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AG 120

INTRODUCTION

TO THE

AGRICULTURAL INDUSTRY

FOR

IDAHO

SECONDARY AGRICULTURE INSTRUCTORS

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Department of Agricultural and Extension Education
University of Idaho
By
Douglas A. Pals, Project Director

FOREWORD

The Agricultural Science and Technology Curriculum Guides are the product of many years of careful planning and development. In 1987, an Agricultural Education Technical Committee was assembled to determine the competencies necessary to prepare students for careers in agriculture. In 1989, a committee of secondary agriculture instructors, state supervisory staff and University of Idaho Agricultural and Extension Education faculty arranged the competencies into an outline of courses appropriate for secondary agriculture programs in Idaho. These curriculum guides have been written to provide the secondary agriculture instructor with up-to-date instructional materials to be used in developing lessons for the student interested in pursuing a career in agriculture.

The arrangement of the guide follows the courses outlined in the Agricultural Science and Technology Curriculum Outline - The Guide to the 90's (Vo. Ed. #240) published in 1989. The format used in this guide was adapted from the curriculum guides developed for Idaho secondary agriculture instructors during the period of 1981-1985.

The original Idaho Agricultural Curriculum Guides used in the development of these materials were:

- 1981 - Livestock Production
- 1981 - Agricultural Mechanics
- 1982 - Farm Business Management
- 1985 - Crop and Soil Science

Many individuals made the original guides possible. The format used was adapted from curriculum developed by the Curriculum and Instructional Materials Center of the Oklahoma State Department of Vocational and Technical Education. Selected information and many of the transparency masters used in the guides were provided by the Vocational Instructional Services, Texas A & M University. Additional information and transparency masters were provided by the Department of Agricultural Communications and Education, College of Agriculture, University of Illinois and the Agricultural Education Program, Department of Applied Behavioral Sciences, University of California, Davis.

Laboratory exercises incorporated into the units of instruction were used from the Holt, Rinehart and Winston, Inc. book, Modern Biology, Biology Investigations and the Scott, Foresman, and Company Lab Manual for Biology. Credit appears on the first page of the materials used from these two sources.

Without the following individuals' dedication and commitment, this project would not have been completed.

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USE OF THIS PUBLICATION

Introduction

This material must be taught. It does not replace the teacher, nor the teacher's expertise. The teacher needs to adapt the material to the local area and individual students. The teacher must also provide the necessary motivating techniques to help the students learn the material.

The pages in the guide are color coded to assist in identifying and locating the desired pages. The colors used are:

Table of Contents	Ivory
Semester Course Title Page	Green
Foreword	Yellow
Use of Publication	Salmon
Divider Page Between Units	Tan
Refer to Another Unit Page	Grey
Unit Objectives/Specific Competencies	White
Suggested Activities	Blue
Information Sheets	White
Transparency Masters	White
Assignment Sheets	White
Answers to Assignment Sheets	Gold
Instructors Notes for Laboratory Exercises	Blue
Laboratory Exercises	White
Answers to Laboratory Exercises	Gold
Unit Test	White
Answers to Test	Gold

Instructional Units

These units are not geared to a particular age level and must be adapted for the students with whom they are used. Units include objectives and competencies, suggested activities for the instructor and students, information sheet, transparency masters, assignment sheets, laboratory exercises, instructor notes for laboratory exercises, answers to assignment sheets and laboratory exercises, test and answers to test. Units are planned for more than one lesson or class period.

The teacher should carefully study each instructional unit to determine:

- A. The appropriateness of the material for the age level
- B. The amount of material that can be covered during a class period
- C. Additional objectives and/or assignments, which could be developed

- D. The skills that must be demonstrated
 - 1. Supplies needed
 - 2. Equipment needed
 - 3. Amount of practice needed
 - 4. Amount of class time needed for demonstrations
- E. Supplementary materials, such as pamphlets, filmstrips and slides that must be ordered
- F. Resource people who must be contacted

Objectives and Competencies

Each unit of instruction is based on stated objectives. These objectives state the goals of the unit, thus providing a sense of direction and accomplishment for the student.

The objectives are stated in two forms: unit objectives, stating the subject matter to be covered in a unit of instruction; and specific objectives, stating the student performances necessary to reach the unit objective.

Since the objectives of the unit provide direction for the teaching-learning process, it is important for the teacher and students to have a common understanding of the intent of the objectives. A limited number of performance terms have been used in the objectives for this curriculum to assist in promoting the effectiveness of the communication among all individuals using the materials.

Following is a list of performance terms and their synonyms that may have been used in this material:

<u>Name</u>	<u>Identify</u>	<u>State a Rule</u>	<u>Apply a Rule</u>
Label	Select	Calculate	
List in writing	Mark		
List orally	Point out		
Letter	Pick out		
Record	Choose		
Repeat	Locate		
Give	Match		
<u>Describe</u>		<u>Order</u>	<u>Distinguish</u>
Define		Arrange	Discriminate
Discuss in writing		Sequence	
Discuss orally		List in order	
Interpret		Classify	
Tell how		Divide	
Tell what		Isolate	
Explain		Sort	

Construct

Draw
Make
Build
Design
Formulate
Reproduce

Transcribe
Reduce
Increase
Figure
Conduct
Compare

Demonstrate

Show your work
Show procedure
Perform an experiment
Perform the steps
Operate
Remove

Replace
Turn on/off
(Dis) assemble
(Dis) connect

Reading of the objectives by the student should be followed by a class discussion to answer any questions concerning performance requirements for each instructional unit.

Teachers should feel free to add objectives, which will fit the material to the needs of the students and community. When a teacher adds objectives, he/she should remember to supply the needed information, assignment sheets and/or laboratory exercises and criterion tests.

Suggested Activities

Each unit of instruction has a suggested activities sheet outlining steps to follow in accomplishing specific objectives. Duties of the instructor will vary according to the particular unit. However, for best use of the material they should include the following: provide students with objective sheet, information sheet, assignment sheets, and laboratory exercises; preview filmstrips, make transparencies, and arrange for resource materials and people; discuss unit and specific objectives and information sheet; give test. Teachers are encouraged to use any additional instructional activities and teaching methods to aid students in accomplishing the objectives.

Information Sheet

The information sheet provides content essential for meeting the cognitive (knowledge) requirements of the unit. The teacher will find that the information sheet serves as an excellent guide for presenting the background knowledge necessary to develop the skills specified in the unit objective.

Students should read the information sheet before the information is discussed in class. Students may take additional notes on the information sheet.

Transparency Masters

Transparency masters provide information in a special way. The students may see as well as hear the material being presented, thus reinforcing the learning process. Transparencies may present new information or they may reinforce information presented in the information sheet. They are particularly effective when identification is necessary.

Transparencies should be made and placed in the notebook where they will be immediately available for use. Transparencies direct the class's attention to the topic of discussion. They should be left on the screen only when topics shown are under discussion. (NOTE: Stand away from the overhead projector when discussing transparency material. The noise of the projector may cause the teacher to speak too loudly.)

Assignment Sheets

Assignment sheets give direction to study and furnish practice for paper and pencil activities to develop the knowledge which is a necessary prerequisite to skill development. These may be given to the student for completion in class or used for homework assignments. Answer sheets are provided which may be used by the student and/or teacher for checking student progress.

Laboratory Exercises

Laboratory exercises are found in selected units. The laboratory exercises include both science and agricultural mechanics activities. The science laboratory exercises often have instructions to the instructor prior to the actual laboratory. Procedures outlined in the laboratory exercise for agricultural mechanics give direction to the skill being taught and allow both student and teacher to check student progress toward the accomplishment of the skill.

Test and Evaluation

Paper-pencil and performance tests have been constructed to measure student achievement of each objective listed in the unit of instruction. Individual test items may be pulled out and used as a short test to determine student achievement of a particular objective. This kind of testing may be used as a daily quiz and can help the teacher spot difficulties being encountered by students in their efforts to accomplish the unit objective. Test items for objectives added by the teachers should be constructed and added to the test.

Test Answers

Test answers are provided for each unit. These may be used by the teacher and/or student for checking student achievement of the objectives.

Care of Materials

The cost of reproduction of this guide prohibits the replacement of these materials. Therefore, please be extremely careful in handling originals. Make the necessary copies of the information sheets, transparencies, assignments and tests and replace originals in the curriculum guide notebook. Take extra care in keeping originals clear for future reproduction.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

UNIT OBJECTIVE

After completing this unit, students should be able to recite the FFA motto and FFA creed. Students should be able to use the *Official FFA Manual* to answer questions and to make decisions regarding the roles and responsibilities of an active FFA member. This knowledge will be demonstrated by completing the assignment sheets and unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completing this unit, the student should be able to:

1. Write and recite the FFA motto.
2. List the FFA colors.
3. List and describe the symbols of the FFA emblem.
4. List and describe the four kinds of membership.
5. Write the primary aim of the FFA.
6. List six specific purposes of the FFA.
7. Write the FFA salute.
8. State proper uses of the FFA jacket.
9. State the code of ethics for FFA members.
10. Identify the correct date for the historical highlights of the FFA organization.
11. List the four FFA degrees.
12. Name the offices and the officer station symbols of each office.
13. List five duties of all chapter officers.
14. Identify the office corresponding to specific officer duties.
15. List eight ways to work toward becoming a chapter leader.
16. Describe the official FFA dress code for males and females.
17. State the response of all members in unison during the opening ceremonies.
18. List four benefits of FFA contests.
19. List ten district, state and/or national FFA contests.

20. List six major categories of FFA awards.
21. Identify the correct FFA chapter awards and activities when given a description of each.
22. Write and recite the FFA creed.
23. Attend an FFA meeting.
24. Use the *Official FFA Manual*.
25. Complete an application for the Greenhand FFA Degree.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

SUGGESTED ACTIVITIES

- I. Suggested activities
 - A. Order materials to supplement the unit
 1. Literature
 - a. *Official FFA Manual*--Purchase one copy of the most recent edition for each student. Order from the National FFA Supply Service.
 - b. *Student Handbook*--Purchase from the National FFA Supply Service.
 2. Films, filmstrips, slideshows, etc.
 - a. *FFA - Agriculture's New Generation*, Color, 25 minutes. Available from Venard Films, 1009 Highview Road, East Peoria, Illinois 61654.
 - b. *Food for America*, Color, 5 minutes. Available from Venard Films, 1009 Highview Road, East Peoria, Illinois 61654.
 - c. *Building Our American Communities*, Color, 30 minutes. Available from Venard Films, 1009 Highview Road, East Peoria, Illinois 61654.
 - d. *Education Through Experience and Stars Over America*, Color, 20 minutes. Can be purchased from FFA Supply Service.
 - B. Make transparencies.
 - C. Provide students with objective sheet.
 - D. Provide students with information and assignment sheets.
 - E. Discuss unit and specific objectives.
 - F. Discuss information and assignment sheets.
 - G. Invite a chapter officer to talk to the class about the importance of wearing the jacket and following the code of ethics.
 - H. Invite a chapter, district, or state officer to talk to the class about the opportunities available through the FFA.
 - I. Invite a chapter, district or state officer to talk about developing leadership abilities through the FFA.
 - J. Invite the previous year's chapter creed speaker to recite the FFA creed to the class and give pointers in presenting the creed.

- K. Have all members fill out an application for the Greenhand FFA Degree and hold Greenhand Ceremony at chapter meeting.
 - L. Review and give test.
 - M. Reteach and retest if necessary.
- II. Instructional materials
- A. Objective sheet
 - B. Suggested activities
 - C. Information sheet
 - D. Transparency masters
 - 1. TM 1--FFA Motto and Colors of the FFA
 - 2. TM 2--FFA Emblem
 - 3. TM 3--Symbols of the FFA Emblem
 - 4. TM 4--Kinds of FFA Membership
 - 5. TM 5--FFA Aims and Purposes
 - 6. TM 6--Proper Use of the FFA Jacket
 - 7. TM 7--FFA Code of Ethics
 - 8. TM 8--Officer Station Symbols
 - 9. TM 9--Duties of Chapter Officers
 - 10. TM 10--Specific Duties of Chapter Officers
 - E. Assignment Sheets
 - 1. AS 1--Recite the FFA Motto
 - 2. AS 2--Symbols and Description of the FFA Emblem
 - 3. AS 3--FFA Crossword Puzzle
 - 4. AS 4--Recite the FFA Creed
 - 5. AS 5--Attend an FFA Chapter Meeting
 - 6. AS 6--Use the *Official FFA Manual*
 - 7. AS 7--Greenhand Degree Application
 - F. Answers to assignment sheets

- G. Test
- H. Answers to test

III. Unit references

- A. *Leadership/FFA for Beginning Vocational Agriculture Students*, The Department of Agricultural Education, Iowa State University, Ames, Iowa, 1981.
- B. *Model Agricultural Core Curriculum*, State Department of Education, University of California, Davis, 1989.
- C. *Official FFA Manual*, FFA Organization, Alexandria, Virginia, 1989.
- D. *Student Handbook*, National FFA Center, Alexandria, Virginia, 1984.
- E. *Vocational Agriculture I*, Oklahoma State Board of Vocational and Technical Education, Stillwater, Oklahoma, 1984.
- F. *Washington Conference Program Notebook*, National FFA Organization, Alexandria, Virginia.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

INFORMATION SHEET

- I. FFA Motto (Transparency 1; Assignment Sheet #1)
 - Learning to do
 - Doing to learn
 - Earning to live
 - Living to serve

- II. FFA Colors (Transparency 1)
 - A. National blue--FFA is a national organization
 - B. Corn gold--Corn is a native American crop grown in every state

- III. Symbols of the FFA Emblem (Transparencies 2, 3; Assignment Sheet #2)
 - A. Owl--Wisdom and knowledge
 - B. Plow--Labor and tillage of the soil
 - C. Rising sun--Progress in agriculture; the new day that will dawn when all farmers are educated and have learned to cooperate; the confidence that FFA members have in the future
 - D. Cross section of an ear of corn--Common agricultural interests
 - E. Eagle--National scope of the FFA
 - F. The words "Agricultural Education" surrounding "FFA"--FFA is an important part of the agriculture/agribusiness program

- IV. Four kinds of membership (Transparency 4)
 - A. Active
 - 1. Must be enrolled in a secondary agricultural education program
 - 2. Members may retain membership until 21 years old or three years out of high school (whichever time length is greater)
 - B. Alumni
 - 1. Anyone who is interested in agriculture/agribusiness and FFA
 - 2. May be former FFA members (but not a requirement)

- C. Collegiate
 - 1. Students enrolled in agriculture courses in a two or four year institution
 - 2. Former active members of chartered local chapters who are enrolled in a two or four year institution having a collegiate chapter

- D. Honorary
 - 1. Awarded to those who have helped to advance agricultural education and the FFA
 - 2. Limited to the following:
 - a. Honorary Chapter FFA Degree--chapter level
 - b. Honorary State FFA Degree--state level
 - c. Honorary American FFA Degree--national level

V. The primary aim of the FFA is the development of agricultural leadership, cooperation, and citizenship (Transparency 5)

VI. Specific purposes of the FFA (Transparency 5)

- A. To develop competent and aggressive agricultural leadership
- B. To create and nurture a love of agricultural life
- C. To strengthen the confidence of students of agricultural education in themselves and their work
- D. To create more interest in the intelligent choice of agricultural occupations
- E. To encourage members to improve the home and its surroundings
- F. To participate in worthy undertakings for the improvement of the industry of agriculture
- G. To develop character, train for useful citizenship, and foster patriotism
- H. To participate in cooperative effort
- I. To encourage and practice thrift
- J. To encourage scholarship improvement
- K. To provide and encourage the development of organized recreational activities

VII. FFA salute

I pledge allegiance to the flag of the United States of America, and to the republic for which it stands, one nation under God, indivisible, with liberty and justice for all

- VIII. Proper use of the FFA jacket (Transparency 6)
- A. Worn only by FFA members
 - B. Kept clean and neat
 - C. Only one large emblem on back and one small emblem on front; state association and chapter name on back; individual's name and one office or honor on the front
 - D. Worn on official occasions; zipped to top, collar turned down, and cuffs buttoned
 - E. Worn by officers and members on all official FFA occasions and wherever the chapter or state association is represented. May be worn to school or other appropriate places
 - F. No school letters or insignia of other organizations should be attached to or worn on jacket
 - G. Jacket should be discarded when faded and worn (or emblems and lettering removed)
 - H. Remove emblems and lettering before giving or selling jacket to non-member
 - I. Always act like a lady or gentleman when wearing jacket
 - J. Refrain from alcohol or tobacco use while wearing the jacket or representing the FFA
 - K. All medals should be worn beneath the name on the right side of the jacket (Exception: A single state FFA degree charm and American FFA degree key should be worn above the name or attached to a standard key chain.) No more than three medals should be worn on the jacket; these should represent the highest degree earned, the highest office held, and the highest award earned
- IX. FFA Code of Ethics (Transparency 7)--FFA members shall conduct themselves at all times in order to be a credit to the FFA organization, chapter, school and community by:
- A. Dressing neatly and appropriately for the occasion
 - B. Showing respect for the rights of others and being courteous at all times
 - C. Being honest and not taking unfair advantage of others
 - D. Respecting property of others
 - E. Refraining from loud, boisterous talk, swearing and other unbecoming conduct
 - F. Demonstrating sportsmanship in the show ring, judging contests, and meetings; modest in winning and generous in defeat

- G. Attending meetings promptly and respecting the opinions of others in discussion
 - H. Taking pride in the FFA organization, in our activities, in our supervised experience programs, in our exhibits, and in the occupation of agriculture
 - I. Sharing with others experience and knowledge gained by attending national and state meetings
- X. Historical highlights of the FFA
- A. 1917--High school vocational agriculture classes began when Congress passed the Smith-Hughes Act
 - B. 1928--The National FFA Association was organized at the first National FFA Convention in Kansas City, Missouri
 - 1. Leslie Applegate became the first National FFA President
 - 2. Dr. Lane was the first National FFA Advisor
 - C. 1929--Idaho became the 17th state to receive her FFA Charter; (Malad received first Idaho Chapter Charter)
 - D. 1930--Official FFA creed and colors were adopted at the third national convention
 - E. 1939--The National FFA purchased 28 1/2 acres of George Washington's estate. The national FFA headquarters and supply service are now located there
 - F. 1944--National FFA Foundation formed
 - G. 1950--U.S. Congress passed Public Law 740, which granted the FFA a federal charter
 - H. 1952--The first *National Future Farmer* magazine was published
 - I. 1965--The "New Farmers" organization merged with the Future Farmers of America
 - J. 1969--Girls were admitted to membership in FFA
 - K. 1971--FFA Alumni Organization founded
 - L. 1988--Delegates at the national convention changed "Future Farmers of America" to the "National FFA Organization"
- XI. FFA degrees
- A. Greenhand FFA Degree
 - B. Chapter FFA Degree

- C. State FFA Degree
 - D. American FFA Degree
- XII. FFA offices and symbols (Transparency 8)
- A. President--Rising Sun
 - B. Vice President--The Plow
 - C. Secretary--Ear of Corn
 - D. Treasurer--Bust of George Washington
 - E. Reporter--United States Flag
 - F. Sentinel--Shield of Friendship
 - G. Advisor--Owl
- XIII. Duties of chapter officers (Transparency 9)
- A. Be willing to memorize their parts in the official ceremonies
 - B. Have a genuine interest in being part of a leadership team
 - C. Be able to lead by example
 - D. Be familiar with the chapter constitution and by-laws
 - E. Be familiar with parliamentary procedure
 - F. Be willing to accept responsibility
- XIV. Specific duties of chapter officers (Transparency 10)
- A. President
 - 1. Preside over meetings
 - 2. Official representative of chapter
 - 3. Coordinate chapter activities
 - 4. Appoint committees
 - B. Vice President
 - 1. Assume duties of president if necessary
 - 2. Supervise committees

3. Work closely with president
4. Coordinate chapter activities

C. Secretary

1. Prepare the minutes of meetings and agenda for each meeting
2. Attend to chapter correspondence
3. Prepare, post, and distribute motions
4. Compile chapter reports
5. Keep member attendance and activity records
6. Issue membership cards
7. Keep secretary's book, copy of program of activities, and chapter constitution and by-laws on hand at each meeting

D. Treasurer

1. Receive and deposit FFA funds
2. Collect dues and assessments
3. Work with secretary to prepare and submit membership roster and dues to the national organization
4. Maintain a neat and accurate official "Treasurer's Record Book"
5. Chair the earnings and savings committee
6. Prepare monthly treasurer's reports for chapter meetings

E. Reporter

1. Prepare chapter newsletter and scrapbook
2. Release news and information to local news media
3. Help plan public information programs
4. Send local stories to area, district and state reporters
5. Send articles and pictures to the *FFA New Horizons* and other publications
6. Work with local media on radio and television appearances and FFA news

- F. Sentinel
 - 1. Prepare meeting room and care for paraphernalia
 - 2. Attend door and welcome visitors
 - 3. Keep meeting room comfortable
 - 4. Take charge of candidates for degree ceremonies
 - 5. Assist with special features and refreshments

- G. Advisor
 - 1. Acquaint members with FFA
 - 2. Make FFA a learning experience
 - 3. Advise officers, committees, and members

XV. Ways to work toward becoming a chapter leader

- A. Work to involve every member of the chapter in a worthwhile activity
- B. Become knowledgeable with the FFA chapter, state, and national program, including the structure and the history of the organization
- C. Observe the FFA dress and grooming code
- D. Study self-improvement ideas
- E. Learn the characteristics of a good leader
- F. Learn how to effectively lead and participate in group discussion
- G. Learn parliamentary procedure
- H. Learn how to meet others, including how to start and conclude a conversation
- I. Learn how to properly introduce a friend, parent, advisor, principal and others
- J. Demonstrate how to properly present an award
- K. Give an FFA speech according to FFA speaking contest standards
- L. Attend and participate in meetings and FFA functions
- M. Learn proper social graces and rules of etiquette
- N. Set an example that anyone in your school and community will respect and recognize as FFA leadership training

XVI. Official FFA dress code

A. Females

1. Black skirt
2. White blouse
3. Official FFA scarf
4. Black shoes
5. Official jacket zipped to top

(Note: Black slacks may be worn for outdoor activities.)

B. Males

1. Black slacks
2. White shirt
3. FFA tie
4. Black shoes and socks
5. Official jacket zipped to top

XVII. Members' response during opening ceremonies

"To practice brotherhood, honor rural opportunities and responsibilities, and develop those qualities of leadership which FFA members should possess."

XVIII. Benefits of FFA contests

- A. Make classes more interesting
- B. Encourage development of special skills
- C. Help gain technical knowledge
- D. Develop ability to make sound judgments
- E. Develop ability to defend decisions
- F. Become a good loser and gracious winner
- G. Others?

XIX. District, state and/or national FFA contests

- A. Public Speaking
- B. Extemporaneous Speaking

- C. Creed Speaking
 - D. Parliamentary Procedure
 - E. Agribusiness Sales
 - F. Greenhand Knowledge
 - G. Agricultural Mechanics
 - H. Dairy
 - I. Dairy Foods (Food Products)
 - J. Poultry
 - K. Farm Business Management
 - L. Floriculture
 - M. Forestry
 - N. Livestock
 - O. Meats
 - P. Nursery/Landscape (Crops)
 - Q. Others?
- XX. FFA awards
- A. Achievement Awards--FFA members are recognized for accomplishments in the instructional program and FFA leadership activities
 - B. Achievement in Volunteerism Awards--FFA members are recognized for accomplishments in leading the chapter's BOAC (Building Our American Communities) program
 - C. Computers in Agriculture Award--Recognize FFA members who have made the greatest progress in utilizing computers in agriculture and agribusiness
 - D. Proficiency Awards
 - 1. Development of specialized skills and abilities in an agricultural career
 - 2. Based on the individual SAE and career objectives
 - 3. Areas
 - a. Agricultural Electrification
 - b. Agricultural Mechanics

- c. Agricultural Processing
- d. Agricultural Sales and/or Service
- e. Beef Production
- f. Cereal Grain Production
- g. Dairy Production
- h. Diversified Crop Production
- i. Diversified Livestock Production
- j. Feed Grain Production
- k. Fiber Crop Production
- l. Forage Production
- m. Floriculture
- n. Forest Management
- o. Fruit and/or Vegetable Production
- p. Home and/or Farmstead Improvement
- q. Horse Proficiency
- r. Nursery Operations
- s. Oil Crop Production
- t. Outdoor Recreation
- u. Placement in Agricultural Production
- v. Poultry Production
- w. Sheep Production
- x. Soil and Water Management
- y. Specialty Animal Production
- z. Specialty Crop Production
- aa. Swine Production
- bb. Turf and Landscape Management
- cc. Wildlife Management

- E. Scholarships--Available for FFA members to attend both colleges and vocational/technical schools upon graduation from high school
- F. Star Awards
 - 1. Star Greenhand
 - a. First year member
 - b. Most active in chapter
 - c. Demonstrated leadership
 - d. Strong SAE program
 - 2. Star Chapter Farmer
 - a. Member most involved in all phases of the chapter's activities
 - b. Outstanding SAE program in production agriculture
 - 3. Star Chapter Agribusinessman
 - a. Member most involved in all phases of the chapter's activities
 - b. Outstanding SAE program in agribusiness
 - 4. Star State Farmer
 - a. Selected from applicants for the State FFA Degree
 - b. Active involvement in the FFA
 - c. Outstanding SAE in production agriculture
 - 5. Star State Agribusinessman
 - a. Selected from applicants for the State FFA Degree
 - b. Active involvement in FFA
 - c. Outstanding SAE in agribusiness
 - 6. Star Farmer of America
 - a. Selected from among the four regional star farmers
 - b. Top SAE in production agriculture
 - c. Recognizes achievement in both career and leadership development

7. Star Agribusinessman of America
 - a. Selected from among the four regional star agribusinessmen
 - b. Top SAE program in agribusiness
 - c. Recognizes achievement in both career and leadership development

XXI. FFA chapter awards and activities

- A. National Chapter Award--Based on the degree of achievements of local chapters in the completion of the chapter program of activities
- B. National Safety Award Program--Recognizes chapters for making their communities safer places to live and work
- C. Building Our American Communities (BOAC)--Involves members in community development activities with local government and citizen leaders
- D. Food for America--FFA members present a program about the importance of agriculture to elementary students to gain teaching experience and improve the image of agriculture

FFA MOTTO AND COLORS OF THE FFA

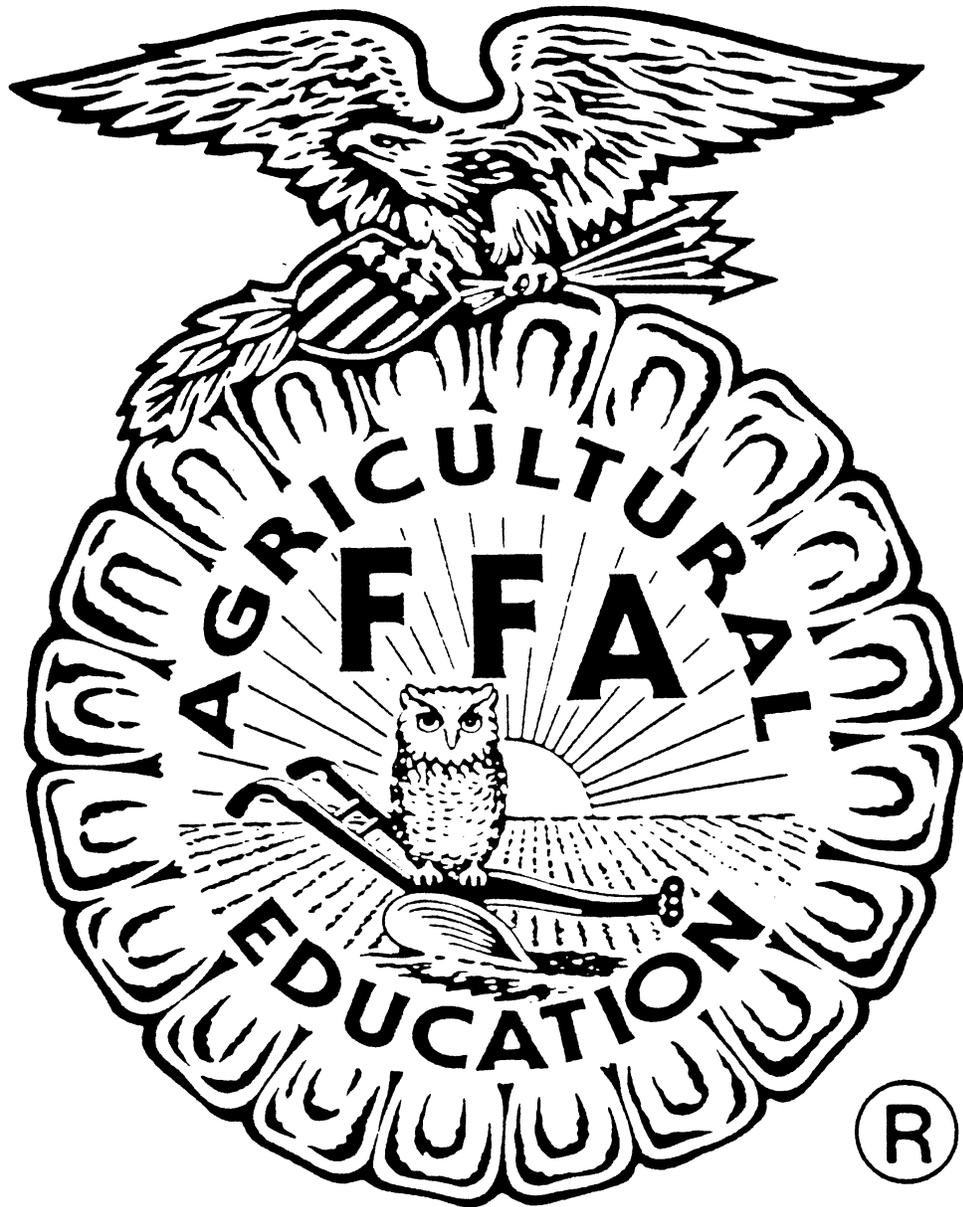
FFA Motto

**Learning to Do
Doing to Learn
Earning to Live
Living to Serve**

Colors of the FFA

**The colors of the FFA are National Blue and Corn Gold.
Blue reminds us that the FFA is a national organization.
Gold reminds us that corn is a native American crop
grown in every state.**

FFA Emblem

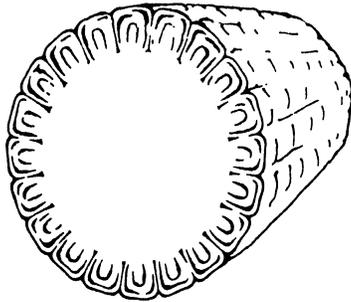


Symbols of the FFA Emblem

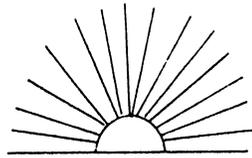


THE EMBLEM

The FFA emblem was designed with much thought and meaning. It is made up of five symbols.



A cross section of an ear of corn. The symbol of corn represents our common agricultural interests, is native to America and is grown in every state.



The rising sun. It symbolizes progress in agriculture and the confidence that FFA members have in the future.



The plow. It is a symbol of labor and tillage of the soil.



The owl. It symbolizes wisdom and knowledge.



The eagle. This is symbolic of the national scope of the FFA.



The words "Agricultural Education" surrounds the letters "FFA". This tells us that FFA is an important part of the agricultural/agribusiness program.

KINDS OF FFA MEMBERSHIP

- 1. Active – enrolled in secondary (grades 7-12) agricultural education program. Member may retain active membership until November 30, following the fourth National FFA Convention after graduation from high school.**
- 2. Alumni - anyone who is interested in agriculture/agribusiness and FFA; can be former FFA members, but not limited only to former members**
- 3. Collegiate - enrolled in an agricultural degree program in college**
- 4. Honorary - is bestowed upon anyone who has made a commitment or contribution to agriculture/agribusiness**

FFA AIMS AND PURPOSES

The Primary aim of the FFA is the "development of agricultural leadership, cooperation, and citizenship."

- 1. To develop competent, aggressive agricultural leadership**
- 2. To create and nurture a love of agricultural life**
- 3. To strengthen the confidence of students of vocational agriculture in themselves and their work**
- 4. To create more interest in the intelligent choice of agricultural occupations**
- 5. To encourage members in the development of individual occupational experience programs in agriculture and establishment in agricultural careers**
- 6. To encourage members to improve the home and its surroundings**
- 7. To participate in monthly undertakings for the improvement of the industry of agriculture**
- 8. To develop character, train for useful citizenship, and foster patriotism**
- 9. To participate in cooperative effort**
- 10. To encourage and practice thrift**
- 11. To encourage improvement in scholarship**
- 12. To provide and encourage the development of organized recreational activities**

PROPER USE OF THE FFA JACKET

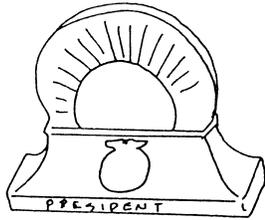
- A. Worn only by FFA members**
- B. Kept clean and neat**
- C. Only one large emblem on back and one small emblem on front; state association and chapter names on back; individual's name and one office or honor on the front**
- D. Worn on official occasions; zipped to top, collar turned down, and cuffs buttoned**
- E. Worn by officers and members on all official FFA occasions and wherever the chapter or state association is represented. May be worn to school or other appropriate places**
- F. No school letters or insignia of other organizations should be attached to or worn on jacket**
- G. Jacket should be discarded when faded and worn (or emblems and lettering removed)**
- H. Remove emblems and lettering before giving or selling jacket to non-member**
- I. Always act like a lady or gentleman when wearing jacket**
- J. Refrain from alcohol or tobacco use while wearing the jacket or representing the FFA**
- K. All medals should be worn beneath the name on the right side of the jacket (Exception: A single state FFA degree charm and American FFA degree key should be worn above the name or attached to a standard key chain.) No more than three medals should be worn on the jacket; these should represent the highest degree earned, the highest office held, and the highest award earned**

FFA CODE OF ETHICS

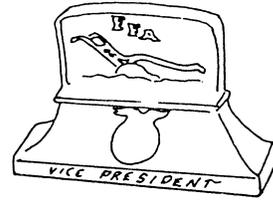
FFA members shall conduct themselves at all times in order to be a credit to the FFA organization, chapter, school and community by:

- A. Dressing neatly and appropriately for the occasion**
- B. Showing respect for the rights of others and being courteous at all times**
- C. Being honest and not taking unfair advantage of others**
- D. Respecting property of others**
- E. Refraining from loud, boisterous talk, swearing and other unbecoming conduct**
- F. Demonstrating sportsmanship in the show ring, judging contests, and meetings; modest in winning and generous in defeat**
- G. Attending meetings promptly and respecting the opinions of others in discussion**
- H. Taking pride in the FFA organization, in our activities, in our supervised experience programs, in our exhibits, and in the occupation of agriculture**
- I. Sharing with others experience and knowledge gained by attending national and state meetings**

Officer Station Symbols



President—
"Rising Sun"



Vice President—
"The Plow"



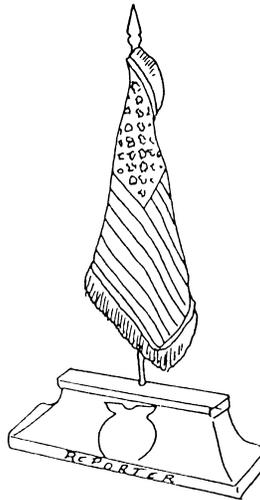
Treasurer—
"Bust of George
Washington"



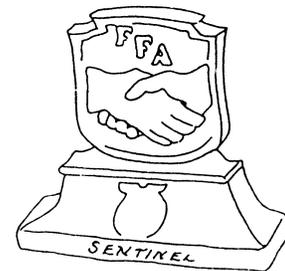
Secretary—
"Ear of Corn"



Advisor—
"Owl"



Reporter—
"United States Flag"



Sentinel—
"Shield of Friendship"

DUTIES OF CHAPTER OFFICERS

All officers have some duties and responsibilities in common. Every officer must:

- * Be willing to memorize their parts in the official ceremonies**
- * Have a genuine interest in being a part of a leadership team**
- * Be able to lead by example**
- * Be familiar with the chapter constitution and by-laws**
- * Be familiar with parliamentary procedure**
- * Be willing to accept responsibility**

SPECIFIC DUTIES OF CHAPTER OFFICERS

THE PRESIDENT

- * PRESIDE OVER MEETINGS
 - * OFFICIAL REPRESENTATIVE OF CHAPTER
 - * COORDINATE CHAPTER ACTIVITIES
-

THE VICE PRESIDENT

- * ASSUME DUTIES OF PRESIDENT IF NECESSARY
 - * SUPERVISE COMMITTEES
 - * WORK CLOSELY WITH PRESIDENT
-

THE SECRETARY

- * PREPARE THE MINUTES OF MEETINGS
 - * ATTEND TO CHAPTER CORRESPONDENCE
 - * RECORD MEMBER ATTENDANCE AND ACTIVITY
-

THE TREASURER

- * RECEIVE AND DEPOSIT FFA FUNDS
 - * COLLECT DUES
 - * MAINTAIN TREASURER'S BOOK
-

THE REPORTER

- * PUBLICIZE CHAPTER ACTIVITIES
 - * SEND STORIES TO DISTRICT AND STATE FFA REPORTERS
 - * PREPARE CHAPTER SCRAPBOOK
-

THE SENTINEL

- * PREPARE MEETING ROOM
- * CARE FOR CHAPTER PARAPHERNALIA
- * ATTEND THE DOOR AND WELCOME VISITORS

THE ADVISOR

- * ACQUAINT MEMBERS WITH FFA
 - * MAKE FFA A LEARNING EXPERIENCE
 - * ADVISE OFFICERS, COMMITTEES, AND MEMBERS
-

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ASSIGNMENT SHEET #1--RECITE THE FFA MOTTO

Name _____ Score _____

The FFA motto is what every FFA member believes and practices each day. As a first year secondary agricultural education student and a Greenhand in the FFA Organization, it is necessary for you to memorize the FFA motto and to practice saying the motto with meaning and sincerity.

The motto is written below. Read the FFA motto aloud several times, and then practice saying the motto without looking at the words.

The FFA Motto

LEARNING TO DO

DOING TO LEARN

EARNING TO LIVE

LIVING TO SERVE

After you have practiced saying the FFA motto without looking at the words, practice saying it when looking into a mirror. This practice allows you to give meaning to the words. Be prepared to recite the FFA motto to the class when called upon by the instructor.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

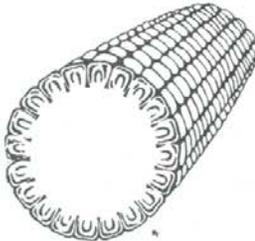
ASSIGNMENT SHEET #2--SYMBOLS AND DESCRIPTION OF THE FFA EMBLEM

Name _____ Score _____



FFA EMBLEM

DIRECTIONS: Name symbol and complete the description.

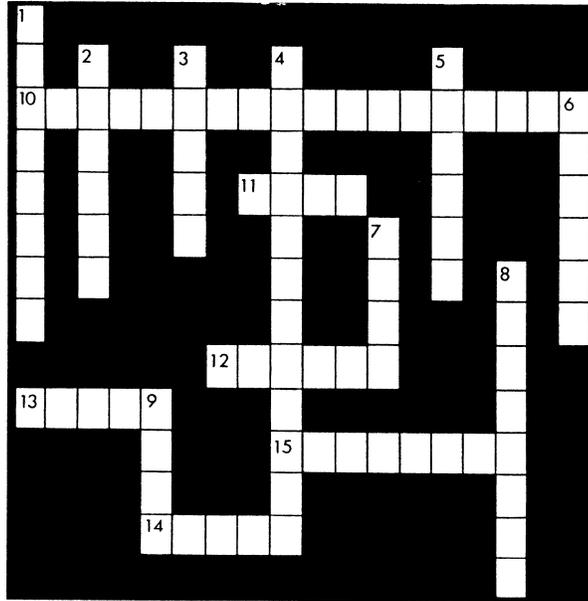
<p>1. _____</p>  <p>COMMON _____ INTEREST</p>	<p>2. _____</p>  <p>_____ AND _____</p>	<p>3. _____</p>  <p>FFA IS A _____ OF AGRICULTURE</p>
<p>4. _____</p>  <p>_____ AND _____ OF THE SOIL</p>	<p>5. _____</p>  <p>NATIONAL _____ OF THE FFA</p>	<p>6. _____</p>  <p>_____ IN AGRICULTURE AND _____ IN THE FUTURE</p>

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ASSIGNMENT SHEET #3--FFA CROSSWORD PUZZLE

Name _____ Score _____

DOWN

1. "To the _____ for which it stands"
2. The FFA jacket should be worn only by _____.
3. "Living to _____"
4. Color that represents the National Organization.
5. Should be fastened to top on official occasions.
6. Should be removed if jacket is sold to non-members.
7. Color of official FFA Tie.
8. Color that represents corn growing in every state.
9. Jackets should be kept clean and _____.

ACROSS

10. Official FFA Salute.
11. "Earning to _____"
12. Part of official closing ceremony.
13. "Doing to _____"
14. Number of metals that should be worn on the jackets.
15. "_____ to Do"

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ASSIGNMENT SHEET #4--RECITE THE FFA CREED

Name _____ Score _____

The FFA creed has been recited by every individual who has been a member of the FFA. The creed expresses the true meaning of agriculture and the role that the FFA member plays in making our country and community a better place to live and to work. The creed was written by E.M. Tiffany, and the membership attending the Third National FFA Convention adopted it in 1930.

It is best to learn the creed a paragraph at a time. Start with the first paragraph and learn it. Then move on to the second paragraph. Repeat these steps with each paragraph. Learn to say the creed speaking slowly, but also learn to stress the important parts of each paragraph. It is best to practice saying the creed to someone. Ask your mother, father, brother, sister or a friend to help you. Your instructor will require that you recite the creed to the class at some time.

(Note: Your FFA chapter will hold an FFA creed contest and select the person who does the best job of reciting the creed to represent the chapter in district competition.)

Tips for reciting the creed:

1. Control your voice (use emphasis)
2. Maintain eye contact (look at forehead instead of directly into eyes)
3. Use hand gestures to emphasize points
4. Don't lean on the podium
5. Speak slowly and clearly
6. Maintain good posture

THE FFA CREED

I believe in the future of farming, with a faith born not of words but of deeds - achievements won by the present and past generations of agriculturists; in the promise of better days through better ways, even as the better things we now enjoy have come to us from the struggles of former years.

I believe that to live and work on a good farm, or to be engaged in other agricultural pursuit, is pleasant as well as challenging; for I know the joys and discomforts of agricultural life and hold an inborn fondness for those associations which, even in hours of discouragement, I cannot deny.

I believe in leadership from ourselves and respect from others. I believe in my own ability to work efficiently and think clearly, with such knowledge and skill as I can secure, and in the ability of progressive agriculturists to serve our own and the public interest in producing and marketing the product of our toil.

I believe in less dependence on begging and more power in bargaining; in the life abundant and enough honest wealth to help make it so - for others as well as myself; in less need for charity and more of it when needed; in being happy myself and playing square with those whose happiness depends upon me.

I believe that rural America can and will hold true to the best traditions of our national life and that I can exert an influence in my home and community which will stand solid for my part in that inspiring task.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ASSIGNMENT SHEET #5--ATTEND AN FFA CHAPTER MEETING

Name _____ Score _____

It is the responsibility of all FFA members to attend and participate in the local FFA chapter meetings. During the meetings, each member can express opinions and develop plans for improvement of the chapter. As a first-year secondary agricultural education student, you have the opportunity to select the committees on which you wish to work. At the first meeting, you will probably not have a leadership role or do a lot of talking, but you will be learning how the meeting operates.

The purpose of this assignment sheet is to help you learn your part and to observe a meeting in practice. Learn your part before the first meeting. You will not have to recite the part by yourself, but you will be required to stand and say the part with the other FFA members.

PART I

Read the parts listed below several times; practice saying your part aloud without looking at the copy.

OPENING CEREMONY

President: "Thank you. FFA members, why are we here?"

(All members stand at third tap of gavel.)

Member response: *(In unison.)* "To practice brotherhood, honor rural opportunities and responsibilities, and develop those qualities of leadership which FFA members should possess."

(All are seated at one tap of gavel.)

CLOSING CEREMONY

(The president taps three times with gavel to call members to stand, face the flag at the reporter's station, and with their right hands over their hearts repeat the following pledge.)

In unison: "I pledge allegiance to the flag of the United States of America, and to the republic for which it stands, one nation under God, indivisible, with liberty and justice for all."

PART II

Answer the following questions about the FFA meeting you attended.

A. How many FFA members attended the meeting? _____

- | | YES | NO |
|--|-------|-------|
| B. Did all of the FFA officers know their parts from memory? | _____ | _____ |
| C. Was there chapter paraphernalia at each officer's station? | _____ | _____ |
| D. Was the room set up as specified by the <i>Official FFA Manual</i> ? | _____ | _____ |
| E. Was the order of business made available to all members? | _____ | _____ |
| F. Did the majority of the members participate in the meeting? | _____ | _____ |
| G. Did the membership use parliamentary procedure in conducting the meeting? | _____ | _____ |
| H. Did you enjoy attending? | _____ | _____ |

Why or why not? _____

- | | | |
|--|-------|-------|
| I. Did you know your part and did you stand and recite the part with meaning and enthusiasm? | _____ | _____ |
| J. Do you think you will be better prepared for the next meeting? | _____ | _____ |
| K. What additional things will you need to work on before the next meeting? | | |

- L. What did you learn by attending the meeting?
- _____

- M. List the names and offices of each of your chapter officers.
- | | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ASSIGNMENT SHEET #6--USE THE *OFFICIAL FFA MANUAL*

Name _____ Score _____

The *Official FFA Manual* is the official publication of the FFA. All FFA members and officers should be able to answer questions and make decisions about chapter activities. Your answers to questions and the decisions that you make should be based on facts found in the *Official FFA Manual*.

Use the most current *Official FFA Manual* to answer the questions listed below and on the following pages.

A. What is the name of the National FFA Advisor?

B. Who is the National Treasurer?

C. What is the name of the person who is serving as National Executive Secretary of the FFA?

D. What city and state is the home of the National FFA Center?

E. The FFA Organization was organized in what month and year?

F. What is the FFA?

G. How many National FFA officers are elected annually?

H. What are the titles of the elected officers of the National FFA?

I. The National FFA organization is governed by what type of a body?

J. What is the name of the official FFA magazine?

K. What year was the FFA Supply Service started?

L. In what year did the FFA start publishing the official FFA magazine?

M. Where is the headquarters for the National FFA organization?

N. How many FFA chapters are there?

O. What is the membership of the National FFA?

P. What is the address of the National FFA Supply Service?

Q. How many times per year is the National FFA magazine published?

R. Name the styles of the FFA calendars.

S. What is the function of the National FFA Foundation, Incorporated?

T. What year was the National FFA Foundation, Incorporated chartered?

U. How many members serve on the board of trustees of the FFA Foundation?

V. In what year was the FFA Alumni Association organized?

W. What is the purpose of FFA camps and leadership conferences?

X. What types of chapter awards and activities are available?

Y. What are the four functions of the FFA Judging Contests?

Z. How many FFA contests are there at the national level?

What are the names of the national FFA contests?

AA. What is the official FFA dress for male members?

BB. What is the official FFA dress for female members?

CC. What are the names of the two national FFA public speaking contests?

DD. What is the purpose of the Star Awards?

EE. What are the names of the different types of FFA Star Awards?

FF. How many FFA chapters are there in the United States and Idaho?

Chapters in United States _____

Chapters in Idaho _____

GG. What are the names of the different FFA proficiency award areas?

HH. What is the FFA motto?

II. Who was the individual who wrote the FFA creed?

JJ. At what National FFA Convention was the FFA creed adopted?

KK. At what convention was the FFA creed revised?

LL. What is the first paragraph of the FFA creed?

MM. How many symbols make up the National FFA emblem?

Name the symbols and give a definition for each.

NN. What are the FFA colors? _____

OO. What are the words of the Pledge of Allegiance?

PP. What are the names of the four degrees of active membership in the FFA?

QQ. What degree does the national organization confer on active members?

RR. What are the names of the offices of the chapter?

SS. What is the primary aim of the FFA?

TT. For what specific purposes was the FFA organization formed?

UU. What is the purpose of the chapter program of activities?

VV. The FFA organization program of activities should include several areas. What are the names of these areas?

WW. What is the correct room arrangement for an FFA meeting? (Draw and label the correct arrangement.)

XX. What does the FFA gavel symbolize?

YY. What do two taps of the gavel mean?

ZZ. What do three taps of the gavel mean?

AAA. Why does the FFA chapter have honorary membership?

BBB. List the symbols of the FFA officers' stations and the corresponding office name.

CCC. List the names and office held of the current National FFA officers.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ASSIGNMENT SHEET #7--GREENHAND DEGREE APPLICATION

_____ *Chapter*

_____ *Candidate's Name*

ANSWER YES
OR NO

1a. Are you enrolled in vocational agriculture? _____

1b. Do you have a satisfactory Supervised Agricultural Occupational Experience Program planned for the current year? _____

Briefly describe your program:

Kind

Scope (Number, size, quantity)

2a. Have you learned and can you explain the meaning of the creed? _____

2b. Can you recite from memory the FFA motto and the salute? _____

3. Do you know the FFA colors and can you describe the FFA emblem and symbols? _____

4. Can you explain the proper use of the FFA jacket? _____

5. Can you identify the historical highlights of the FFA organization? _____

6. Do you know the duties and responsibilities of FFA members by having an understanding of the aim and purposes, proper use of the FFA jacket and code of ethics of the FFA? _____

7. Do you personally own or have access to an *Official FFA Manual*? _____

Date submitted: _____, 20____

Signed _____
(Candidate)

Approved by the Degree Committee

(Chairman)

(Advisor)

Degree conferred on: _____, 20____

(Page 153, Student Handbook)

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

(Note: Use the criteria below as an aid in evaluating the completed assignment sheet.)

- A. Did the student recite the FFA motto from memory?
 B. Did the student recite the FFA motto with meaning?

Assignment Sheet #2

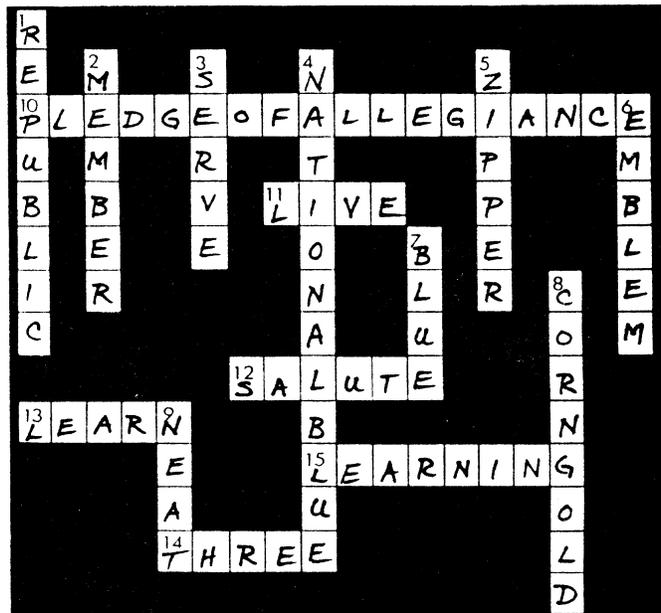
- Cross section of an ear of corn
Common agricultural interest
- Owl
Knowledge and wisdom
- Words
FFA is a part of vocational agriculture
- Plow
Labor and tillage of the soil
- Eagle
National scope of the FFA
- Rising sun
Progress in agriculture and confidence in the future

Assignment Sheet #3Down

- Republic
- Member
- Serve
- National Blue
- Zipper
- Emblem
- Blue
- Corn gold
- Neat

Across

- Pledge of Allegiance
- Live
- Salute
- Learn
- Three
- Learning



Assignment Sheet #4

(Note: Use the criteria below as an aid in evaluating the completed assignment sheet.)

- A. Did the student recite the FFA creed from memory?
- B. Did the student make less than five mistakes?
- C. Did the student emphasize important points within the creed?
- D. Did the student use good body mechanics and gestures?

Assignment Sheet #5

(Note: Use the criteria below as an aid in evaluating the completed assignment sheet.)

- A. Did the student attend the FFA meeting?
- B. Did the student participate in the meeting?
- C. Did the student know the parts for the opening and closing ceremonies?
- D. Did the student answer all of the questions on the assignment sheet?

Assignment Sheet #6

(Note: Any questions that may change from year to year have not been answered. You will find the answers to these in the most recent *Official FFA Manual*.)

- A.
- B.
- C.
- D. Alexandria, Virginia
- E. November, 1928
- F. A national organization of students enrolled in secondary agricultural education programs
- G. Six
- H. President; secretary; vice president, western region; vice-president, central region; vice-president, eastern region; vice-president, southern region
- I. Board of directors and six national officers
- J. *FFA NEW HORIZONS*
- K. 1948
- L. 1952

- M. National FFA Center; Alexandria, Virginia
- N.
- O.
- P. 5632 Mount Vernon Memorial Highway, P.O. Box 15160, Alexandria, Virginia 22309
- Q. Six times per year
- R.
- S. To cooperate in furthering the programs of FFA
- T. 1944
- U. Nineteen members
- V. 1971
- W. To build leaders
- X. National Chapter Award, National Safety Award, Building Our American Communities, Food for America, The President's Challenge
- Y. Gain technical knowledge, ability to make sound judgements, ability to defend decisions, ability to be a gracious winner or good loser
- Z. 10
Agricultural mechanics, dairy, dairy foods, farm business management, floriculture, forestry, livestock, meats, nursery/landscape, poultry
- AA. Black slacks, white shirt, blue FFA tie, black shoes, black socks, official FFA jacket zipped to top
- BB. Black skirt, white blouse, FFA scarf, black shoes, official FFA jacket zipped to top (black pants may be worn for outdoor activities)
- CC. Prepared Public Speaking, Extemporaneous Public Speaking
- DD. Recognize outstanding achievement at chapter, state, and national levels
- EE. Star Greenhand, Star Chapter Farmer, Star Chapter Agribusinessman, Star State Farmer, Star State Agribusinessman, Star Farmer of America, Star Agribusinessman of America
- FF.
- GG. Agricultural Electrification, Agricultural Mechanics, Agricultural Processing, Agricultural Sales and/or Service, Beef Production, Cereal Grain Production, Dairy Production, Diversified Crop Production, Diversified Livestock Production, Feed Grain Production, Fiber Crop Production, Forage Production, Floriculture, Forest Management, Fruit and/or Vegetable Production, Home and/or Farmstead Improvement, Horse Proficiency, Nursery Operations, Oil Crop Production, Outdoor Recreation, Placement in Agricultural Production, Poultry Production, Sheep Production, Soil and Water Management, Specialty

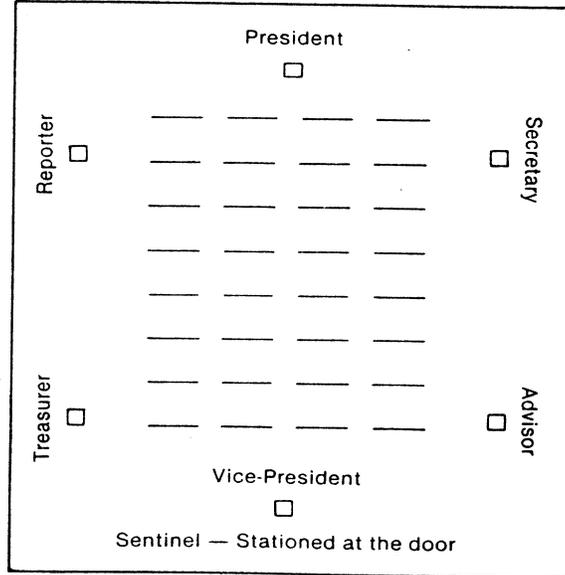
Animal Production, Specialty Crop Production, Swine Production, Turf and Landscape Management, Wildlife Management

(Note: These may be changed at future national conventions.)

- HH. Learning to do, doing to learn, earning to live, living to serve
- II. E.M. Tiffany
- JJ. Third National FFA Convention
- KK. Thirty-eighth National Convention
- LL. I believe in the future of farming, with a faith born not of words but of deeds—achievements won by the present and past generations of agriculturists; in the promise of better days through better ways, even as the better things we now enjoy have come to us from the struggles of former years.
- MM. Five symbols
1. Cross section of an ear of corn--Represents common agricultural interests because corn is native to America and is grown in every state
 2. Rising sun--Signifies progress and the new day that will dawn when all farmers are educated and have learned to cooperate
 3. Plow--Symbolizes labor and tillage of the soil
 4. Eagle--Signifies the national scope of the organization
 5. Owl--Symbolizes knowledge and wisdom
 6. Letters "F-F-A" and words "vocational agriculture"--Signify the integral relationship of this educational program
- NN. National blue, corn gold
- OO. I pledge allegiance to the flag of the United States of America, and to the republic for which it stands, one nation under God, indivisible, with liberty and justice for all
- PP. Greenhand FFA Degree, Chapter FFA Degree, State FFA Degree, American FFA Degree
- QQ. American FFA Degree
- RR. President, vice-president, secretary, treasurer, reporter, sentinel
- SS. Development of agricultural leadership, cooperation and citizenship
- TT. To develop competent and aggressive agricultural leadership; to create and nurture a love of agricultural life; to strengthen the confidence of students of vocational agriculture in themselves and their work; to create more interest in the intelligent choice of agricultural occupations; to encourage members in the development of individual occupational experience programs in agriculture and establishment in agricultural careers; to encourage members to improve the home and its surroundings; to participate in worthy undertakings for the improvement of the industry of agriculture; to develop character, train for useful citizenship, and foster patriotism; to participate in cooperative effort; to encourage and practice thrift; to encourage improvement in scholarship; to provide and encourage the development of organized recreational activities

- UU. Serves as a road map by setting goals and charting the course for reaching those goals
- VV. Supervised agricultural occupational experience; cooperation; community service; leadership; earnings, savings, and investments; conduct of meetings; scholarship; recreation; public relations; participatory state and national activities; alumni relations

WW.



- XX. Symbol of authority
- YY. Members come to order so that the meeting may start
- ZZ. All members stand
- AAA. To recognize individuals for outstanding work and for the support they give the chapter; to recognize outstanding achievements on behalf of the chapter
- BBB.
 1. Owl - Advisor
 2. Rising Sun - President
 3. Plow - Vice-president
 4. Ear of Corn - Secretary
 5. American Flag - Reporter
 6. Bust of Washington - Treasurer
 7. Shield of Friendship - Sentinel

CCC.

Assignment Sheet #7

Evaluated to the satisfaction of the advisor.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

UNIT TEST

Name _____ Score _____

1. Write the FFA motto.

2. List the FFA colors.

3. List and describe the symbols of the FFA emblem.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

4. List and describe the four kinds of membership.

a. _____

b. _____

c. _____

d. _____

5. Complete the following.

The primary aim of the FFA is the (a)_____ of (b)_____
(c)_____, (d)_____ and (e)_____.

6. List six specific purposes of the FFA.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

7. Write the FFA salute.

8. State five proper uses of the FFA jacket.

a. _____

- b. _____

- c. _____

- d. _____

- e. _____

9. State six rules in the code of ethics for FFA members.

- a. _____

- b. _____

- c. _____

- d. _____

- e. _____

- f. _____

10. Match the correct date to the historical highlights of the FFA organization. Write the number of the date in the blank.

- | | | |
|---|----|------|
| _____ a. Official FFA creed and colors were adopted at the third National Convention | 1. | 1917 |
| _____ b. United States Congress passed Public Law 740 which granted FFA a Federal Charter | 2. | 1928 |
| _____ c. High school vocational agriculture classes began when Congress passed the Smith-Hughes Act | 3. | 1929 |

_____d. Girls were admitted to membership in FFA	4.	1930
_____e. Delegates at the National Convention changed "Future Farmers of America" to the "National FFA Organization"	5.	1939
_____f. National FFA Association was organized at the first National FFA Convention in Kansas City, Missouri	6.	1944
_____g. The National FFA Foundation was formed	7.	1950
_____h. The "New Farmers" organization merged with the Future Farmers of America	8.	1952
_____i. FFA Alumni Organization was founded	9.	1965
_____j. Idaho became the 17th state to receive her FFA charter	10.	1969
_____k. First <i>National Future Farmer</i> magazine was published	11.	1971
_____l. National FFA purchased 28 1/2 acres of George Washington's estate	12.	1988

11. List the four FFA Degrees.

- a. _____

- b. _____

- c. _____

- d. _____

12. Name the offices and the officer station symbols of each.

- a. _____
- b. _____
- c. _____
- d. _____

- e. _____
- f. _____
- g. _____

13. List five duties of all chapter officers.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

14. Write the name of the office that corresponds with the following specific officer duties. Write your answer in the blank. Answers will be used more than once.

- _____ a. Supervise committees
- _____ b. Prepare meeting room
- _____ c. Prepare chapter scrapbook
- _____ d. Official representative of chapter
- _____ e. Help plan public information programs
- _____ f. Advise officers, committees, and members
- _____ g. Take charge of candidates for degree ceremonies
- _____ h. Collect dues and assessments
- _____ i. Chair the earnings and savings committee
- _____ j. Compile chapter reports
- _____ k. Issue membership cards
- _____ l. Attend door and welcome visitors

15. List eight ways to work toward becoming a chapter leader.

- a. _____
- b. _____
- c. _____
- d. _____

- e. _____
- f. _____
- g. _____
- h. _____

16. Describe the official dress code for females.

17. Describe the official dress code for males.

18. Write the members' response during opening ceremonies.

19. List four benefits of FFA contests.

- a. _____
- b. _____
- c. _____
- d. _____

20. List ten district, state and/or national contests.

- a. _____
- b. _____
- c. _____
- d. _____

- e. _____
- f. _____
- g. _____
- h. _____
- i. _____
- j. _____

21. List six major categories of FFA awards.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

22. Identify the correct chapter award or activity for the descriptions given. Write your answer in the blank.

- _____ a. Involves members in community development activities with local government and citizen leaders
- _____ b. Recognizes chapters for making their communities safer places to live and work
- _____ c. FFA members present a program about the importance of agriculture to elementary students to gain teaching experience and improve the image of agriculture
- _____ d. Based on the degree of achievements of local chapters in the completion of the chapter program activities

23. Fill in the blanks with the correct words to complete the FFA creed.

I believe in the _____ of _____, with a
_____ born not of _____ but of
_____ - _____ by the

_____ and _____ of
_____ ; in the _____ of _____

_____, _____ as the _____
_____ we now _____ have _____
to us from the _____ of _____
_____.

I believe that to _____ and _____ on a
_____, or to be _____ in
other _____, is _____ as
well as _____ for I _____ the
_____ and _____ of _____
_____ and hold an _____ for
those _____ which, _____ in _____
of _____, I _____.

I believe in _____ from _____ and
_____ from _____. I _____ in my
own _____ to _____ and
_____, with _____
_____ and _____ as I _____
_____, and in the _____ of _____
_____ to _____ our _____ and the
_____ in _____ and
_____ the _____ of our _____.

I believe in _____ on _____
and _____ in _____ ; in the
_____ and _____

_____ to help _____ it so -
for _____ as _____ as _____; in
_____ for _____ and
_____ of it when _____; in _____
_____ and _____
_____ with those whose _____
_____.

I believe that _____
and _____ hold _____ to the _____
_____ of _____
_____ and that I can _____ an
_____ in _____ and
_____ will _____
_____ for _____ in
_____.

LEADERSHIP THROUGH AGRICULTURAL EDUCATION

AG 120 - A

ANSWERS TO TEST

1. Learning to do, Doing to learn, Earning to live, Living to serve
2. National blue, corn gold
3.
 - a. Owl--Wisdom and knowledge
 - b. Plow--Labor and tillage of the soil
 - c. Rising sun--Progress in agriculture; the new day that will dawn when all farmers are educated and have learned to cooperate; the confidence that FFA members have in the future
 - d. Cross section of an ear of corn--Common agricultural interests
 - e. Eagle--National scope of the FFA
 - f. The words "Agricultural Education" surrounding "FFA"--FFA is an important part of the agriculture/agribusiness program
4.
 - a. Active--Enrolled in a secondary (Grades 7-12) agricultural education program. A member may retain active membership until November 30, following the fourth National FFA Convention after graduation from High School.
 - b. Alumni--Anyone who is interested in agriculture/agribusiness and FFA; maybe former FFA members (but not a requirement)
 - c. Collegiate--Students enrolled in agriculture courses in a two or four year institution; former active members of chartered local chapters who are enrolled in a two or four year institution having a collegiate chapter
 - d. Honorary—is bestowed upon anyone who has made a commitment or contribution to agriculture/agribusiness.
5.
 - a. development
 - b. agricultural
 - c. leadership
 - d. cooperation
 - e. citizenship
6. The answer should include six of the following:

To develop competent and aggressive agricultural leadership; To create and nurture a love of agricultural life; To strengthen the confidence of students of agricultural education in themselves and their work; To create more interest in the intelligent choice of agricultural occupations; To encourage members to improve the home and its surroundings; To participate in worthy undertakings for the improvement of the industry of agriculture; To develop character, train for useful citizenship, and foster patriotism; To participate in cooperative effort; To encourage and practice thrift; To encourage scholarship improvement; To provide and encourage the development of organized recreational activities
7. I pledge allegiance to the flag of the United States of America, and to the republic for which it stands, one nation under God, indivisible, with liberty and justice for all

8. Answer should include five of the following:

Worn only by FFA members; Kept clean and neat; Only one large emblem on back and one small emblem on front; State association and chapter names on back; Individual's name and one office or honor on the front; Worn on official occasions; Zipped to top, collar turned down, and cuffs buttoned; Worn by officers and member on all official FFA occasions and wherever the chapter or state association is represented; No school letters or insignia of other organizations should be attached to or worn on jacket; Jacket should be discarded when faded and worn (or emblems and lettering removed); Remove emblems and lettering before giving or selling jacket to non-member; Always act like a lady or gentleman when wearing jacket; Refrain from alcohol or tobacco use while wearing the jacket or representing the FFA; All medals should be worn beneath the name on the right side of the jacket; No more than three medals should be worn on the jacket

9. Answer should include six of the following:

Dressing neatly and appropriately for the occasion; Showing respect for the rights of others and being courteous at all times; Being honest and not taking unfair advantage of others; Respecting property of others; Refraining from loud, boisterous talk, swearing and other unbecoming conduct; Demonstrating sportsmanship in the show ring, judging contests, and meetings; Modest in winning and generous in defeat; Attending meetings promptly and respecting the opinions of others in discussion; Taking pride in the FFA organization, in our activities, in our supervised experience programs, in our exhibits, and in the occupation of agriculture; Sharing with others experience and knowledge gained by attending national and state meetings

- | | | | | | | |
|-----|----|----|----|----|----|----|
| 10. | a. | 4 | e. | 12 | i. | 11 |
| | b. | 7 | f. | 2 | j. | 3 |
| | c. | 1 | g. | 6 | k. | 8 |
| | d. | 10 | h. | 9 | l. | 5 |

11. Greenhand FFA Degree, Chapter FFA Degree, State FFA Degree, American FFA Degree

12. President-Rising Sun; Vice President-The Plow; Secretary-Ear of Corn; Treasurer-Bust of George Washington; Reporter-United States Flag; Sentinel-Shield of Friendship; Advisor-Owl

13. Answer should include five of the following:

Be willing to memorize their parts in the official ceremonies; Have a genuine interest in being part of a leadership team; Be able to lead by example; Be familiar with the chapter constitution and by-laws; Be familiar with parliamentary procedure; Be willing to accept responsibility

- | | | | | |
|-----|----|----------------|----|-----------|
| 14. | a. | Vice President | g. | Sentinel |
| | b. | Sentinel | h. | Treasurer |
| | c. | Reporter | i. | Treasurer |
| | d. | President | j. | Secretary |
| | e. | Reporter | k. | Secretary |
| | f. | Advisor | l. | Sentinel |

15. Answer should include eight of the following:

Work to involve every member of the chapter in a worthwhile activity; Become knowledgeable with the FFA chapter, state, and national program, including the structure and the history of the organization; Observe the FFA dress and grooming code; Study self-improvement ideas; Learn the characteristics of a good leader; Learn how to effectively lead and participate in group discussion; Learn parliamentary procedure; Learn how to meet others, including how to start and conclude a conversation; Learn how to properly introduce a friend, parent, advisor, principal and others; Demonstrate how to properly present an award; Give an FFA speech according to FFA speaking contest standards; Attend and participate in meetings and FFA functions; Learn proper social graces and rules of etiquette; Set an example that anyone in your school and community will respect and recognize as FFA leadership training

16. Black skirt/slacks; white blouse; official FFA scarf; black shoes; official jacket zipped to top
17. Black slacks; white shirt; FFA tie; black shoes and socks; official jacket zipped to top
18. "To practice brotherhood, honor rural opportunities and responsibilities, and develop those qualities of leadership which FFA members should possess"
19. Answer should include four of the following:

Make classes more interesting; Encourage development of special skills; Help gain technical knowledge; Develop ability to make sound judgments; Develop ability to defend decisions; Become a good loser and gracious winner; Others

20. Answer should include 10 of the following:

Public Speaking; Extemporaneous Speaking; Creed Speaking; Parliamentary Procedure; Agribusiness Sales; Greenhand Knowledge; Agricultural Mechanics; Dairy; Dairy Foods (Food Products); Poultry; Farm Business Management; Floriculture; Forestry; Livestock; Meats; Nursery/Landscape (Crops); Others

21. Achievement Awards, Achievement in Volunteerism Awards, Computers in Agriculture Award, Proficiency Awards, Scholarships, Star Awards

22. a. Building Our American Communities (BOAC)
 b. National Safety Award Program
 c. Food for America
 d. National Chapter Award

23. I believe in the future of farming, with a faith born not of words but of deeds - achievements won by the present and past generations of agriculturists; in the promise of better days through better ways, even as the better things we now enjoy have come to us from the struggles of former years.

I believe that to live and work on a good farm, or to be engaged in other agricultural pursuit, is pleasant as well as challenging; for I know the joys and discomforts of agricultural life and hold an inborn fondness for those associations which, even in hours of discouragement, I cannot deny.

I believe in leadership from ourselves and respect from others. I believe in my own ability to work efficiently and think clearly, with such knowledge and skill as I can secure, and in the ability of progressive agriculturists to serve our own and the public interest in producing and marketing the product of our toil.

I believe in less dependence on begging and more power in bargaining; in the life abundant and enough honest wealth to help make it so - for others as well as myself; in less need for charity and more of it when needed; in being happy myself and playing square with those whose happiness depends upon me.

I believe that rural America can and will hold true to the best traditions of our national life and that I can exert an influence in my home and community which will stand solid for my part in that inspiring task.

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

UNIT OBJECTIVE

After completing this unit, students should be able to choose and plan a Supervised Agricultural Experience Program. Students should be able to list sources and steps involved in securing a loan. Students should also be able to complete the SOEP Planning and Accounting Book. This knowledge will be demonstrated by completing the assignment sheets and unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with SAE to their correct definitions.
2. Describe the three types of SAE programs.
3. List six reasons for participating in a Supervised Agricultural Experience Program.
4. Select from a list factors to consider when choosing an SAE program.
5. List four factors to consider in developing a plan for a long-term SAE program.
6. List five characteristics of a good SAE program.
7. List six student responsibilities in conducting SAE programs.
8. Select an occupational objective.
9. Prepare a plan for a long-term SAE program.
10. List four sources for financing productive enterprises.
11. Arrange in order the steps involved in obtaining a loan from a credit source.
12. List the types of SAE program records.
13. List five reasons for keeping records on your SAE program.
14. Select from a list standards for keeping records on your SAE program.
15. Record all transactions and activities pertinent to a sample SAE program.
16. Evaluate the overall quality and value of your current SAE program.

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

SUGGESTED ACTIVITIES

- I. Suggested activities for instructor
 - A. Order materials to supplement unit.
 1. Literature
 - a. *SOEP Planning and Accounting Book*. Available from Interstate Printers and Publishers, Inc., Danville, Illinois (Sold in packages of 20).
 2. Filmstrips, slide shows, etc.
 - a. *SOE: Bridging the Gap*. Color, 12 minute film. Available from National FFA Center, 5632 Mount Vernon Memorial Highway, P.O. Box 15160, Alexandria, Virginia 22309. (Also available on a free loan basis from Vernard Films, Box 1332, Peoria, Illinois 61654.)
 - b. *Keeping America on the Grow*. Available on 16 mm film, slide show or filmstrip from the National FFA Center, 5632 Mount Vernon Memorial Highway, P.O. Box 15160, Alexandria, Virginia 22309, (703) 360-3600.
 - c. *SOE Series*. A set of five filmstrips available from the National FFA Center, 5632 Mount Vernon Memorial Highway, P.O. Box 15160, Alexandria, Virginia 22309, (703) 360-3600.
 - B. Make transparencies.
 - C. Provide students with objective sheet.
 - D. Provide students with information and assignment sheets.
 - E. Discuss unit and specific objectives.
 - F. Invite a more experienced or former FFA member to discuss how the SAE program and record keeping are the starting points for students who wish to receive various proficiency awards and to earn advanced degrees.
 - G. Relate the detailed planning of successful SAE programs to business planning.
 - H. Discuss other students' successes related to SAE program activities and expansions.
 - I. Challenge students to make the most of their SAE program--explain how others are involved. (For example: parents, employees, etc.)

- J. Invite two or three former FFA members to discuss how important record keeping is to them and to those they work with. Try to include a variety of occupations, such as farmer, banker, business owner, business manager, accountant, sales clerk, etc.
- K. Discuss financial records required when applying for loans.
- L. Discuss information and assignment sheets.

(Note: All assignment sheets will require extensive guidance from the instructor.)
- M. Review and give test.
- N. Reteach and retest if necessary.

II. Instructional materials

- A. Objective sheet
- B. Suggested activities
- C. Information sheet
- D. Transparency masters
 - 1. TM 1--What is an SAE Program?
 - 2. TM 2--SAE Program Structure
 - 3. TM 3--Relationship Between Classroom - Laboratory Instruction, SAE and FFA
 - 4. TM 4--Where Can I Get Agricultural Experiences?
 - 5. TM 5--Occupational Areas in Agriculture
 - 6. TM 6--Ownership SAE Programs Requires...
 - 7. TM 7--Examples of Ownership Programs in SAE
 - 8. TM 8--Indicators of Successful Ownership SAE Programs
 - 9. TM 9--Examples of Placement Programs in SAE
 - 10. TM 10--Characteristics of an Effective Placement SAE Program
 - 11. TM 11--Indicators of Successful Placement SAE Programs
 - 12. TM 12--Tips for Successful Employment
 - 13. TM 13--Tips on Making a Job Interview
 - 14. TM 14--Comparing Two Jobs

15. TM 15--Examples of Improvement Projects
16. TM 16--Examples of Occupational Skills
17. TM 17--How Do People Learn New Skills?
18. TM 18--Characteristics of a Good SAE Program
19. TM 19--Two Ways to Expand Ownership SAE Programs
20. TM 20--Ways to Expand a Placement Program
21. TM 21--Student Responsibilities in Conducting SAE Programs
22. TM 22--Types of SAE Program Records
23. TM 23--Why Keep Records on Your SAE Program?
24. TM 24--Crop Records Help Determine:
25. TM 25--Livestock Records Help Determine:
26. TM 26--Efficiency Factors
27. TM 27--Standards for Keeping Records on Your SAE Program
28. TM 28--Records Are Important

E. Assignment sheets

1. AS 1--Select an Occupational Objective
2. AS 2--Prepare a Plan for a Long-Term SAE Program
3. AS 3--Sample Record Book Problem
4. AS 4--Supplemental Record Book Problem: Supervised Occupational Skills Record
5. AS 5--Self-evaluation of My SAE Program

F. Answers to assignment sheets

G. Test

H. Answers to test

III. Unit references

- A. *Agricultural Education Curriculum*. College of Agriculture, University of Illinois, Urbana, Illinois.

- B. Carwin, Merle A. *Supervised Occupational Experience Manual for Students of Vocational Agriculture*. The Interstate Printers and Publishers, Inc., Danville, Illinois 61832.
- C. Cooper, Elmer L. *Agriscience Fundamentals and Applications*. Delmar Publishers, Inc., Albany, New York, 1990.
- D. *Model Agricultural Core Curriculum*. State Department of Education, University of California, Davis, August 1989.
- E. *Supervised Occupational Experience Handbook*. National FFA Foundation.
- F. *Vocational Agriculture I*. Oklahoma State Department of Vocational and Technical Education, Stillwater, Oklahoma.

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

INFORMATION SHEET

- I. Terms and definitions
- A. Supervised Agricultural Experience (SAE) Program--Consists of practical agricultural activities performed by students outside of scheduled classroom and laboratory time
 - B. Occupational experience--Part of SAE program that involves production farming or agribusiness employment to gain knowledge, skill, on-the-job experience and income
 - C. Laboratory experience--Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor. Students are not paid for this experience
 - D. Occupational skills--Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence
 - E. Occupational objective--A person's career goal
 - F. Enterprise--Category of the total business for which individual records are kept as a part of the total record-keeping system
Example: Swine, beef, wheat, agribusiness, etc.
 - G. Scope--Extent, size or volume of the SAE program or an enterprise of the SAE program
 - H. Beginning inventory--Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the start of the record-keeping period
 - I. Asset--Any item of value owned or claimed as part of the business
 - J. Unit--Any fixed quantity, amount, distance, or measure used as a standard for counting or measuring items or assets
Example: Livestock counted by the head, harvested crops can be measured by bushels, etc.
 - K. Unit price--Monetary value assigned to individual units; used to figure overall value
Example: Price/bushel
 - L. Ending inventory--Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the close of the record-keeping period
 - M. Net worth--Difference between total assets and total liabilities

- N. Liabilities--Financial claims against a business
Example: Unpaid bills, notes or mortgages owed to individuals or lending institutions
- O. Lien--Claim against property for an amount of money owed to someone or a business
- P. Financial statement--A statement that lists the assets and liabilities of the business at a particular time, usually at the end of the accounting year (also called a balance sheet)

II. Types of SAE programs (Transparencies 1, 2, 3, 4, 5)

- A. Occupational experience (OE)--Part of SAE program that involves production farming or agribusiness employment to gain knowledge, skill, on-the-job experience and income

(Note: Sometimes referred to as Supervised Occupational Experience or SOE.)

1. Ownership experience (production program) (Transparencies 6, 7, 8)--
A type of OE in which students have personal ownership of the materials and other inputs required and have managerial responsibilities

Example: Beef cattle, wheat, apples, etc.

(Note: Ownership programs are not limited to production agriculture. A student operating a lawn/garden service with an investment in tools and equipment has ownership and managerial involvement.)

2. Placement experience (agribusiness employment)
(Transparencies 9, 10, 11, 12, 13, 14)--A type of OE in which students work for other people (on farms or agribusinesses) or are self-employed in agriculture (building projects, custom baling or stacking, etc.)
3. Improvement program (Transparency 15)
 - a. Improve appearance and/or real estate value of home or farm
 - b. Increase efficiency and/or profits
 - c. Increase family comfort and/or convenience
 - d. May or may not provide financial return
 - e. Carried out in addition to other SAE components
 - f. Programs include new construction; the repair or renovation of existing facilities; painting; the improvement, repair and construction of farm equipment and machinery; property beautification; recreational facilities; and the improvement of and, irrigation and utilities

- B. Laboratory experience (LE)--Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor. Students are not paid for this experience. Possibilities include: raising bedding plants in the vo-ag greenhouse, working as a veterinarian assistant, etc.
 - C. Occupational skills (OS) (Transparency 16)--Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence. The student is not generally paid to master these skills. Usually, these skills are not directly related to the student's occupational choice or improvement projects, but should serve to enrich the student's background. Some examples of these skills are castrating, controlling lice, servicing and adjusting machinery, etc.
- III. Reasons for participating in an SAE program (Transparency 17)
- A. Learning responsibility
 - B. Gaining experience
 - C. Earning money
 - D. Developing management abilities
 - E. Preparing for a career
 - F. Learning record keeping
 - G. Learning skills or improving skills in agriculture
 - H. Becoming established in farming or an agribusiness occupation
 - I. Developing self-discipline
 - J. Developing human relations skills
 - K. Gaining experience in money management
- IV. Factors to consider when choosing an SAE program
- A. Personal interest
 - B. Background and knowledge
 - C. Finances available
 - D. Facilities available (adequate facilities are necessary for a production agriculture program)
 - E. Transportation needs and availability
 - F. Local agriculture department requirements

- V. Factors to consider in developing a plan for a long-term SAE program
 - A. Occupational objective area
 - B. Facilities and finances available, as needed for expansion
 - C. Net income expected
 - D. Degree of independence expected
 - E. Anticipated scope of program in four years
 - F. Areas of interest
 - G. Support of parents or other parties
- VI. Characteristics of a good SAE program (Transparencies 18, 19, 20)
 - A. Based upon the student's interests
 - B. Has an agricultural focus
 - C. Provides for the development of a large number of abilities
 - D. Sufficient in scope to be challenging
 - E. Contains diversity
 - F. Provides an opportunity to make management decisions
 - G. Has the potential for profit
 - H. Requires student's involvement most of the year
 - I. Provides opportunities for expansion
 - J. Can lead to future business ownership or employment in agriculture
- VII. Student responsibilities in conducting SAE programs (Transparency 21)
 - A. Consider the responsibilities
 - B. Keep teacher, parents and employers informed
 - C. Set goals for yourself
 - D. Keep records of financial concerns and experiences gained
 - E. Seek advice/assistance from your ag instructor
 - F. Meet financial obligations
 - G. Carry out your SAE program plan

- H. Self-evaluate your progress
 - I. Develop an SAE program that will be valuable to you
- VIII. Sources for financing productive enterprises
- A. Local bank or other credit institution
 - B. FFA chapter loan program
 - C. Parents or other individuals
 - D. Self-financing
 - 1. With job
 - 2. Savings account
- IX. Steps involved in obtaining a loan
- A. Develop a budget and financial statement
 - B. Prepare presentation
 - 1. Need for a loan
 - 2. Plans for enterprise
 - 3. Be prepared to answer questions pertaining to your budget and financial statement
 - C. Identify possible credit sources
 - D. Call to make appointments with credit sources
 - E. Meeting with credit sources
 - 1. Your appearance--clean, professional
 - 2. Make planned presentation
 - 3. Question lender's policies
 - a. Finance charge
 - b. Interest rate
 - c. Due date
 - d. Requirements
 - F. Compare advantages and disadvantages of each credit source contacted
 - G. Select credit source preferred

- H. Complete application papers
- I. Draw up and sign contract (both parties must sign)

- X. Types of SAE program records (Transparency 22)
 - A. Inventories
 - 1. Beginning
 - 2. Ending
 - B. Skills and experience records
 - 1. Diary
 - 2. Self-employment or production program agreement
 - 3. Work experience agreement
 - 4. Improvement program
 - 5. Supervised occupational skills record
 - C. Financial records and planning guides
 - 1. Planning ahead
 - 2. Financial statement
 - 3. Budget guides
 - 4. Breeding and loss records
 - 5. Income
 - 6. Expenses
 - 7. Annual program summary
 - D. FFA and other leadership activities

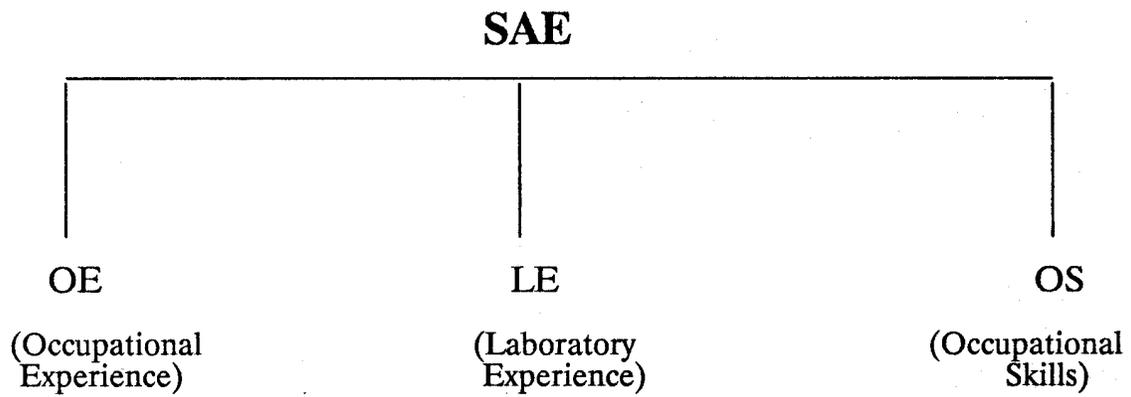
- XI. Reasons for keeping records on your SAE program (Transparencies 23, 24, 25, 26)
 - A. Cash flow analyzation
 - B. Money management
 - C. Profit/loss determination
 - D. Financial progress observation over several years
 - E. Basis for sound management decisions

- F. Investment and purchasing guidance
 - G. FFA awards
 - H. Information for income tax returns
 - I. Information for obtaining a loan
- XII. Standards for keeping records on SAE program (Transparencies 27, 28)
- A. Use appropriate record book section for each phase of program
 - B. Use a pencil for entries
 - C. Keep records on a calendar year basis (January 1-December 31)
(Note: Your first record book should begin in September, instead of January.)
 - D. Make entries neat, complete, easy to read
 - E. Enter income and expenses as they occur
 - F. Review and update record book each week
 - G. Keep record book accessible and protected
 - H. Complete all relevant pages in record book
 - I. Ask instructor for help as needed

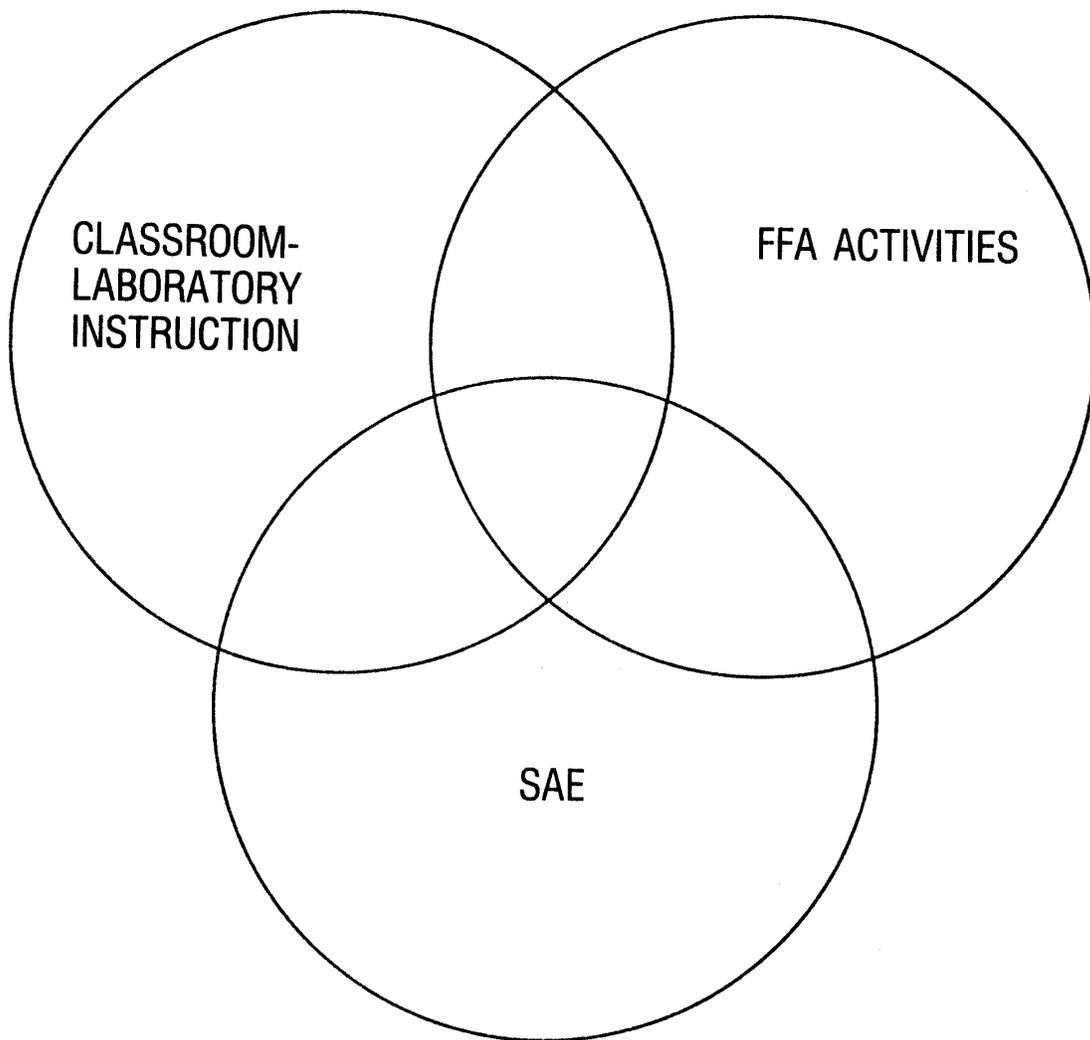
WHAT IS AN SAE PROGRAM?

Supervised agricultural experience (SAE) programs consist of practical agricultural activities performed by students outside of scheduled classroom and laboratory time. During class and lab periods, students are taught related principles and practices in agriculture. The agricultural teacher, parents, and employer work together to help students gain valuable agricultural experience in their SAE programs.

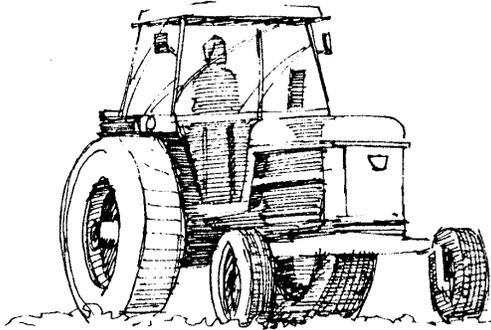
SAE PROGRAM STRUCTURE



RELATIONSHIP BETWEEN CLASSROOM- LABORATORY INSTRUCTION, SAE AND FFA



WHERE CAN I GET AGRICULTURAL EXPERIENCES?



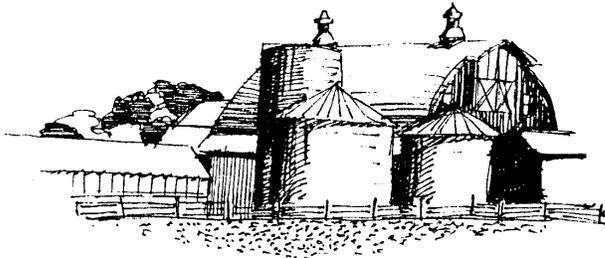
BUSINESS



HOME



COMMUNITY CENTER



FARM



SCHOOL

OCCUPATIONAL AREAS IN AGRICULTURE

AGRICULTURAL PRODUCTION

AGRICULTURAL SUPPLIES AND SERVICES

AGRICULTURAL MECHANICS

AGRICULTURAL PRODUCTS

HORTICULTURE

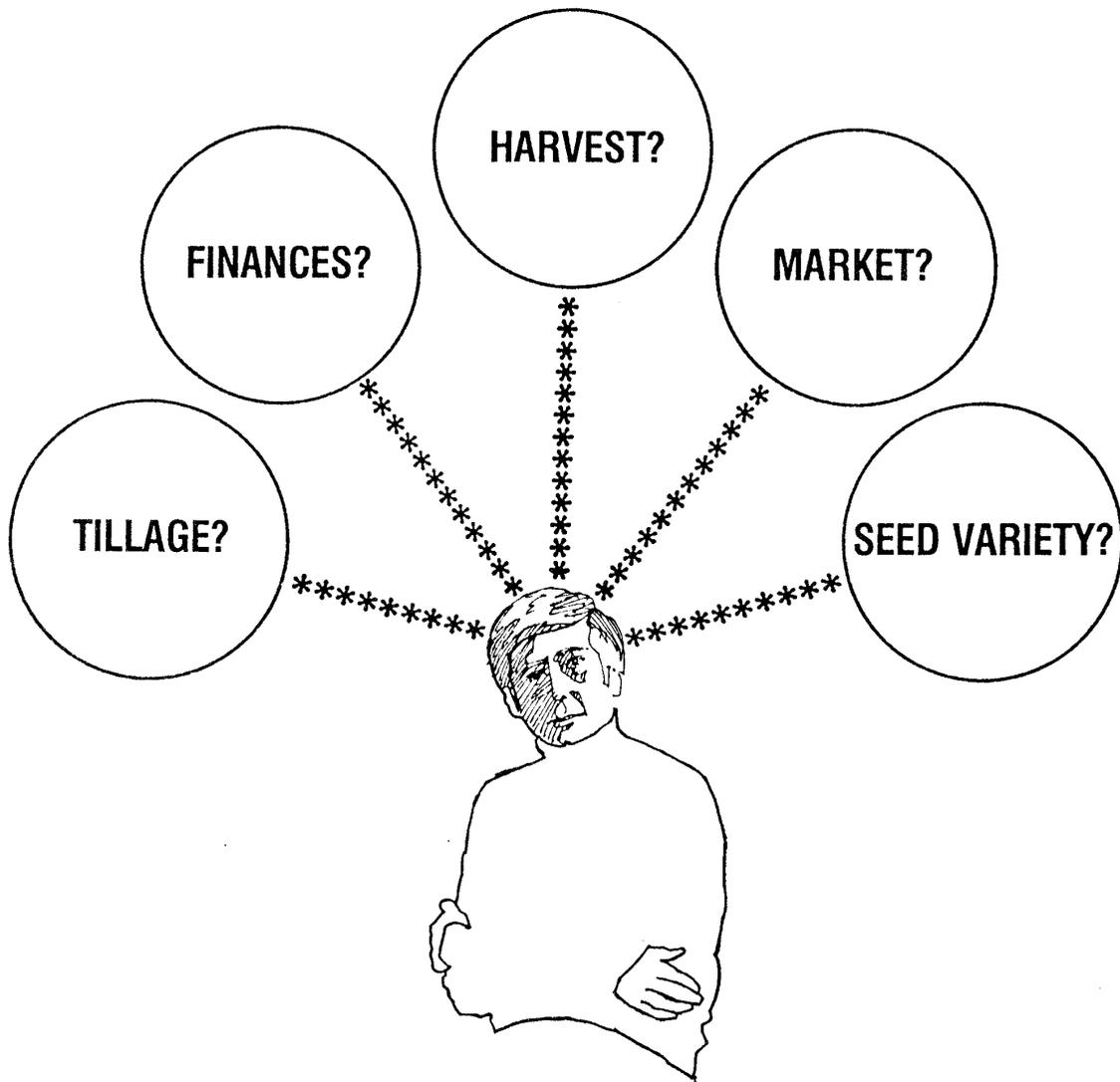
FORESTRY

RENEWABLE NATURAL RESOURCES

OTHER (PROFESSIONAL)

OWNERSHIP SAE PROGRAMS REQUIRES . . .

**DECISIONS—DECISIONS—DECISIONS
PLANS—PLANS—PLANS**



EXAMPLES OF OWNERSHIP PROGRAMS IN SAE

Landscaping business

Cow-calf ownership

Pest control business

Raising fish bait

Crop production

Vegetable production

Fruit production

Ornamental horticulture plant production

Mink raising

Rabbit raising

Bee raising

Wildlife raising

Broiler production

Roadside market

Re-potting plants for sales

Custom harvesting

Meat cutting

Crop spraying

Fish egg collecting

INDICATORS OF SUCCESSFUL OWNERSHIP SAE PROGRAMS

- 1. ADEQUATE SIZE**
- 2. ADEQUATE PROFIT**
- 3. ADAPTED TO HOME, FARM OR OTHER SETTING**
- 4. NOT HARDSHIP ON FAMILY**
- 5. ENTERPRISES IMPORTANT IN COMMUNITY**
- 6. LEADS TO OCCUPATIONAL GOAL**
- 7. EXPANDS EACH YEAR**
- 8. INCLUDES APPROVED PRACTICES**
- 9. EFFICIENCY INCREASES EACH YEAR**
- 10. DEVELOPS KNOWLEDGE AND SKILLS IN AGRICULTURE**
- 11. EARNING OF FFA DEGREES AND AWARDS**
- 12. COMPLETED RECORDS**

EXAMPLES OF PLACEMENT PROGRAMS IN SAE

Meat processing plant employee
Livestock farm employee
Farm equipment operator
Feed mill operator
Agricultural mechanic assistant
Landscape employee
Golf course employee
Livestock auction employee
Agricultural bank consultant assistant
Crop farm employee
Veterinarian assistant
Implement parts department employee
Stable hand at race track
Welder
Electrician helper
Nursery employee
Timber cruiser
Fire warden
SCS intern
Park service employee

CHARACTERISTICS OF AN EFFECTIVE PLACEMENT SAE PROGRAM

- 1. RELATES TO AGRICULTURAL CAREER OBJECTIVES**
- 2. PROVIDES JOB SATISFACTION**
- 3. DEVELOPS JOB SKILLS**
- 4. DEVELOPS HUMAN RELATION SKILLS**
- 5. HELPS SET EDUCATIONAL AND CAREER GOALS**
- 6. PROVIDES EXPERIENCE IN KEEPING RECORDS**
- 7. UTILIZES COOPERATIVE ARRANGEMENTS**
- 8. RELATES TO CLASSROOM-LABORATORY INSTRUCTION**
- 9. ENCOURAGES APPLICATION FOR FFA DEGREES AND AWARDS**
- 10. LEADS TO A JOB AFTER GRADUATION**

INDICATORS OF SUCCESSFUL PLACEMENT SAE PROGRAMS

- 1. HOURS OF EXPERIENCE**
- 2. VARIETY OF EXPERIENCES**
- 3. DOLLARS EARNED**
- 4. KNOWLEDGE AND SKILLS DEVELOPED**
- 5. DESIRABLE WORK HABITS**
- 6. COOPERATIVE ATTITUDE**
- 7. INCREASED RESPONSIBILITY**
- 8. INCREASED WAGES**
- 9. COMPLETED RECORDS**
- 10. EARNING OF FFA DEGREES AND AWARDS**
- 11. LEADS TO OCCUPATIONAL GOAL**

TIPS FOR SUCCESSFUL EMPLOYMENT

ASSUME RESPONSIBILITY

LEARN ABOUT YOUR EMPLOYER

BE TACTFUL

BE COURTEOUS

BE DEPENDABLE

BE ENTHUSIASTIC

BE PRODUCTIVE

DRESS AND GROOM APPROPRIATELY

GET ALONG WITH CO-WORKERS AND

**GET ALONG WITH CO-WORKERS AND
SUPERVISORS**

**AVOID ANNOYING AND INAPPROPRIATE
BEHAVIOR**

KEEP HEALTHY

THINK AND ACT WITH A POSITIVE ATTITUDE

BE LOYAL TO EMPLOYER

DO YOUR BEST

TIPS ON MAKING A JOB INTERVIEW

- * OBTAIN BACKGROUND INFORMATION ON COMPANY BEFORE INTERVIEW**
- * ARRIVE ON TIME**
- * DRESS AND GROOM APPROPRIATELY**
- * LISTEN CAREFULLY**
- * MAKE EYE CONTACT**
- * BE ENTHUSIASTIC, YET REALISTIC**
- * BE HONEST**
- * SPEAK CORRECTLY AND POLITELY**
- * HAVE POSITIVE ATTITUDE ABOUT WORK**
- * ASK QUESTIONS ABOUT THE COMPANY**
- * ASK QUESTIONS SPECIFICALLY AND COMPLETELY**
- * END INTERVIEW ON TIME**

COMPARING TWO JOBS

JOB TITLE		
NATURE OF WORK		
EDUCATION REQUIRED		
NUMBER OF JOBS AVAILABLE EACH YEAR		
ADVANCEMENT OPPORTUNITIES		
WORKING CONDITIONS		
AVERAGE SALARY		
FRINGE BENEFITS		

EXAMPLES OF IMPROVEMENT PROJECTS

Home Beautification

Construct yard fence
Paint house
Plant flowers
Plant lawn

Farm Shop

Remodel shop
Build tool hangers
Wire shop
Pour concrete floor
Install overhead lights

Conservation

Make fire breaks
Thin trees
Plant trees
Cultivate trees

Home Recreation

Build stereo cabinet
Build barbecue
Make record collection
Build book shelves
Panel recreation room

Safety

Take hazard survey
Install fire extinguishers
Install smoke alarms
Store chemicals safely

Materials Handling

Build corral panels
Install overhead augers
Build hay storage shed
Build hay manger or feeder

EXAMPLES OF OCCUPATIONAL SKILLS

Pruning trees
Spraying weeds
Potting plants
Making flower arrangements
Testing soil
Cleaning seed
Timing an engine
Cutting pipe
Calibrating equipment
Operating a chainsaw
Cruising timber
Grading fruit
Changing oil
Shoeing a horse
Balancing a ration
Grading meat
Sharpening a chisel
Mixing concrete
Shearing sheep
Castrating, branding, dehorning, and vaccinating calves
Treating seed
Wiring a switch
Selecting electrodes
Adjusting a combine
Calibrating a sprayer

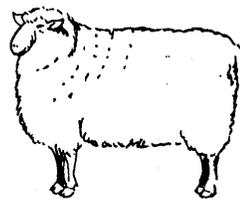
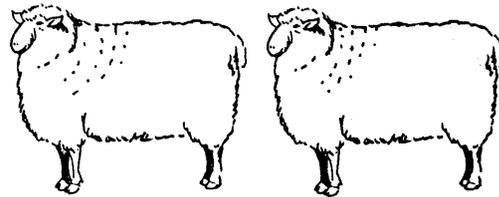
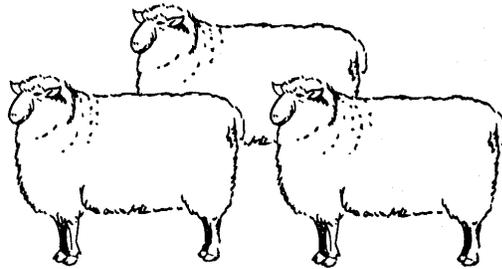
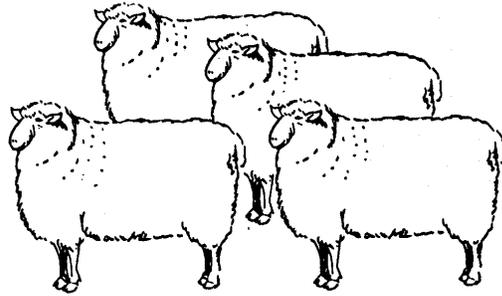
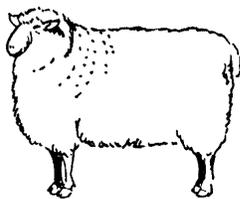
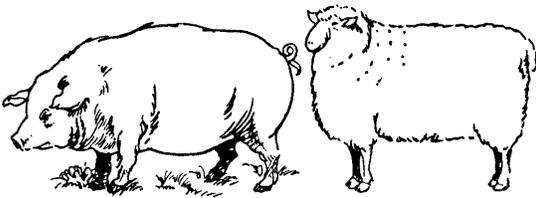
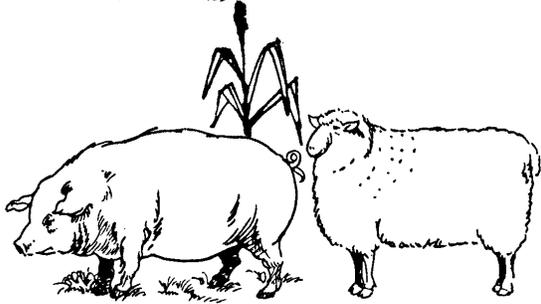
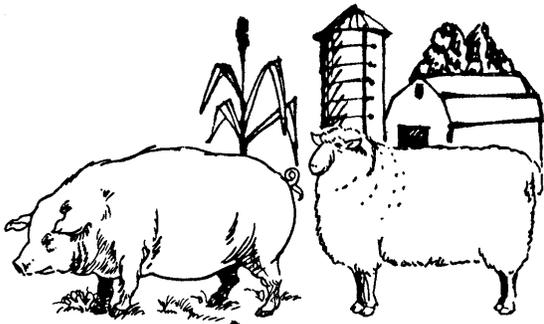
HOW DO PEOPLE LEARN NEW SKILLS?



**BY DOING AND WORKING WITH
SOMEONE WHO KNOWS!**

CHARACTERISTICS OF A GOOD SAE PROGRAM

- 1. Based upon the student's interests**
- 2. Has an agricultural focus**
- 3. Provides for the development of a large number of abilities**
- 4. Sufficient in scope to be challenging**
- 5. Contains diversity**
- 6. Provides an opportunity to make management decisions**
- 7. Has the potential for profit**
- 8. Requires student's involvement most of the year**
- 9. Provides opportunities for expansion**
- 10. Can lead to future business ownership or employment in agriculture**



TWO WAYS TO EXPAND OWNERSHIP SAE PROGRAMS

WAYS TO EXPAND A PLACEMENT PROGRAM

- 1. INCREASE IN RESPONSIBILITY OR DUTIES**
- 2. EARN MORE MONEY**
- 3. INCREASE SIZE OR SCOPE OF PRESENT PLACEMENT PROGRAM**
- 4. WORK MORE HOURS**
- 5. INCREASE IN EFFICIENCY OF WORK**
- 6. INCREASE DIFFICULTY OF SKILLS TO BE LEARNED**

STUDENT RESPONSIBILITIES IN CONDUCTING SAE PROGRAMS

- 1. Consider the possibilities**
- 2. Keep teacher, parents, and employers informed**
- 3. Set goals for yourself**
- 4. Keep records of financial concerns and experiences gained**
- 5. Seek advice/assistance from your teacher**
- 6. Meet financial obligations**
- 7. Carry out your SAE program plan**
- 8. Self-evaluate your progress**
- 9. Develop an SAE program that will be valuable to you**
- 10. Give it your best shot!**

TYPES OF SAE PROGRAM RECORDS

Inventories

Skills and Experience Records

Financial Records and Planning Guides

FFA and Other Leadership Activities

WHY KEEP RECORDS ON YOUR SAE PROGRAM?

- 1. To analyze cash flow**
- 2. To stimulate better money management**
- 3. To determine profit or loss of enterprise**
- 4. To observe financial progress over several years**
- 5. To provide a basis for sound management decisions**
- 6. To guide investment and purchasing activity**
- 7. To provide evidence needed for FFA awards and degree programs**
- 8. To furnish information for income tax returns**
- 9. To furnish needed information for obtaining a loan**

CROP RECORDS HELP DETERMINE:

YIELD PER ACRE

ENTERPRISE PROFIT

COST PER UNIT OF PRODUCTION

INCOME PER ACRE

RETURN PER UNIT OF INPUT

**WHICH ENTERPRISE TO EXPAND, REDUCE OR
ELIMINATE**

**LIVESTOCK RECORDS HELP
DETERMINE:**

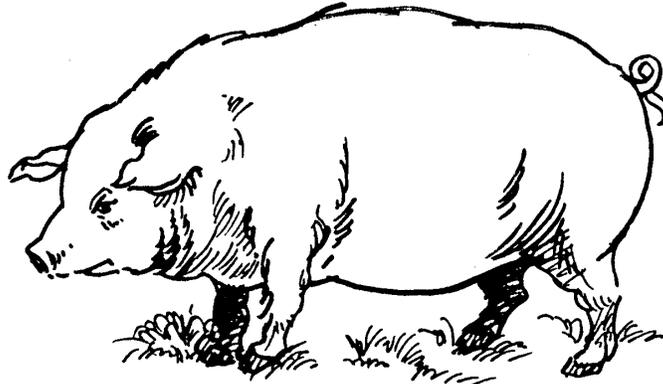
ENTERPRISE PROFIT

RETURN TO CAPITAL INVESTED

RETURN TO LABOR

RETURN PER UNIT OF INPUT

**WHICH ENTERPRISE TO EXPAND, REDUCE OR
ELIMINATE**



EFFICIENCY FACTORS

EFFICIENCY FACTORS

GOAL

PIGS/LITTER

_____ PIGS/LITTER

% DEATH LOSS

_____ %

#FEED/#GAIN

_____ LBS.

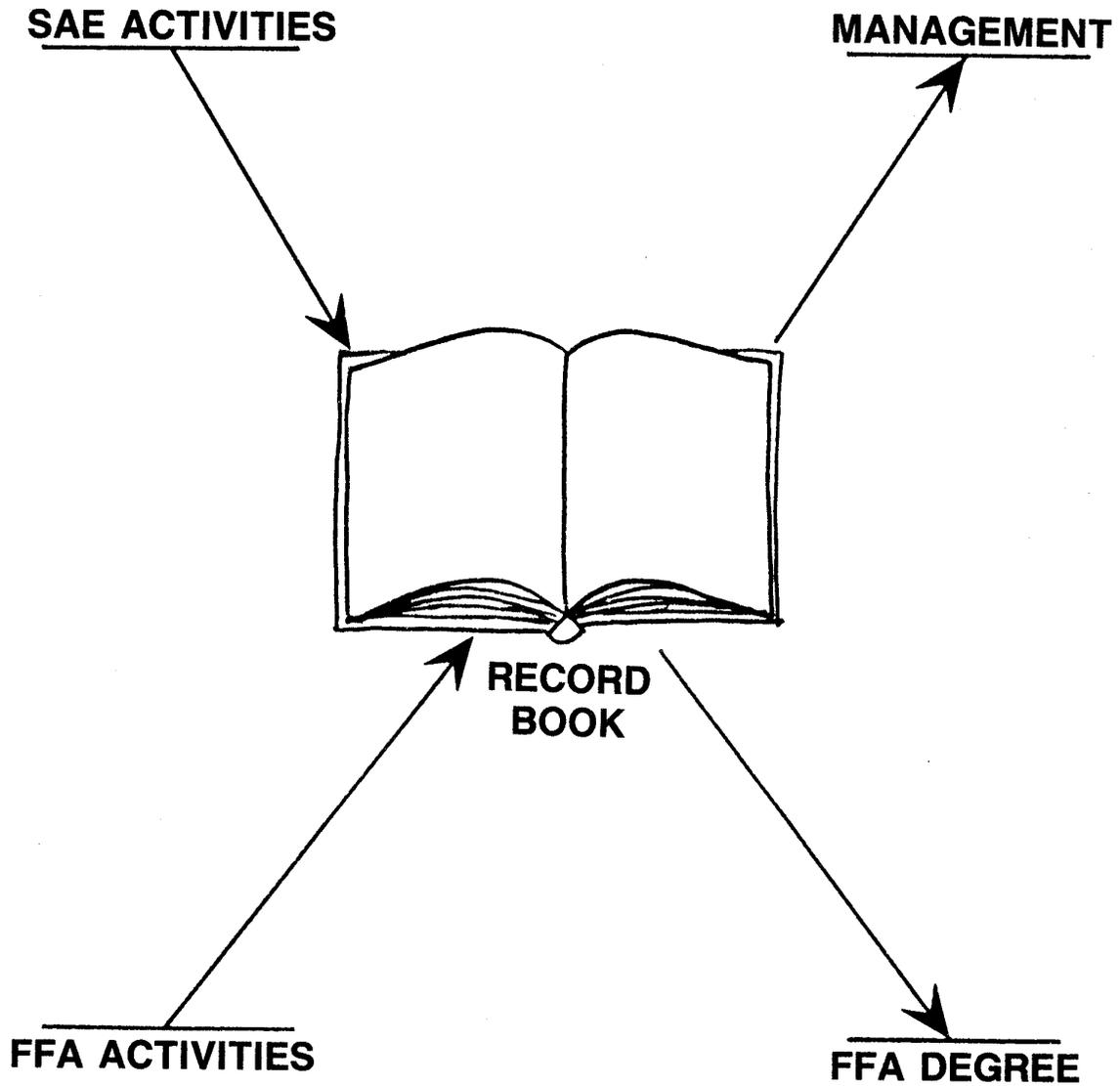
AVERAGE MARKET WEIGHT

_____ LBS.

STANDARDS FOR KEEPING RECORDS ON YOUR SAE PROGRAM

- 1. USE THE APPROPRIATE RECORD BOOK SECTION FOR EACH PHASE OF YOUR SAE PROGRAM**
- 2. USE A PENCIL FOR ENTRIES**
- 3. KEEP RECORDS ON A CALENDAR YEAR BASIS (JANUARY 1 - DECEMBER 31)**
- 4. MAKE SURE ENTRIES ARE NEAT, COMPLETE, AND EASY TO READ**
- 5. ENTER EXPENSES AND INCOME AS THEY OCCUR**
- 6. REVIEW YOUR RECORD BOOK EVERY WEEK TO MAKE SURE ALL ENTRIES ARE UP TO DATE (INCLUDING IMPROVEMENT PROJECTS, SUPPLEMENTARY SKILLS, AWARDS, CREDITS, DEBITS, ETC.)**
- 7. KEEP YOUR RECORD BOOK IN AN ACCESSIBLE, PROTECTED PLACE**
- 8. COMPLETE ALL RELEVANT PAGES IN YOUR RECORD BOOK**
- 9. ASK YOUR TEACHER FOR HELP AS YOU NEED IT**

RECORDS ARE IMPORTANT



SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

ASSIGNMENT SHEET #1--SELECT AN OCCUPATIONAL OBJECTIVE

Name _____ Score _____

As you begin your agriculture career, you should have in mind an appropriate area of interest or occupational objective.

Study the following list of occupational objectives and their descriptions. Then choose the objective that most closely matches your area of interest, and record it at the end of the assignment sheet. If you are uncertain about your particular interest, please choose Agricultural Production. You will have an opportunity to change your occupational objective later in the secondary agriculture program if you desire. If you cannot decide between two areas of interest, list them both.

OCCUPATIONAL OBJECTIVE

DESCRIPTION

Agricultural Production

Planning and economically using facilities, land, water, machinery, chemicals, finance, and labor in the production of plant and animal products

Agricultural Electrification, Power and Controls

Safe use of electricity, electrical power, equipment, and automatic controls

Agricultural Mechanics, Construction and Maintenance Skills

Selecting, safely using, and maintaining hand and power tools, arc and acetylene welding equipment, and construction materials

Agricultural Power Machinery

Selecting, operating, servicing, maintaining and repairing a variety of agricultural power units and agricultural machinery and equipment to include gas, diesel, and electric units; welding, refrigeration, hydraulics and other power systems

OCCUPATIONAL OBJECTIVE

DESCRIPTION

Agricultural Structures, Equipment and Facilities

Planning, selecting materials for, constructing, utilizing, and maintaining agricultural structures, equipment, and environmental facilities such as barns, sheds, milking parlors, manure and other waste handling structures and equipment, forage and grain storage structures, and greenhouses

Soil and Water Mechanical Practices

Implementing soil and water management by surveying, planning, laying out, constructing, using, and maintaining irrigation, drainage, and run-off systems

Animal Production

Selection, breeding, physiology, nutrition, health, housing, feeding, and marketing of animals such as dairy cattle, beef cattle, horses, swine, sheep, poultry, bees, rabbits, cats, dogs, and earthworms

Crop Production

Production of all types of marketable agricultural crops; soils work and all types of plant work and identification, including use of chemicals in plant, pest and disease control

Food Products

Processing food products such as meat, fish, poultry, eggs, dairy products, fruits and vegetables, and cereal grains for sale and consumption

OCCUPATIONAL OBJECTIVE

DESCRIPTION

Nonfood Products

Processing nonfood products such as cotton, tobacco and wool

Agricultural Services

Providing agricultural services such as custom work, equipment operation and maintenance, management and finance; includes small animal services such as breeding, horseshoeing, pet services and animal hospital services

Agricultural Supplies Marketing

Purchasing, storing, grading, transporting and marketing agricultural supplies such as feeds, seeds, fertilizers, chemicals, machinery and parts, and products such as livestock and grains

Animal Grooming

Grooming animals by clipping, bathing, cutting and conditioning hair, and caring for hooves and nails

Animal Training

Teaching animals to obey commands, competing in shows, and performing all types of activities necessary for animal competition and performances

Horseshoeing

Selecting and fitting shoes; shaping and nailing shoes to animals' hooves

OCCUPATIONAL OBJECTIVE

DESCRIPTION

Arboriculture

Cultivating and maintaining woody plants and trees used for decoration and shade purposes

Floriculture

Producing flowers, foliage, and related plant materials in fields and greenhouses for ornamental purposes; arranging, packaging and marketing these materials

Greenhouse Operation and Management

Producing plants under glass and in other artificial environments

Landscaping

Locating, planting, and maintaining turf, plants, shrubs, or devices for the beautification of home grounds or other areas of human habitation and recreation

Nursery Operation and Management

Producing turf, plants, shrubs, and trees for the purpose of transplanting or propagating them

Turf Management

Establishing, managing, and maintaining grass areas for ornamental or recreational purposes

Forest Products Utilization

Selecting, grading, and marketing forest raw materials for conversion to consumer goods; maintenance, safe operation, and repair of related equipment

OCCUPATIONAL OBJECTIVE

DESCRIPTION

Logging

Harvesting and transporting trees as a crop; maintaining, safely operating, and repairing logging equipment and machinery

Other _____

Your occupational objective title

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

ASSIGNMENT SHEET #2--PREPARE A PLAN FOR A LONG-TERM SAE PROGRAM

Name _____ Score _____

In order to gain experience, it is necessary to set some goals and expectations. These goals should include expansion and broadening into other areas when possible.

Study the sample plan on the next page. On the form that follows, write your own plan for the long-term Supervised Agricultural Experience Program. Organize your plan by school year and by individual enterprise.

Your chosen or planned enterprise(s) is/are

_____	_____
_____	_____
_____	_____
_____	_____

ASSIGNMENT SHEET #2

STUDENT'S PLAN FOR A LONG-TERM SAE PROGRAM
(sample)

1991-92

SWINE: I plan to purchase a bred gilt in the fall of my freshman year, and to keep one or two gilt pigs from the first litter to expand my swine breeding program.

1992-93

SWINE: I plan to purchase my own boar in the fall and possibly start doing outside breeding to provide income for my swine enterprise. I plan to expand to breeding six of my own sows by the spring of 1993. I also plan to purchase adequate equipment as my swine enterprise grows.

WHEAT: I plan to start a crop-share wheat enterprise with my parents in the fall of 1992.

1993-94

SWINE: Continue with swine enterprise at the same level, with a farrowing to finishing operation.

WHEAT: Continue crop-share enterprise with parents and try to locate land to cash rent for additional wheat acreage.

BEEF: Purchase stocker calves for wheat pasture; sell the calves in the spring.

1994-95

SWINE: Continue and expand as profits allow.

WHEAT: Continue previous year's level and possibly cash rent additional acres.

BEEF: Increase number of stockers as wheat pasture is available.

ASSIGNMENT SHEET #2

STUDENTS PLAN FOR A LONG-TERM SAE PROGRAM

20_____

20_____

20_____

ASSIGNMENT SHEET #2 (cont.)

20_____

20_____

20_____

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

ASSIGNMENT SHEET #3--SAMPLE RECORD BOOK PROBLEM

The following is a sample record book problem. This sample problem has been developed to help you understand how to use your record book. Use a pen to fill out the front and inside cover information; use a #2 pencil for the rest of the information. As you complete the information in each section of your sample record book, you should also complete the information in your personal record book for your own Supervised Agricultural Experience Program (as is possible). Your Ag Instructor will tell you the correct year dates for the blanks.

1. COUNSELING INFORMATION

You will be completing a record book for Mark Dawson, who is a freshman, first-year, vo-ag student and FFA member at Glenview High School. Mark is the son of Zach and Tara Dawson, Route 2, Box 56, Englewood, Idaho 83999. His telephone number is 397-5225. Mark was born on May 18, 19__; he is 14 years old. He has two brothers, Jake, 17, who is a high school senior this year and Mike, 8, who is in grade school. He also has two sisters. Marie, 19, is a freshman at the University of Idaho, and Sara, 13, is in junior high school. Mark will be keeping records on his dairy cows and corn projects. This summer he is going to be on a corn topping crew. Put your name on the outside cover of the record book and fill in the inside cover with the information for Mark.

2. ACTIVITIES

Mark has the following activities to record on page 3 of his record book. He was initiated as a Greenhand in November. He received first place in the Chapter Creed Speaking contest and went on to receive first place in the district as well. Mark is an active athlete, competing in basketball and cross-country. He is also a member of the Spanish Club, Key Club, and Rodeo Club. He is president of his church youth group and actively takes part in all activities. List Mark's other activities on this page as they are reported later.

3. PLANNING AHEAD

Mark is working hard to win the State FFA Creed Speaking contest at the State FFA Convention. He also hopes to make the chapter Livestock, Dairy, Food Products, and Parliamentary Procedure teams in order to attend the district contests and also the State FFA Judging contests. He wants to run for the office of chapter Sentinel next year.

Mark is going to raise two springer heifers and cultivate 10 acres of corn this year. This summer he is going to work on a corn topping crew. He wants to rebuild the fences around his home farm as an improvement project. After graduation, Mark thinks he will attend the University of Idaho to major in Agricultural Education. Mark wants to be a Secondary Agriculture Instructor/FFA Advisor in Idaho.

4. FINANCIAL STATEMENT

As of January 1, Mark has the following items to report on his financial statement: \$74.69 in his checking account; his heifers valued at \$1,050.00 and \$1,100.00 respectively. He got a loan of \$350.00 from his father to pay for livestock expenses on December 31, 20__ at 8 percent interest due at the end of the following year; the grain he has is worth about \$17.00. Jake borrowed \$25.00 on September 20. He has \$1476.39 in his savings account. Calculate Mark's net worth with this information (**Assets - Liabilities = Net Worth**).

5. LIVESTOCK BUDGET

Mark's springer heifers should produce 2,400# of milk a month for 11 months at \$12.00 cwt (hundred weight). At the end of the year, Mark hopes to have 2 cows worth \$1,010.00 each and 2 calves worth \$400.00 apiece. Mark figures that he will need about 15 hours of labor excluding himself. He would pay \$4.00 an hour. Mark will rent his father's milking equipment at \$5.00 a month for 11 months. He will also rent corral space from his father at \$5.00 a month for 7 months. During the summer months, Mark will pasture his stock at a rate of \$10.00 a head per month for the 2 yearlings and older, and \$7.00 a head per month for the 2 calves under one year of age for 5 months. Mark's father will sell him approximately 3,600# of rolled barley at \$6.00 cwt, approximately 27,500# of alfalfa hay at \$80.00 a ton, and approximately 5,000# of corn silage at \$20.00 a ton. Mark estimates \$25.00 for veterinary expenses and \$30.00 for breeding fees. The beginning inventory for Mark's dairy project was \$2,167.00.

6. CROP BUDGET

Mark is going to raise 10 acres of silage corn and hopes to gross \$400.00 an acre when he sells the crop. He figures that he will need to hire some extra help for about 5 hours at \$4.00 an hour. Mark can rent his father's tractor for \$10.00 an hour. He can rent the other equipment for \$3.00 an hour. It should take about 7 hours to plow, 3 hours to groundhog, 4 hours to harrow, 3 hours to seed, 2 1/2 hours to corrugate, 5 hours to cultivate, and 5 hours to landplane. He will need 5,000# of fertilizer at \$200.00 a ton. He will have *Lasso* chemical applied with the fertilizer at \$15.00 an acre. He will rent the land from his father at \$100.00 an acre. He will buy 3 bags of corn seed at \$50.00 each. He will pay \$21.00 an acre to insure the crop. (Harvesting expenses will be included in the selling price.) He has no beginning inventory.

7. PRODUCTION PROGRAM AGREEMENT

On January 1, 20__, Mark and his father agreed upon the following practices to be in effect for the current year in association with his 2 Holstein springer heifers and 10 acres of silage corn.

Land -- Mark will rent ground for his corn from his father at \$100.00 an acre. In the summer months Mark will pasture his dairy herd at the rate of \$10.00 a head per month for the yearlings and older and \$7.00 a head per month for any stock under one year of age.

Facilities -- Mark will rent corral space for his cows for \$5.00 a month.

Machinery -- Mark can rent his father's tractor at the rate of \$10.00 an hour.

Equipment -- Mark will rent his father's milking equipment for \$5.00 a month; he can also rent the plow, groundhog cultivator, land plane, harrow and corn planter for \$3.00 an hour.

Livestock/Crops -- Mark bought 2 Holstein springer heifers and plans to have both of them bred; he will be raising 10 acres of silage corn.

Production Costs -- Estimate the total production costs for Mark's livestock and crop enterprises for one year. The dairy production costs should include hired labor, machinery costs, feed costs, breeding fees and veterinary expenses. The corn production costs should include hired labor, equipment and machinery costs, fertilizer, chemicals, insurance, land rent and seed. You will find this information in your completed budgets.

Management -- Mark will manage his projects on his own; if he decides he needs help, he can hire someone for \$4.00 an hour.

Financing -- Mark's father will finance the program and Mark will pay him back at the end of the year when he has received his receipts on the silage, corn and milk.

Other -- Mark will pay for his feed every 2 months.

8. GENERAL BREEDING RECORD

Tina, #431, was bred to ABS bull #1859 on April 21, 20__, and is due to calve on January 29. Tonya, #645, was bred to ABS bull #1859 on April 26, 20__, and is due to calve on February 3.

9. OPENING INVENTORY

Mark owns two Holstein springer heifers. One is worth \$1,050.00 and the other is worth \$1,100.00. He also has \$17.00 of feed on hand in the beginning inventory. There is no opening inventory for Mark's corn project.

10. JOURNAL

The following is a chronological listing of the events Mark reported in his first record book. List each item in the appropriate place. Some items may be listed somewhere other than just the journal. Leave one blank line between each month's entries. Be neat and careful when making your entries. Use a #2 pencil to make your entries.

January	1	bought a ton of alfalfa hay for \$80.00 a ton, 900# of rolled barley at \$6.00 cwt, and a ton of corn silage at \$20.00 a ton
	25	spent 3 hours preparing the calving pens; paid friend, John, to help for 3 hours
	31	feed and care for month - 5 hours labor; corral rent - \$5.00

February	1	both heifers calved Tina - twin heifers Tonya - bull spent 3 1/2 hours caring for calves after they were born; paid friend, John, to help for 3 hours
----------	---	--

2 bought 500 board feet of lumber to build a small calf shed and pen for \$56.50 and 20# of nails for \$.25 a pound, 10 1/2 hours labor, paid Dad for 4 hours of help

3 competed in the District Food Products Contest

5 talked to Meadow Gold representative. They will pick up milk twice a week, but pay for it at the end of every month

6 one of Tina's heifers came down with pneumonia; bought a plastic syringe for \$.25, needle for \$.25, and 250 cc's of Tylan-200 for \$13.95; spent 2 hours doctoring heifer

7 Tina's heifer died, worth \$100.00

9 decided to take the calves off their mother's milk and put them on milk replacer; purchased two 50# bags of milk replacer at \$50.00 each

22 sold 1,200# of milk for \$12.00 cwt = \$144.00; advertising fees = \$.84 and hauling charges = \$2.40

28 milk equipment rent - \$5.00

28 feed, care and milking for month - 10 hours labor; corral rent - \$5.00

March 2 competed in the District Parliamentary Procedure Contest

18 competed in the District Livestock Contest

31 bought 1,500# of alfalfa hay at \$80.00 a ton, 1,500# of corn silage at \$20.00 a ton, and 900# of rolled barley at \$6.00 cwt

31 milking equipment rent - \$5.00

31 feed, care and milking for month - 15 hours labor; corral rent - \$5.00

31 sold 2,600# of milk for \$12.00 cwt: advertising fees = \$1.64 and hauling charges = \$6.00

April 3 placed second in State Creed Speaking Contest

6 sold bull calf to neighbor for \$150.00

7 joined high school track team

15 Tina isn't milking up to Mark's expectations so he decided to sell her at the local auction. She brought \$1,200.00. He had to pay \$8.25 for an auction commission, \$.25 for brand inspection, and \$8.50 for a trucking charge

17 spent 5 hours repairing the corral

18 competed in the District Dairy Cattle Contest

23 spent 3 hours working on the fence line

28 bought 3 bags of corn seed at \$50.00 each

30 used tractor for 25 hours this month at \$10.00 an hour; (Note: Self labor for tractor work is included in total self labor for putting in the corn crop, which is listed below.)

30 used the following for \$3.00 an hour: plow - 7, groundhog - 3, landplane - 5, corn planter - 3, harrow - 4, corrugator - 3

30 milking equipment and corral rent - \$10.00

30 feed, care and milking - 10 hours labor

30 sold 2,400# of milk this month for \$12.00 cwt; advertising fees = \$1.44 and hauling charges = \$5.80

30 30 hours labor putting in corn crop

30 paid for fertilizer at \$50.00/acre, Lasso for \$15/acre = \$65.00/acre

May	1	called ABS representative to artificially inseminate Tonya to ABS bull #1888 for a fee of \$15.00 (Note: Consult the gestation table on the inside back cover of the record book to determine the due date.)
	5	elected Chapter Sentinel
	10	spent 6 hours repairing fences
	25	bought a canvas dam for \$15.00 and shovel for \$8.95 to use when irrigating the corn
	31	pasture rent - 1 head at \$10.00
	31	bought 1,000# of corn silage at \$20.00 a ton, 700# of rolled barley at \$6.00 cwt and 12 ton of alfalfa hay at \$80.00 a ton
	31	milking equipment rent - \$5.00
	31	feed, care and milking - 10 hours labor
	31	sold 1,600# of milk this month at \$12.00 cwt; advertising fees = \$1.04 and hauling charges = \$2.80
June	15	irrigated corn for 4 hours (will irrigate corn on a rotation basis every 15 days from 6/15 to 8/31)
	16 - 20	attended State FFA Contests as a member of the Livestock, Dairy Cattle and Food Products Teams. Placed 9th high individual in the Livestock Contest
	20	paid brother, Jake, for doing 5 hours worth of chores while at State contests for \$4.00 an hour
	25	got a call from the corn topping crew boss; will be topping corn for Eliot Farms from July 1 to August 31

11. WORK EXPERIENCE AGREEMENT

Mark was hired by Eliot Farms for the summer. The address is Rt. 2, Box 5, Englewood, Idaho 83999. The telephone number is 397-2121. Eliot Farms raises sweet corn that needs topped. Mark will generally work from 7 a.m. to 12 p.m. every day, but the hours are flexible. He will make \$5.00 an hour since he has been topping for several years now. He will be paid every two weeks. If Mark is injured while on the job, the company insurance will pay for all costs up to \$4,000.

12. AGRIBUSINESS EMPLOYMENT BUDGET

Mark already has gloves worth \$1.75; a hat worth \$2.50; and boots worth \$12.00. His neighbor, Katelyn Mustoe, is also on the corn topping crew, and has agreed to give Mark a ride to and from work for \$4.00 a week. (His clothing will have depreciated by the end of the year - gloves at \$1.25, hat at \$2.15 and boots at \$10.50.)

13. OPENING INVENTORY

Gloves: \$1.75; Hat: \$2.50; Boots: \$12.00

June	30	irrigated corn for 4 hours
	30	pasture rent - 1 head at \$10.00
	30	milking equipment rent - \$5.00
	30	feed, care and milking - 10 hours
	30	used tractor for 5 hours this month; used cultivator for 5 hours this month; 5 hours labor cultivating
	30	paid \$21.00 an acre for crop insurance on corn

	30	sold 1,500# of milk this month at \$12.00 cwt; advertising fees = \$.99 and hauling charges = \$2.70
July	10	won a blue ribbon with Tonya at the county fair and received a \$5.00 premium
	15	irrigated corn for 4 hours
	15	worked for 70 hours in 2 weeks at \$5.00 an hour
	27	went on Chapter Leadership Retreat
	30	irrigated corn for 5 hours
	31	sold 1,400# of milk at \$12.00 cwt; advertising fees = \$.94 and hauling charges = \$2.60
	31	paid Jake for irrigating corn for 3 1/2 hours at \$4.00 an hour
	31	feed, care and milking for month - 9 hours labor
	31	bought 550# of rolled barley at \$6.00 cwt and 500# of corn silage at \$20.00 a ton
	31	worked 75 hours in 2 weeks at \$5.00 an hour
	31	paid Katelyn for carpool - 4 weeks = \$16.00
	31	pasture rent - 1 cow at \$10.00
August	15	irrigated corn for 5 hours
	15	sold Tonya for \$800.00
	15	worked for 72 hours for 2 weeks at \$5.00 an hour
	25	bought 3 registered Holstein heifers for \$1,000.00 each, 2 hours labor, hauling charges of \$8.50
	30	irrigated corn for 4 hours
	31	sold 1,350# of milk this month at \$12.00 cwt; advertising fees = \$.91 and hauling charges = \$2.55
	31	paid Jake for irrigating corn for 4 hours at \$4.00 an hour
	31	pasture rent - 1 cow for 1/2 month and 1 calf for entire month
	31	milking equipment rent for 1/2 month - \$2.50
	31	feed, care and milking - 5 hours labor
	31	worked 78 hours in 2 weeks at \$5.00 an hour
	31	paid Katelyn for carpool - 4 weeks = \$16.00
September	22	harvested 10 ton of corn at \$6.00 per ton (harvesting expense) and sold it to his dairy project for \$20.00 a ton (Make two entries: one as income in the crops section, and the other as an expense for dairy; don't forget the harvesting expense.)
	23	sold the remaining 190 ton of corn standing in the field to Tony Yochum for \$15.00 a ton (no harvesting expense)
	25	competed in District Meats Contest; first high individual
	30	sold 4,750# of milk at \$12.00 cwt; advertising fees = \$1.75 and hauling charges = \$6.15
	30	paid father field rent of \$100.00 an acre for 10 acres
	30	bought 600# of rolled barley at \$6.00 cwt
	30	pasture rent - 3 head at \$10.00 each and 1 head at \$7.00
	30	feed, care and milking for month - 12 hours labor
	30	milking equipment rent - \$5.00
October	1	paid in advance for the breeding fees of the 3 registered heifers at the rate of \$15.00 each
	3	had Amanda (#822) bred to ABS bull #1899
	13	had Susi (#840) bred to ABS bull #1977
	18	had Katy (#905) bred to ABS bull #1878

	18	sold Tina's heifer to another FFA member for \$350.00
	20	first frost of the season
	21	competed in District Crops Contest; fifth high individual
	31	feed, care and milking for the month - 15 hours; corral and milking equipment rent - \$10.00
	31	sold 4,750# of milk at \$12.00 cwt; advertising fees and hauling charges = \$7.91 total
November	30	sold 4,700# of milk at \$12.00 cwt; advertising fees and hauling charges = \$7.85 total
	30	feed, care and milking - 13 hours; corral and milking equipment rent - \$10.00
December	31	sold 4,700# of milk at \$12.00 cwt; advertising fees and hauling charges = \$7.85 total
	31	feed, care and milking - 15 hours; corral and milking equipment rent - \$10.00
	31	paid off loan to father - \$350.00, plus an additional \$28.00 for interest (only the interest is recorded as an expense)

14. Total and balance the journal

15. CLOSING INVENTORY

As of December 31, Mark had the following items on hand: 3 registered Holstein heifers worth \$700.00 each, 1 Springer heifer worth \$960.00, 9 ton of alfalfa hay at \$80.00 a ton, 9 ton of corn silage at \$20.00 a ton, and calf shed worth \$50.00. From work, as of August 31, 20__, he has his gloves worth \$1.25, hat at \$2.15 and boots at \$10.50. From his crops project, he has a canvas dam worth \$12.00 and a shovel worth \$7.00.

16. Fill in the summary page to determine the profit or loss of the projects.

17. CLOSING FINANCIAL STATEMENT

On December 31, Mark has the following to report: \$150.00 in his checking account; \$1,243.87 in his savings account. The value of livestock, equipment and feed on hand will be taken from the closing inventory. Jake also paid back the \$25.00 he owed Mark. With this information determine Mark's new net worth.

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

ASSIGNMENT SHEET #4 -- SUPPLEMENTAL RECORD BOOK PROBLEM: SUPERVISED OCCUPATIONAL SKILLS RECORD

The following is a sample problem for the Supervised Occupational Skills Record in the Idaho SOEP Planning and Accounting Book. Use the following information to fill out the Supervised Occupational Skills Record and to complete the Annual Summary of S.O.E. Programs in your sample record book.

September	6	attended beef herd disease seminar at vet clinic - 3 hours
	20	helped neighbor pull calf - 2 hours
	23	assisted vet with c-section on heifer - 4 hours
October	2	helped neighbor castrate pigs - 3 hours
	16	attended Hereford Association field day - 6 hours
November	20	helped neighbor vaccinate cows - 5 1/2 hours
	22	assisted vet to castrate horse - 1 1/2 hours
January	20	watched hog butchering demonstration - 2 hours
	24	attended seminar on meat cutting - 6 1/2 hours
February	8	assisted vet treat wire cut on horse - 4 hours
March	4	helped neighbor brand/dehorn calves - 10 hours
	20	assisted vet with c-section on cow - 4 1/2 hours
	24	assisted vet with cow prolapsed uterus - 3 hours
April	15	assisted vet with cow herd vaccinations - 7 hours
May	4	assisted vet with bull semen tests - 6 hours
August	8	assisted vet with cow pregnancy testing - 8 hours
September	15	helped neighbor pull breech calf - 3 hours
October	3	assisted vet with heifer c-section - 3 1/2 hours
November	18	helped neighbor vaccinate cows - 7 1/2 hours

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 – B

ASSIGNMENT SHEET #5--SELF-EVALUATION OF MY SAE PROGRAM

Student Name _____ Date _____
 SAE Program for 20 _____

- I. Use the checklist below to complete a year-end evaluation of your SAE program. As you rate each item, think about what is possible and desirable for you in your SAE program.
- II. Write a one-page analysis of your SAE program, using the items list in the rating scale below. Focus on your strengths and weaknesses of your SAE program.

	Excellent	Good	Fair	Poor
1. Neatness of record book				
2. Completeness of record book				
3. Accuracy of records				
4. Quality of annual plan				
5. Degree to which available opportunities were used				
6. Progress/activity during the year				
7. Skills developed				
8. Knowledge gained				

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

ASSIGNMENT SHEET #5--SELF-EVALUATION OF MY SAE PROGRAM (cont.)

	Excellent	Good	Fair	Poor
9. Level of challenge provided				
10. Degree of management responsibility				
11. Efficiency rating of ownership projects				
12. Achievement of personal career goals				
13. Degree of expansion				
14. Use of approved practices				
15. Overall value of SAE program				

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

Evaluated to satisfaction of the instructor.

Assignment Sheet #2

Evaluated to satisfaction of the instructor.

Assignment Sheet #3 and #4

Answers begin on the following page.

Assignment Sheet #5

Evaluated to satisfaction of the instructor.

IDAHO VOCATIONAL AGRICULTURAL PLANNING AND ACCOUNTING BOOK

Compiled by E. M. Howard, 1957
 Revised 1983 by Wayne Ills and Fred Beckman
 Revised 1988 by Alternate SOEP Committee

FOREWORD

How To Plan For Success

A major responsibility for the success of your agribusiness or farming/ranching operation rests on sound financial management.

You must know where you are before you can develop sound future operating plans and arrange for your credit needs.

The most useful coordinated financial statements to use for summarizing your agribusiness or farm's financial position and demonstrating your managerial ability are the balance sheet,

income statement and cash flow projection. These financial statements force you to systematically analyze your financial progress, plan operations for the year ahead and demonstrate credit worthiness to your lender. To be most useful these statements should be compared over a period of time. If not available from previous years, there is no better time to start keeping these statements than now.

COUNSELING INFORMATION

Student Mark Dawson Birth Date May 18, 19 Age 14
 School Year 19 19 Phone # 397-5225 High School Glenview
 Class in H.S. Freshman Year in Vo-Ag 1 Year in FFA 1
 Parent's Name Zach and Tara Dawson Address Rt. 2 Box 56 Englewood, ID 83949

Names and Ages of Brothers and Sisters. (List oldest first, check those at home.)

- | | |
|--|---|
| 1. <u>Marie</u> Age <u>19</u> | 4. <u>Mike</u> <input checked="" type="checkbox"/> Age <u>8</u> |
| 2. <u>Jake</u> <input checked="" type="checkbox"/> Age <u>17</u> | 5. _____ Age _____ |
| 3. <u>Sara</u> <input checked="" type="checkbox"/> Age <u>13</u> | 6. _____ Age _____ |

SOE PROGRAMS RECORDED IN THIS BOOK

- | | |
|---------------------------|--|
| 1. <u>Dairy Cattle</u> | 3. _____ |
| 2. <u>Corn Production</u> | 4. <u>Agribusiness Employment - Corn topping</u> |
| | 5. <u>Alternative SOE</u> |

Order From . . .

INTERSTATE PRINTERS AND PUBLISHERS, INC.
 Danville, Illinois
 (sold in packages of 20)
 Printed in USA

PLANNING AHEAD

As an extension to the planning for production and improvement program a student should plan short and long term skill and career goals.

Goals for the Current Year:

1. FFA —
 Win first place in State Creed Speaking Contest
 Member of chapter Livestock, Dairy, Food Products and Parliamentary
 Procedure teams - compete on district level
 Attend state FFA judging contests as team member
 Prepare to run for Chapter Sentinel
2. SOEP (Supervised Occupational Experience Program) —
 2 Springer heifers
 10 acres corn
 corn topping crew
3. Improvement Program —
 Rebuild fences around home
4. Supervised Occupational Skills —
 (For non-paid experiences - see pages 30-33)
5. Educational Plans (After High School) —
 Major in Agricultural Education at the University of Idaho
6. Occupational or Career Goals (After High School) —
 Idaho Vocational Agriculture Instructor/FFA Advisor

FINANCIAL STATEMENT

(on following page)

In operating a farm, ranch or other business, you will find that a financial statement is necessary to show what a person owns and owes on a given date. It will be essential when dealing with banks and other loan agencies and it is an indicator of your progress from year to year.

Fill in the correct figures for each item as they pertain to you at the beginning of the year and then again at the end of the year. Also, at the end of the year, calculate your financial gain or loss by taking the difference between your en-

tries. If you have any accounts receivable or payable, make sure you enter them in the section below the financial statement. As the year progresses, you may need to enter more of them in this section. However, do not change your financial statement after you open it. Any finance not related to student's SOE program will be listed under other. The total will reflect the student's whole financial picture. The combined totals are the sum of the S.O.E.P. and other financial listings.

FINANCIAL STATEMENT

Date January 1, 19 ————— Date December 31, 19 —————

STUDENT'S ASSETS	Beginning of Year		End of Year	
	SOEP	Other	SOEP	Other
Cash on hand or in bank	\$	\$ 74.69	\$	\$ 150.00
Savings account		1,476.39		1,243.87
Accounts receivable (list below)		25.00		0
Value of machinery and equipment you own				
List: <u>Corn</u>			19.00	
<u>Corn topping</u>			13.90	
Livestock you own				
List: <u>heifers</u>	2,150.00		3,060.00	
Poultry you own				
Value of buildings and land you own				
List: <u>Calf Shed</u>			50.00	
Investment in products (on hand)				
Investment in feed	17.00		900.00	
Investment in seed				
Other assets (stocks, bonds, savings bonds, etc.)				
List:				
Total Assets	<u>2,167.00</u>	<u>1,576.08</u>	<u>4,042.90</u>	<u>1,393.87</u>
TOTAL COMBINED ASSETS	<u>—</u>	<u>3,743.08</u>	<u>—</u>	<u>5,436.77</u>
STUDENT'S LIABILITIES				
Accounts payable (on loans) (list below)	350.00			
Current unpaid bills				
Other liabilities				
Total Liabilities			0	0
TOTAL COMBINED LIABILITIES	<u>350.00</u>		<u>0</u>	<u>0</u>
Net Worth	<u>1,817.00</u>	<u>1,576.08</u>	<u>4,042.90</u>	<u>1,393.87</u>
COMBINED NET WORTH	<u>—</u>	<u>3,393.08</u>	<u>—</u>	<u>5,436.77</u>

ACCOUNTS RECEIVABLE

Date of Transaction	Name of Person or Firm and Description of Item	Total Amount	For How Long (months)	Interest Rates	Balance Due	
					Beginning	Ending
1. <u>9/20/—</u>	<u>Jake Dawson</u>	\$ 25			\$ 25	\$ 25
2.						
3.						

ACCOUNTS PAYABLE

1. <u>12/31/—</u>	<u>Zach Dawson</u>	350.	12 mo.	8%	350.	378.
2.						
3.						

BUDGET GUIDE (Livestock Program)

Budgets can be effective in estimating your income and expenses, thereby helping you make correct decisions. Use only budgets that apply to your programs.

Kind Size				Kind Size			
	<i>Dairy</i>				<i>Dairy</i>		
	<i>2 spr. heifers</i>				<i>2 heifers</i>		
ANTICIPATED INCOME				3. Feed Costs			
1. Value of Sales				No Value Total			
Type of Animal(s)	No	Value	Total	No	Value	Total	No Value Total
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
animal products	—	—	—	—	—	—	—
by-products	—	—	—	—	—	—	—
other	—	—	—	—	—	—	—
TOTAL							
2. Value of Products Used At Home				4. Other Expenses			
	No	Value	Total		Value	Total	
no. of animals	—	—	—				
animal products	—	—	—				
animal waste	—	—	—				
TOTAL							
3. Closing Inventory				5. Additional Livestock Investments			
Type of Animal(s)	No	Value	Total	Type of Animal(s)	No	Value	Total
<i>cows</i>	<i>2</i>	<i>1010</i>	<i>2020</i>		—	—	—
<i>calves</i>	<i>2</i>	<i>400</i>	<i>800</i>		—	—	—
equipment	—	—	—		—	—	—
TOTAL					—	—	—
A. TOTAL ANTICIPATED INCOME (1+2+3)				6. Opening Inventory			
<i>5988</i>				Type of Animal(s) No Value Total			
				<i>heifer</i> <i>1</i> <i>1050</i> <i>1050</i>			
				<i>heifer</i> <i>1</i> <i>1100</i> <i>1100</i>			
				equipment			
				other <i>feed</i> <i>17</i>			
				TOTAL <i>2167</i>			
ANTICIPATED EXPENSES				B. TOTAL ANTICIPATED EXPENSES (1+2+3+4+5+6)			
1. Labor (excluding self)				<i>3908</i>			
hired		<i>60</i>					
contract							
special (shearing, etc.)							
other							
TOTAL		<i>60</i>					
2. Machinery Costs				Anticipated Labor Income			
transportation							
handling							
equipment		<i>55</i>					
pens & corrals		<i>35</i>					
housing							
electricity							
other							
TOTAL		<i>90</i>					
				A. Total Anticipated Income <i>5988</i>			
				B. Total Anticipated Expenses <i>3908</i>			
				NET ANTICIPATED LABOR INCOME (A - B) <i>+ 2080</i>			

BUDGET PAGE (Crop Program)

Budgets can be effective in estimating your income and expenses, thereby helping you make correct decisions. Use only budgets that apply to your programs.

Kind Size	Field corn 10 acres						Kind Size	Field corn 10 acres					
ANTICIPATED INCOME							2. Machinery Costs						
1. Value of Sales	No	Value	Total	No	Value	Total	No	Value	Total	No	Value	Total	
crop	10	400	4000		x	=	fuel & oil		x	=		x	=
by-product		x	=		x	=	seed bed prep.	21.5	13	279.50		x	=
other		x	=		x	=	seeding	3	13	39		x	=
TOTAL SALES			4000				cultivating	5	13	65		x	=
							spraying		x	=		x	=
							harvesting		x	=		x	=
							transportation		x	=		x	=
2. Value of Products							electricity		x	=		x	=
Used at Home	No	Value	Total	No	Value	Total	repair		x	=		x	=
crops		x	=		x	=	other		x	=		x	=
by-product		x	=		x	=	TOTAL MACHINERY COSTS			383.50			
other		x	=		x	=							
TOTAL USED AT HOME			0										
							3. Other Expenses						
							storage						
3. Closing Inventory	No	Value	Total	No	Value	Total	fertilizer			500			
crop		x	=		x	=	chemicals			150			
by-product		x	=		x	=	certification						
equipment		x	=		x	=	interest						
other		x	=		x	=	insurance			210			
TOTAL INVENTORY			0				land rent			1000			
							seed			150			
							water						
							other						
A. TOTAL ANTICIPATED INCOME (1+2+3)			4,000				TOTAL OTHER PROJECT EXPENSES			2010			
ANTICIPATED EXPENSES							4. Beginning Inventory						
1. Labor (excluding self)							supplies on hand						
hired			20				equipment						
contract							preparation for crop year plowing, fertilizer, etc. (prior to opening date)						
special							other						
other							TOTAL BEGINNING INVENTORY			0			
TOTAL LABOR			20										
							B. TOTAL ANTICIPATED EXPENSES (1+2+3+4)			2413.50			

Anticipated Labor Income

A. Total Anticipated Income		4000.00		
B. Total Anticipated Expense		2413.50		
NET ANTICIPATED LABOR INCOME (A - B)		+ 1586.50		

BUDGET GUIDE (Agribusiness Employment)

Type of Employment No. of Hours Per Week	<u>Corn Topping</u>					
	No. Hours	Rate	Total	No. Hours	Rate	Total
ANTICIPATED INCOME						
1. Value of Sales - Labor	<u>280</u>	<u>5</u>	<u>\$1400</u>			
- Unpaid Labor						
- Other						
2. Value of Products Used at Home (work traded for products)	No	Value	Total	No	Value	Total
	x		=	x		=
3. Closing Inventory - Tools						
- Safety Equipment						
- Clothing			<u>13.90</u>			
- Other						
A. TOTAL ANTICIPATED INCOME = VALUE OF SALES + CLOSING INVENTORY			<u>\$ 1413.90</u>			
ANTICIPATED EXPENSES						
1. Labor (excluding self)	No	Value	Total	No	Value	Total
	x		=	x		=
2. Machinery Costs						
3. Meal Costs						
4. Other Expenses						
- Transportation			<u>32</u>			
- Tools & Equipment						
- Safety Equipment, etc.						
- Clothing						
- Insurance						
- Room						
- Other						
5. Beginning Inventory						
- Tools						
- Safety Equipment						
- Clothing			<u>16.25</u>			
- Other						
B. TOTAL ANTICIPATED EXPENSES (1+2+3+4+5)			<u>48.25</u>			
Anticipated Labor Income						
A. Total Anticipated Income			<u>1413.90</u>			
B. Total Anticipated Expenses			<u>48.25</u>			
A - B = NET ANTICIPATED LABOR INCOME			<u>\$ 1365.65</u>			

SELF EMPLOYMENT OR PRODUCTION PROGRAM AGREEMENT

1. This agreement is entered into this 1st day of January, 19
 for a period from January 1, 19 to December 31, 19 by and between
Mark Dawson (student) and Zach Dawson (parent or other party)
 and covers the student's program.

2. Description of Program

10 acres of silage corn
Two holstein springer heifers

3. Parties Agree To

- a. Land: Mark will rent 10 acres ground from Zach Dawson at \$100/acre.

Mark will rent pasture from Zach Dawson during the summer at a rate of \$10/head for yearlings and older; \$7/hd for stock under one year of age.

- b. Facilities: Mark will rent corral space for \$5/month from Zach Dawson.

- c. Machinery: Mark will rent a tractor from Zach Dawson at \$10/hour.

- d. Equipment: Mark will rent milking equipment from Zach Dawson at \$5/month.

Mark will rent the plow, groundhog, cultivator, land plane, harrow, and corn planter for \$3/hour from Zach Dawson.

Self Employment or Production Program Agreement (continued)

e. Livestock or Crops: Mark bought two Holstein springer heifers and plans to have both of them bred.

Mark will raise 10 acres of silage corn.

f. Production Costs: Dairy - hired labor (\$60), machinery (\$90), Feed (\$1536), veterinary (\$25), breeding fees (\$30) - total: \$1741.00. Corn production - hired labor (\$20), equipment and machinery (\$383.50), fertilizer (\$500), chemicals (\$150), insurance (\$210), land rent (\$1,000), Seed (\$150) - total: \$2413.50

g. Management: Mark will manage his own projects; he may decide to hire help at \$4/hour.

h. Financing: Zach Dawson will finance the programs and Mark will repay him at the end of the year.

i. Other: Mark will pay for his feed every two months.

We, the undersigned, agree to the conditions of this agreement.

(Parent or Cooperating Party)

(Student)

(Teacher)

(Date)

WORK EXPERIENCE (WE) AGREEMENT OR COOPERATIVE OCCUPATIONAL EXPERIENCE (COE) AGREEMENT

The purpose of this agreement is to provide a basis of understanding and to promote sound business relationships. It may be terminated by any party after giving advance notice to the teacher in charge.

1. The agreement is between Mark Dawson and Eliot Farms and covers the period between July 1, 19__ and August 31, 19__.

2. Business Description

NAME OF BUSINESS: Eliot Farms

BUSINESS ADDRESS Rt. 2, Box 5, Englewood, ID 83444 TEL. NO. 397-2121

MAIN PRODUCTS AND/OR SERVICES: Tapping Corn

3. Job Description

Mark will top sweet corn every day from 7:00 a.m. to 12:00 p.m. (flexible).

4. Liability Insurance Coverage (Type and Amount)

If Mark is injured on the job, the company insurance will pay for all costs up to \$4,000.00.

Work Experience (WE) Agreement or Cooperative Occupational Experience (COE) Agreement (continued)

5. The student agrees:

- a. To conform to the policies and rules of the agreement, to be punctual, to be regular in attendance at school and on the job and to notify the cooperater and the teacher in advance in case of absence from school or from the job.
- b. To keep accurate and complete records.
- c. To carefully perform all related study assignments.
- d. To carry out the training program, both on the job and in the school, in such a manner that will reflect credit upon both the student and the school.
- e. To work from 7:00 a.m. to 12:00 p.m. every day
(the hours are flexible) from July 1 to August 31.

6. The cooperating employer agrees:

- a. To assist the student in fulfilling the training program plan and to provide the training experiences necessary.
- b. To provide employment and training in accordance with federal, state and local laws and regulations.
- c. To start the student at a wage of \$5.00 (per hour, week, month) and later to adjust the wages to a higher rate when he develops competence in the performance of his work responsibilities.
- d. Hire Mark from 7:00 a.m. to 12:00 p.m. (although
hours are flexible.) from July 1 to August 31.

e. To pay Mark every two weeks

We, the undersigned, agree to all conditions of this agreement.

(Student)

(Cooperating Employer)

(Teacher)

(Parent or Guardian)

(Date)

INVENTORY OF STUDENT'S SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAMS

Opening: List all items on hand that apply to the program such as livestock, equipment, feed and supplies. List only items that belong to you or the value of the share that is yours.

Closing: List all items on hand on the date program closes including (a) items left from opening inventory; (b) items left from new investments and (c) residues, products and stock on hand from the program.

General Notes: Inventory values on livestock and equipment change. Values on growing stock normally increase while aged stock and equipment normally decrease. For continuation programs, start next year's record with an opening inventory dated one day later and having exactly the same contents and values as you closed this one.

I. SOE Program Dairy

	Date <u>1-1-</u>			Date <u>12-31-</u>		
	Opening			Closing		
	Amt.	Unit Price	Value	Amt.	Unit Price	Value
ITEMS						
<u>Holstein springer heifer</u>	1	1050	\$1050 -			\$.
<u>Holstein springer heifer</u>	1	1100	1100 -			
<u>Feed</u>			17 -			
<u>Registered Holstein heifers</u>				3	700	2100 -
<u>Springer heifer</u>				1	960	960 -
<u>alfalfa hay</u>				9	80	720 -
<u>Corn silage</u>				9	20	180 -
<u>Calf shed</u>				1	50	50 -
<u>Totals Inventory</u>	XXXX		2167 -	XXXX		4010 -

II. SOE Program Corn

	Date <u>1-1-</u>			Date <u>12-31-</u>		
	Opening			Closing		
	Amt.	Unit Price	Value	Amt.	Unit Price	Value
ITEMS						
<u>Canvas dam</u>			\$	1	12	\$12 -
<u>Shovel</u>				1	7	7 -
<u>Totals Inventory</u>	XXXX		0 -	XXXX		19 -

INVENTORY OF STUDENT'S SOEP (continued)

III. SOE Program _____	Date _____			Date _____		
	Opening			Closing		
	Amt.	Unit Price	Value	Amt.	Unit Price	Value
ITEMS			\$			\$
Totals Inventory	XXXX			XXXX		

IV. SOE AGRIBUSINESS EMPLOYMENT PROGRAM <i>Corn Topping</i>	Date <i>7-1-</i> _____			Date <i>8-31-</i> _____		
	Opening			Closing		
	Amt.	Unit Price	Value	Amt.	Unit Price	Value
ITEMS						
<i>Gloves</i>	<i>1</i>	<i>1.75</i>	<i>\$ 1.75</i>	<i>1</i>	<i>1.25</i>	<i>\$ 1.25</i>
<i>Boots</i>	<i>1</i>	<i>12.</i>	<i>12.00</i>	<i>1</i>	<i>10.50</i>	<i>10.50</i>
<i>Hat</i>	<i>1</i>	<i>2.50</i>	<i>2.50</i>	<i>1</i>	<i>2.15</i>	<i>2.15</i>
Totals Inventory	XXXX		<i>16.25</i>	XXXX		<i>13.90</i>

JOURNAL (An Account of Daily Transactions)

The journal section of this record book is based on the premise that you should learn the true cost of producing livestock and crops or engagement in job opportunities. Therefore, charge your program with all expense items whether cash or non-cash, whether given by Dad or worked out by you.

Your programs are to pay their own way and any gift of feed, labor or service is a gift to you, the student, not to your program. Be fair, but

charge your program for all items.

Include expenses such as feed, seed, fertilizer, supplies, rent, use of buildings, pens and equipment, land rent, payroll deductions, transportation, meals, safety equipment, interest paid on money borrowed and labor (excluding self-labor).

Credit your program for all income received and items sold, consumed by family, used on farm or given away.

CASH FLOW FOR ALL SOE PROGRAMS

A					B		C	
Date	Hrs. Self Labor	ITEM	Amount	Unit Price	Income	Expenses		
1-1		Alfalfa hay	1	80		80	-	1
1-1		Rolled barley	9	6		54	-	2
1-1		Corn silage	1	20		20	-	3
1-25	3	Labor-prepare calving pens	3	4		12	-	4
1-31	5	Feed and care						5
1-31		Corral rent				5	-	6
								7
2-1	3.5	Labor-newborn calves	3	4		12	-	8
2-2		Lumber for calf shed	500	.113		56	50	9
2-2		Nails for calf shed	20	.25		5	-	10
2-2	10.5	Labor-build calf shed	4	4		16	-	11
2-6		Plastic syringe	1	.25			25	12
2-6		Needle	1	.25			25	13
2-6		Bottle Tylan - 200	1	13.95		13	95	14
2-6	2	Doctoring heifer						15
2-9		Milk replacer	2	50		100	-	16
2-22		Sold milk	12	12	144	-		17
2-22		Advertising					84	18
2-22		Milk hauling					2	40
2-28		Milk equipment rent					5	-
2-28	10	Feed, care, milking						21
2-28		Corral rent					5	-
	34	Totals for Page			144	-	388	19

A		B			C	
Date	Hrs. Self Labor	ITEM	Amount	Unit Price	Income	Expenses
	34	Total Brought Forward			144 -	388 19
1 3-31		Alfalfa hay	.75	80		60 -
2 3-31		Corn silage	.75	20		15 -
3 3-31		Rolled barley	9	6		54 -
4 3-31		Milking equipment rent				5 -
5 3-31	15	Feed, care and milking				
6 3-31		Corral rent				5 -
7 3-31		Sold milk	26	12	312 -	
8 3-31		Advertising				1 64
9 3-31		Milk hauling				6 -
10						
11 4-6		Sold bull calf	1	150	150 -	
12 4-15		Sold Tina - #431			1200 -	
13 4-15		Auction Commission - Tina				8 25
14 4-15		Brand Inspection - Tina				25
15 4-15		Trucking charge - Tina				8 50
16 4-17	5	Corral repair				
17 4-23	3	Fence repair				
18 4-28		Corn seed	3	50		150 -
19 4-30		Tractor rent	25	10		250 -
20 4-30		Plow rent	7	3		21 -
21 4-30		Groundhog rent	3	3		9 -
22 4-30		Land plane rent	5	3		15 -
23 4-30		Corn planter rent	3	3		9 -
24 4-30		Harrow rent	4	3		12 -
25 4-30		Corrugator rent	3	3		9 -
26 4-30		Fertilizer and lasso	10	65		650 -
27 4-30	10	Feed, care and milking				
28 4-30		Rent - Corral + milking equip.				10 -
29 4-30		Sold milk	24	12	288 -	
30 4-30		Advertising				1 44
31 4-30		Milk hauling				5 80
Total Hours	67	Totals to Date			2094 -	1694 07

I Dairy				II Corn			III			IV Agribusiness Employment				
a		b	c	a		c	a		b	c	a		b	c
SL	Income	Expenses		SL	Income	Expenses	SL	Income	Expenses	Hours	Income	Expenses		
34	\$144 -	\$388	19		\$	\$		\$	\$		\$	\$		
1		60 -											1	
2		15 -											2	
3		54 -											3	
4		5 -											4	
5	15												5	
6		5 -											6	
7	312 -												7	
8		1 64											8	
9		6 -											9	
10													10	
11	150 -												11	
12	1200 -												12	
13		8 25											13	
14		25											14	
15		8 50											15	
16	5												16	
17	3												17	
18						150 -							18	
19						250 -							19	
20						21 -							20	
21						9 -							21	
22						15 -							22	
23						9 -							23	
24						12 -							24	
25						9 -							25	
26						650 -							26	
27	10												27	
28		10 -											28	
29	288 -												29	
30		1 44											30	
31		5 80											31	
Totals to Date	67	2094 -	569 07			1125 -								

A		B		C		
Date	Hrs. Self Labor	ITEM	Amount	Unit Price	Income	Expenses
	67	Total Brought Forward			2094 -	1694 07
1 4-30	30	labor putting in corn crop				
2						
3 5-1		Breeding fee	1	15		15 -
4 5-10	6	Fence repair				
5 5-25		Canvas dam	1	15		15 -
6 5-25		Shovel	1	8.95		8 95
7 5-31		Pasture rent	1	10		10 -
8 5-31		Corn Silage	.5	20		10 -
9 5-31		Rolled barley	7	6		42 -
10 5-31		Alfalfa hay	12	80		960 -
11 5-31		Milking equipment rent				5 -
12 5-31	10	Feed, care and milking				
13 5-31		Sold milk	16	12	192 -	
14 5-31		Advertising fee				1 04
15 5-31		Hauling charges				2 80
16						
17 6-15	4	Irrigate corn				
18 6-20		labor - chores	5	4		20 -
19 6-30	4	Irrigate corn				
20 6-30		Pasture rent	1	10		10 -
21 6-30		Milking equipment rent				5 -
22 6-30	10	Feed, care and milking				
23 6-30		Tractor rent	5	10		50 -
24 6-30	5	Cultivator rent	5	3		15 -
25 6-30		Crop insurance				210 -
26 6-30		Sold milk	15	12	180 -	
27 6-30		Advertising fee				99
28 6-30		Hauling charges				2 70
29						
30 7-10		Fair premium			5 -	
31 7-15	4	Irrigate corn				
Total Hours	140	Totals to Date			2471 -	3077 55

I Dairy			II Corn			III			IV Agribusiness Employment		
a	b	c	a	b	c	a	b	c	a	b	c
SL	Income	Expenses	SL	Income	Expenses	SL	Income	Expenses	Hours	Income	Expenses
67	\$2094	\$569.67		\$	\$1125 -		\$	\$		\$	\$
1			30								
2											
3		15 -									
4	6										
5					15 -						
6					8 95						
7		10 -									
8		10 -									
9		42 -									
10		960 -									
11		5 -									
12	10										
13	192 -										
14		1 04									
15		2 80									
16											
17			4								
18		20 -									
19			4								
20		10 -									
21		5 -									
22	10										
23					50 -						
24			5		15 -						
25					210 -						
26	180 -										
27		99									
28		2 70									
29											
30	5 -										
31			4								
Totals to Date			93	2471	16536.47						
						142395					

A			B				C	
Date	Hrs. Self Labor	ITEM	Amount	Unit Price	Income	Expenses		
	140	Total Brought Forward			2471 -	3077	55	
1 7-15		Corn topping	70	5	350 -		1	
2 7-30	5	Irrigate corn					2	
3 7-31		Sold milk	14	12	168 -		3	
4 7-31		Advertising fee				94	4	
5 7-31		Milk hauling				2 60	5	
6 7-31		Hired labor - irrigate corn	3.5	4		14 -	6	
7 7-31	9	Feed, care and milking					7	
8 7-31		Rolled barley	5.5	6		33 -	8	
9 7-31		Corn silage	.25	20		5 -	9	
10 7-31		Corn topping	75	5	375 -		10	
11 7-31		Carpool	4	4		16 -	11	
12 7-31		Pasture rent	1	10		10 -	12	
13							13	
14 8-15	5	Irrigate corn					14	
15 8-15		Sold Tonya #645	1	800	800 -		15	
16 8-15		Corn topping	72	5	360 -		16	
17 8-25	2	Registered Holstein heifers	3	1,000		3,000 -	17	
18 8-25		Hauling heifers				8 50	18	
19 8-30	4	Irrigate corn					19	
20 8-31		Sold milk	13.5	12	162 -		20	
21 8-31		Advertising fee				91	21	
22 8-31		Hauling charges				2 55	22	
23 8-31		Labor - irrigate	4	4		16 -	23	
24 8-31		Pasture rent - cow	.5	10		5 -	24	
25 8-31		Pasture rent - calf	1	7		7 -	25	
26 8-31		Milking equipment rent	.5	5		2 50	26	
27 8-31	5	Feed, care + milking					27	
28 8-31		Corn topping	78	5	390 -		28	
29 8-31		Carpool	4	4		16 -	29	
30							30	
31 9-22		Harvest corn	10	6		60 -	31	
Total Hours	170	Totals to Date			5076 -	6277	55	

I Dairy			II Corn			III			IV Agribusiness Employment		
a	b	c	a	b	c	a	b	c	a	b	c
SL	Income	Expenses	SL	Income	Expenses	SL	Income	Expenses	Hours	Income	Expenses
93	\$2471 -	\$1653 60	47	\$	\$1423 95		\$	\$		\$	\$
1									70	350 -	
2			5								
3	168 -										
4		94									
5		260									
6					14 -						
7	9										
8		33 -									
9		5 -									
10									75	375 -	
11											16 -
12		10 -									
13											
14			5								
15	800 -										
16									72	360 -	
17	2	3000 -									
18		850									
19			4								
20	162 -										
21		91									
22		255									
23					16 -						
24		5 -									
25		7 -									
26		250									
27	5										
28									78	390 -	
29											16 -
30											
31					60 -						
Totals to Date	109	3601 -	473	60	61				295	1475 -	32 -

A			B			C	
Date	Hrs. Self Labor	ITEM	Amount	Unit Price	Income	Expenses	
	170	Total Brought Forward			5076 -	6277 55	
1	9-22	Sold corn	10	20	200 -		1
2	9-22	Bought corn	10	20		200 -	2
3	9-23	Sold corn	190	15	2850 -		3
4	9-30	Sold milk	47.5	12	570 -		4
5	9-30	Advertising fee				1 75	5
6	9-30	Hauling charges				6 15	6
7	9-30	land rent	10	100		1000 -	7
8	9-30	Rolled barley	6	6		36 -	8
9	9-30	Pasture rent	3	10		30 -	9
10	9-30	Pasture rent	1	7		7 -	10
11	9-30	12 Feed care and milking					11
12	9-30	Milking equipment rent				5 -	12
13							13
14	10-1	Breeding fee	3	15		45 -	14
15	10-18	Sold heifer	1	350	350 -		15
16	10-31	15 Feed care and milking					16
17	10-31	Rent-corral and milking equip.				10 -	17
18	10-31	Sold milk	47.5	12	570 -		18
19	10-31	Advertising and hauling				7 91	19
20							20
21	11-30	Sold milk	47	12	564 -		21
22	11-30	Advertising and hauling				7 85	22
23	11-30	13 Feed care and milking					23
24	11-30	Rent-corral and milking equip.				10 -	24
25							25
26	12-31	Sold milk	47	12	564 -		26
27	12-31	Advertising and hauling				7 85	27
28	12-31	15 Feed, care and milking					28
29	12-31	Rent-corral + milking equip.				10 -	29
30	12-31	Interest	350	.08		28 -	30
31							31
Total Hours		225	Totals to Date		10,744 -	7690 06	

I Dairy				II Corn			III			IV Agribusiness Employment		
a	b	c		a	b	c	a	b	c	a	b	c
SL	Income	Expenses		SL	Income	Expenses	SL	Income	Expenses	Hours	Income	Expenses
109	\$3601 -	\$473	60	61	\$	\$1513 95		\$	\$	295	\$1475 -	\$32 -
1					200 -							
2		200 -										
3					2850 -							
4	570 -											
5		1 75										
6		6 15										
7					1000 -							
8		36 -										
9		30 -										
10		7 -										
11	12											
12		5 -										
13												
14		45 -										
15	350 -											
16	15											
17		10 -										
18	570 -											
19		7 91										
20												
21	544 -											
22		7 85										
23	13											
24		10 -										
25												
26	564 -											
27		7 85										
28	15											
29		10 -										
30		28 -										
31												
Totals to Date												
164	6219 -	5144	11	61	3050 -	2513 95				295	1475 -	32 -

Supervised Occupational Skills Record

All agricultural competencies you have completed in the alternate SOE program are recorded on these pages. Only those competencies you have completed and not received payment for are classified as alternate SOE activities. Activities and competencies performed for wage appear in the Journal (pages 20-29).

Every entry under the item column should have the total hours spent on that activity in the total hours col-

umn (a) on the left hand page. On the right-hand page, the total hours in (a) need to be assigned to class instruction hours (b) or specific instructional areas under Hours Outside Classroom (columns c-l). Columns i, j, k and l are available for you to write in another instructional area not listed in columns c-h. Total Hours Outside Classroom would be tallied in column m. Note: Hours in (a) = (b) + (m).

Date	Item	a	
		total hours	
1	9-6 Attended beef herd disease seminar at vet clinic	3	1
2	9-20 Helped neighbor pull calf	2	2
3	9-23 Assisted vet with C-section on heifer	4	3
4	10-2 Helped neighbor castrate pigs	3	4
5	10-16 Attended Hereford Association field day	6	5
6	11-20 Helped neighbor vaccinate cows	5 1/2	6
7	11-22 Assisted vet castrate horse	1 1/2	7
8	1-20 Watched hog butchering demonstration	2	8
9	1-24 Attended meat-cutting seminar	6 1/2	9
10	2-8 Assisted vet treat wire cut on horse	4	10
11	3-4 Helped neighbor brand/dehorn calves	10	11
12	3-20 Assisted vet with cow C-section	4 1/2	12
13	3-24 Assisted vet with cow prolapsed uterus	3	13
14	4-15 Assisted vet with cow herd vaccinations	7	14
15	5-4 Assisted vet with bull semen tests	6	15
16	8-8 Assisted vet with cow pregnancy testing	8	16
17	9-15 Helped neighbor pull breach calf	3	17
18	10-3 Assisted vet with heifer C-section	3 1/2	18
19	11-18 Helped neighbor vaccinate cows	7 1/2	19
20			20
21			21
22			22
23			23
24			24
25			25
26			26
27			27
28			28
29			29
30			30
Totals to Date . . .		90	

ANNUAL SUMMARY OF S.O.E. PROGRAMS

Name Mark Dawson Age 14

Course: Ag. ① 2, 3, 4 or _____ Year 19 _____
(Semester)

	I	II	III	IV <small>Agribusiness Employment</small>
Name of Program	Dairy	Corn		Corn Topping
Opening Date	Jan. 1	Jan. 1		July 1
Closing Date	Dec. 31	Dec. 31		Aug. 31
Opening Units (Size)	2 heifers			
TOTAL INCOME				
1. Closing Inventory	4010.00	19.00		13.90
2. Journal Income	6219.00	3050.00		1475.00
3. Total Income (1+2=3)	\$10,229.00	\$3069.00	\$	\$1488.90
TOTAL EXPENSE				
4. Opening Inventory	2167.00	0		16.25
5. Journal Expenses	5144.11	2513.95		32.00
6. Total Expense (4+5=6)	7311.00	2513.95		48.25
7. PROFIT OR LOSS (line 3-6=7)	\$2918.00	\$555.05	\$	\$1440.65
EFFICIENCY FACTORS PERTAINING TO PROGRAM				
8. Production	30,950 #	200 T		295 hr.
(ie, lb. of milk, bushels of wheat, lb. of beef)	2 calves			
9. Total hours of Self Labor	164	61		295 hr.
*10. Cost per Unit of Production (line 5÷8) ..	\$.17	\$12.57	\$	\$.11
11. Income per Unit of Production (line 7÷8)09	2.78		4.88
12. Income per hour of Self Labor (line 7÷9)	17.79	9.10		4.88
13. _____				
14. Occupational Skills Total Hours (Column M — page 30-33)				

*Include cost of consumable items (feed, vaccine, etc.) in opening inventory
 minus consumable items (feed, vaccine, etc.) in closing inventory.

SUMMARY OF IMPROVEMENT PROGRAMS (List)

- | | |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

SUMMARY OF AGRICULTURAL SKILLS PERFORMED (List)

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

UNIT TEST

Name _____ Score _____

1. Match terms associated with SAE to their correct definition. Write the correct numbers in the blank.

_____ a.	Category of the total business for which individual records are kept as a part of the total record-keeping system	1.	Supervised Agricultural Experience (SAE) Program
_____ b.	Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the close of the record-keeping period	2.	Occupational experience
_____ c.	Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor; students are not paid for this experience	3.	Laboratory experience
_____ d.	Itemized list of assets and their values pertaining to the SAE program; listed according to enterprises at the start of the record-keeping period	4.	Occupational skills
_____ e.	Consists of practical agricultural activities performed by students outside of scheduled classroom and laboratory time	5.	Occupational objective
_____ f.	Any fixed quantity, amount, distance, or measure used as a standard for counting or measuring items or assets	6.	Enterprise
_____ g.	A statement that lists the assets and liabilities of the business at a particular time, usually at the end of the accounting year (also called a balance sheet)	7.	Scope
_____ h.	Monetary value assigned to individual units; used to figure overall value	8.	Beginning inventory
_____ i.	Financial claims against a business	9.	Asset
_____ j.	Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence	10.	Unit
		11.	Unit price
		12.	Ending inventory
		13.	Net worth
		14.	Liabilities
		15.	Lien
		16.	Financial statement

- _____k. Extent, size or volume of the SAE program or an enterprise of the SAE program
- _____l. Difference between total assets and total liabilities
- _____m. Part of SAE program that involves production farming or agribusiness employment to gain knowledge, skill, on-the-job experience and income
- _____n. Any item of value owned or claimed as part of the business
- _____o. Claim against property for an amount of money owed to someone or a business
- _____p. A person's career goal

2. Describe the three types of SAE programs.

a. _____

b. _____

c. _____

3. List 6 reasons for participating in a supervised agricultural experience program.

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____

4. Select from the following list factors to consider when choosing an SAE program. Write an "X" in the blank before each correct answer.

- _____ a. Personal interest
- _____ b. Relatives' agricultural backgrounds
- _____ c. Local secondary agriculture department requirement
- _____ d. Facilities available
- _____ e. Current feed prices
- _____ f. My friends' interests
- _____ g. Background and knowledge
- _____ h. Transportation needs and availability
- _____ i. Personal preference of ag instructor
- _____ j. Finances available

5. List four factors to consider in developing a plan for a long-term SAE program.

a. _____

b. _____

c. _____

d. _____

6. List five characteristics of a good SAE program.

a. _____

b. _____

c. _____

d. _____

e. _____

7. List six student responsibilities in conducting SAE programs.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

8. List four sources for financing productive enterprises.

a. _____

b. _____

c. _____

d. _____

9. Arrange in order the steps involved in obtaining a loan from a credit source. Write a "1" before the first step, a "2" before the second step, and so on.

____ a. Complete application papers

____ b. Meeting with credit sources

____ c. Prepare presentation

____ d. Identify possible credit sources

____ e. Select credit source preferred

____ f. Develop a budget and financial statement

____ g. Compare advantages and disadvantages of each credit source contacted

____ h. Call to make appointments with credit sources

____ i. Draw up and sign a contract

10. List the types of SAE program records.

a. _____

b. _____

c. _____

d. _____

11. List five reasons for keeping records on your SAE program.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

12. Select from a list standards for keeping records on your SAE program. Write an "X" in the blank before each correct answer.

- ____ a. Review and update record book each week
- ____ b. Keep records on a calendar year from July 1 to June 30
- ____ c. Ask instructor for help as needed
- ____ d. Make entries neat, complete, easy to read
- ____ e. Use pen for entries
- ____ f. Complete all relevant pages in record book
- ____ g. Use one record book for your entire 4-year program
- ____ h. Enter income and expenses at the end of each month
- ____ i. Use a pencil for entries
- ____ j. Keep record book accessible and protected

SUPERVISED AGRICULTURAL EXPERIENCE (SAE)

AG 120 - B

ANSWERS TO TEST

- | | | | | | | |
|----|----|----|----|----|----|----|
| 1. | a. | 6 | g. | 16 | l. | 13 |
| | b. | 12 | h. | 11 | m. | 2 |
| | c. | 3 | i. | 14 | n. | 9 |
| | d. | 8 | j. | 4 | o. | 15 |
| | e. | 1 | k. | 7 | p. | 5 |
| | f. | 10 | | | | |
2. a. Occupational experience (OE)--Part of SAE program that involves production farming or agribusiness employment to gain knowledge, skill, on-the-job experience and income
- Includes:
- Ownership experience (production program)-- a type of OE in which students have personal ownership of the materials and other inputs required and have managerial responsibilities
- Placement experience (agribusiness employment)--A type of OE in which students work for other people or are self-employed in agriculture
- Improvement program--Improve appearance and/or real estate value of home or farm; Increase efficiency and/or profits; Increase family comfort and/or convenience; May or may not provide financial return; Carried out in addition to other SAE components; Programs include new construction; the repair or renovation of existing facilities; painting; the improvement, repair and construction of farm equipment and machinery; property beautification; recreational facilities; and the improvement of land, irrigation and utilities
- b. Laboratory experience (LE)--Part of SAE program that involves ownership or placement experiences in school or community facilities under the direction of the vocational agriculture instructor. Students are not paid for this experience
- c. Occupational skills (OS)--Part of the SAE program that involves jobs or practices performed to improve the student's occupational competence. The student is not generally paid to master these skills. Usually, these skills are not directly related to the student's occupational choice or improvement projects, but should serve to enrich the student's background
3. Answer should include six of the following:
- Learning responsibility; Gaining experience; Earning money; Developing management abilities; Preparing for a career; Learning record keeping; Learning skills or improving skills in agriculture; Becoming established in farming or an agribusiness occupation; Developing self-discipline; Developing human relations skills; Gaining experience in money management
4. a, c, d, g, h, j

5. Answer should include four of the following:
Occupational objective area; Facilities and finances available, as needed for expansion; Net income expected; Degree of independence expected; Anticipated scope of program in four years; Areas of interest; Support of parents or other parties
6. Answer should include five of the following:
Based upon the student's interests; Has an agricultural focus; Provides for the development of a large number of abilities; Sufficient in scope to be challenging; Contains diversity; Provides an opportunity to make management decisions; Has the potential for profit; Requires student's involvement most of the year; Provides opportunities for expansion; Can lead to future business ownership or employment in agriculture
7. Answer should include six of the following:
Consider the responsibilities; Keep teacher, parents and employers informed; Set goals for yourself; Keep records of financial concerns and experiences gained; Seek advice/assistance from your ag instructor; Meet financial obligations; Carry out your SAE program plan; Self-evaluate your progress; Develop an SAE program that will be valuable to you
8. Local bank or other credit institution; FFA chapter loan program; Parents or other individuals; Self-financing with job or savings account
9. a. 8 d. 3 g. 6
 b. 5 e. 7 h. 4
 c. 2 f. 1 i. 9
10. Inventories; Skills and experience records; Financial records and planning guides; FFA and other leadership activities
11. Answer should include five of the following:
Cash flow analyzation; Money management; Profit/loss determination; Financial progress observation over several years; Basis for sound management decisions; Investment and purchasing guidance; FFA awards; Information for income tax returns; Information for obtaining a loan
12. a, c, d, f, i, j

BASIC ANIMAL SCIENCE

AG 120 - C

UNIT OBJECTIVE

After completion of this unit, students will be able to identify the importance and scope of the livestock industry in the United States, Idaho and the community. This knowledge will be demonstrated by completion of assignment sheets and a unit test with a minimum of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with an introduction to the livestock industry to their correct definitions.
2. Name the types of livestock.
3. Name products and services livestock provide.
4. Identify the sources of Idaho cash farm receipts.
5. Identify Idaho's rank in the nation's agriculture for crops, livestock and livestock products.
6. Distinguish between primary and secondary food sources.
7. Describe reasons for and against using livestock as a food source.
8. List five factors to consider when selecting an animal breed.
9. List six major traits to consider when selecting breeding animals.
10. Match the types of mating systems to their correct descriptions.
11. Develop an opinion on the future of livestock production.
12. Conduct a community survey on the types of livestock raised in the area.
13. List three specific careers in each of the major areas of livestock industry employment.

BASIC ANIMAL SCIENCE

AG 120 - C

SUGGESTED ACTIVITIES

- I. Suggested activities for instructor
 - A. Make transparencies and necessary copies of material.
 - B. Provide students with objectives and discuss.
 - C. Provide students with information and discuss.
 - D. Provide students with assignment sheets.
 - E. Obtain background information on the local livestock industry.
 - F. Invite a local rancher to come in and talk about the livestock industry in the local community.
 - G. Have students collect articles on the livestock industry and share them in class.
 - H. Divide class into groups to conduct the community survey and have them report their results in class.
 - I. Review and give test.
 - J. Reteach and retest if necessary.
- II. Instructional materials
 - A. Objective sheet
 - B. Suggested activities
 - C. Information sheet
 - D. Transparency masters
 - 1. TM 1--Food Chains
 - 2. TM 2-- Manure as a Fertilizer
 - E. Assignment sheets
 - 1. AS 1--Develop an Opinion on the Future of Livestock Production
 - 2. AS 2--Conduct a Community Survey on the Types of Livestock Raised in the Area
 - F. Test
 - G. Answers to test

III. Unit references

- A. Badger, Daniel D., *Economics of Substitution and the Demand for Beef Feedlot Wastes: One Alternative for Solving Environmental Quality Problems*. Managing Livestock Wastes: The Proceedings of the 3rd International Symposium on Livestock Wastes, American Society of Agricultural Engineers, 1975.
- B. Ensminger, M.E., *Animal Science*. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1977.
- C. Harper, Judson M., and Seckler, David., *Engineering and Economic Overview of Alternative Livestock and Waste Utilization Techniques*. Managing Livestock Wastes: The Proceedings of the 3rd International Symposium on Livestock Wastes, American Society of Agricultural Engineers, 1975.
- D. *Idaho Agricultural Statistics*. United States Department of Agriculture, Washington, DC, 1989.

BASIC ANIMAL SCIENCE

AG 120 - C

INFORMATION SHEET

- I. Terms and definitions
 - A. Product--An actual material provided by an animal that can be eaten, worn or used
 - B. Service--A benefit provided by an animal
 - C. Receipt--Money coming in or received for a product or service
 - D. Concentrate--Feed high in energy and low in fiber
Example: grain
 - E. Roughage--Feed that is bulky, contains more than 18% crude fiber and is low in energy
Example: pasture
 - F. Cultivate--Working land to produce a crop
 - G. By-products--Products left after the main products have been extracted
 - H. Flexibility--Capacity for change
 - I. Elasticity--Ability of a farm operation to withstand changes in the supply or demand
- II. Types of livestock
 - A. Beef
 - B. Dairy
 - C. Sheep
 - D. Swine
 - E. Dairy goats
 - F. Horses
 - G. Rabbits
 - H. Fish
 - I. Fur-bearing animals
 - J. Poultry

III. Products and services livestock provide

A. Products

1. Meat
2. Eggs
3. Milk
4. Clothing
5. Medicine
6. Fertilizer
7. Miscellaneous products
Example: Shoe polish, photographic film, soap, glue, lubricants

B. Services

1. Power

(Note: Animals used for power are found primarily in developing nations.)
2. Recreation
 - a. Horseback riding
 - b. Racing
 - c. Rodeos
 - d. Back-packing
3. Transportation--Mainly used for large range operations in the west

IV. Sources of Idaho cash farm receipts - 1987

A.	Cattle and calves	27.8%
B.	Dairy products	13.1%
C.	Hogs	.6%
D.	Sheep, lambs and wool	1.2%
E.	Other livestock	2.1%
F.	Total livestock	45.2%
G.	Total crops	54.8%

V. Idaho's rank in the nation's agriculture - 1988

A. Livestock and livestock products

1.	American cheese	5
2.	Honey	11
3.	Sheep, lambs and wool	11
4.	Milk production	13
5.	Milk cows	18
6.	All cattle and calves	22

B. Crops

1.	Potatoes	1
2.	Barley	1
3.	Sugarbeets	3
4.	Hops	3
5.	Mint (all)	3
6.	Onions (summer storage)	3
7.	Prunes and plums (fresh)	4
8.	Dry edible beans	5
9.	Sweet corn (for processing)	5
10.	Sweet cherries	6
11.	Alfalfa hay	6
12.	Wheat (all)	8
13.	Apples	10

VI. Primary and secondary food sources (Transparency 1)

A. Primary--Food source deriving energy directly from the sun

B. Secondary--Food source deriving energy from plants or animals

(Note: A secondary food source requires energy from the primary source for maintenance. Therefore, energy is lost as it is transferred through secondary sources.)

VII. Livestock as a food source

- A. Factors against using livestock--Livestock provide a secondary food source and therefore use more energy to produce the same amount of food

Example: 400 pounds of grain will feed one man for one year; 2,000 pounds of concentrates are needed to produce enough meat and livestock products to feed one man for one year

- B. Factors for using livestock

1. Usable plant energy would otherwise be wasted

- a. Much of the world's land is not cultivated-- 46.8% of the land in the United States is pasture or grazing land, not including Alaska or Hawaii
- b. Forages provide a high percentage of animal food
- c. 95% of all energy fixed by plants is unusable by man, but can be used by ruminants
- d. Animals can use otherwise wasted by-products

Example: Cottonseed hulls, corncobs, beet pulp, rice bran and hulls, wood by-products

2. Animals provide higher quality food

- a. Higher in protein content
- b. Better quality protein--more amino acids
- c. More digestible protein
- d. More preferred by consumers

3. Animals provide other needed products such as medicine, power and fertilizer (Transparency 2)

Example: Medicine--Twenty-six steer pancreas are needed to produce enough insulin to keep one diabetic alive for one year. There are 1.25 million people in the United States who require insulin regularly

Fertilizer--One ton of manure contains 500 pounds of organic matter, 10-30 pounds of nitrogen, 5-20 pounds of phosphoric acid and 10-30 pounds of potassium. The United States' livestock industry currently produces 1.6 billion tons of manure annually

4. Animals increase flexibility of farm operations

- a. Stimulate grain production

- b. Provide elasticity to grain production

Example: In high grain production years the excess can be fed to livestock, while in low production years forage can be substituted and grain can be marketed as cash crop

VIII. Careers in the livestock industry

A. Farming/Ranching

- 1. Manager
- 2. Foreman
- 3. Herdsman

B. Research

- 1. Production
- 2. Processing
- 3. Marketing
- 4. New equipment and use

C. Industry

- 1. Food processing
- 2. Pesticides and herbicides
- 3. Feed manufacturing
- 4. Dairy processing

D. Business

- 1. Agricultural banking
- 2. Farm management
- 3. Grading and packaging
- 4. Marketing

E. Education

- 1. Agricultural extension specialist
- 2. Vocational agriculture instructor
- 3. College instructor
- 4. Governmental agencies

F. Communications

1. Farm reporting
2. Market reporting
3. Radio
4. Television

G. Service

1. Inspection and regulation
2. Plant and animal quarantine
3. Foreign service
4. Agricultural consultant
5. Veterinary

IX. Factors to consider when selecting an animal breed

- A. Market demand in area
- B. Type of operation and breeding program
- C. Cost and availability of good seedstock
- D. Quantity and quality of available feedstuffs
- E. Climatic conditions and topography
- F. Personal preference

X. Major traits to consider when selecting breeding animals

- A. Reproductive performance (number offspring per producing female)
- B. Difficulty at birth and birth weight
- C. Nursing or mothering ability (reproduction, ease of giving birth, maternal behavior, milk production, weaning weights)
- D. Growth rate
- E. Efficiency of gain
- F. Longevity
- G. Carcass merit
- H. Conformation and evaluation

XI. Mating systems

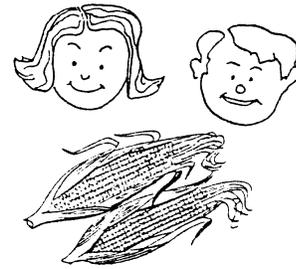
- A. Purebred breeding--Mating of purebred animals of the same breed
- B. Inbreeding--Mating of closely related animals
 - 1. Linebreeding--Mating of animals that can be traced to one common ancestor
Example: Grandparent to grandchild
 - 2. Closebreeding--Mating of animals that can be traced to two or more common ancestors
- C. Outcrossing--Mating of animals of different families within the same breed (most purebred breeding)
- D. Grading up--Mating of purebred sire with a grade female (any animal not eligible for registry)
- E. Two-breed crossbreeding--Mating of two animals from different breeds
- F. Three-breed rotation--Females produced from two-breed crossbreeding are mated with a third breed
- G. Crisscrossing--Females produced from two-breed crossbreeding are mated with male of the same breed as one of the parents of the female

Food Chains

PRIMARY



PLANT

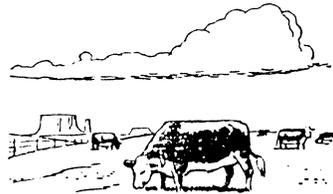


MAN

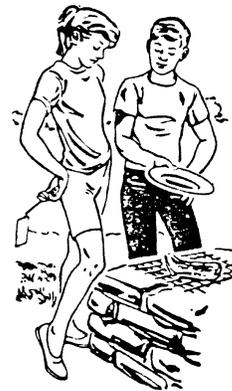
SECONDARY



PLANT

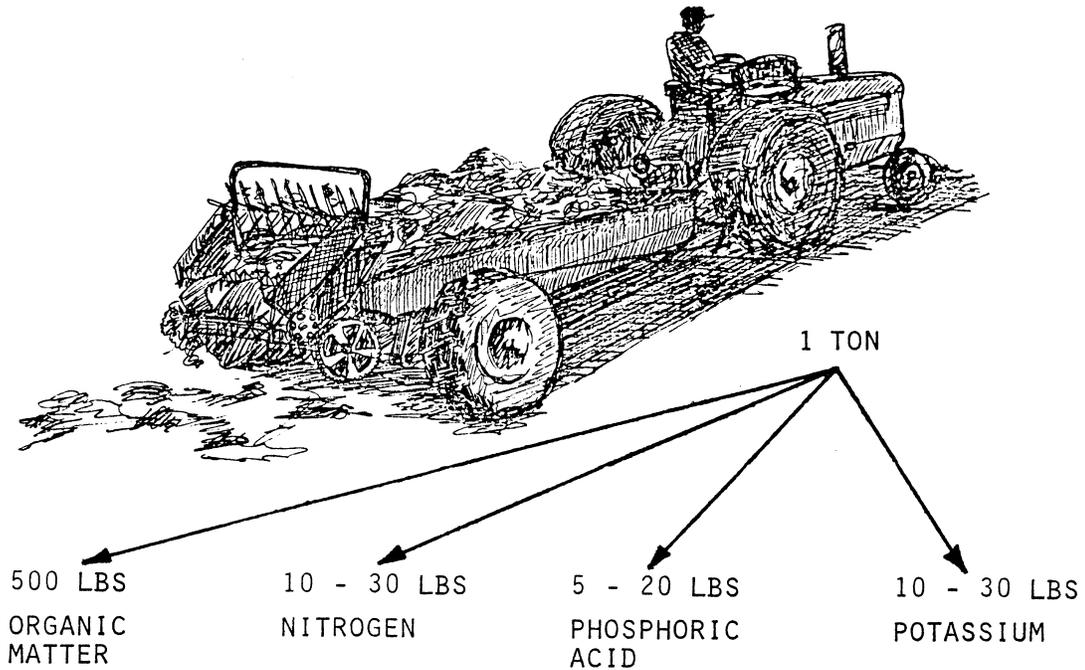


ANIMAL



MAN

Manure As A Fertilizer



1 TON = \$6.00 - \$11.33 FERTILIZER VALUE

1.6 BILLION TONS PRODUCED IN THE UNITED STATES

VALUE OF YEARLY MANURE CROP AT 1980 PRICES IS

9.6 - 18.1 BILLION DOLLARS

BASIC ANIMAL SCIENCE

AG 120 - C

ASSIGNMENT SHEET #1--DEVELOP AN OPINION ON THE FUTURE OF
LIVESTOCK PRODUCTION

Name _____ Score _____

The world food situation is getting more critical every day. The role livestock will play in providing the world's food supply will depend on public opinion and political decisions, as well as technological developments.

Write a few paragraphs outlining your views on the future of livestock production and the role livestock should play in providing the world's food supply.

BASIC ANIMAL SCIENCE

AG 120 - C

ASSIGNMENT SHEET #2--CONDUCT A COMMUNITY SURVEY ON THE TYPES
OF LIVESTOCK RAISED IN THE AREA

Name _____ Score _____

You have looked at the livestock industry on a national and state level. This assignment is designed to help you get an idea of the type and importance of livestock in your community.

Take an informal survey of your community to find out the types and approximate numbers of different livestock raised in the area. People to ask would be farmers, ranchers, agribusiness people, bankers and state extension people. Use at least three sources.

Sources	Types	Numbers
1.		
2.		
3.		

BASIC ANIMAL SCIENCE

AG 120 - C

UNIT TEST

Name _____ Score _____

1. Match the terms on the right with the correct definitions by placing the appropriate number in the blank provided.

- | | |
|---|----------------|
| ____ a. An actual material provided by an animal that can be eaten, worn or used | 1. Product |
| ____ b. Feed, such as pasture, that is bulky, contains more than 18% crude fiber and is low in energy | 2. Cultivate |
| ____ c. Capacity for change | 3. By-products |
| ____ d. Working land to produce a crop | 4. Elasticity |
| ____ e. Money coming in or received for a product or a service | 5. Concentrate |
| ____ f. A benefit provided by an animal | 6. Flexibility |
| ____ g. Feed, such as grain, high in energy and low in fiber | 7. Receipt |
| ____ h. Ability of a farm operation to withstand changes in the supply or demand | 8. Service |
| ____ i. Products left after the main products have been extracted | 9. Roughage |

2. Name ten types of livestock.

_____, _____, _____
_____, _____, _____
_____, _____, _____

3. Name four products and three services livestock provide.

Products

a. _____	c. _____
b. _____	d. _____

Services

- a. _____ c. _____
- b. _____

4. Identify the sources of Idaho cash farm receipts by writing the source by the appropriate percentage:

- a. 13.1% _____
- b. 1.2% _____
- c. .6% _____
- d. 27.8% _____
- e. 2.1% _____
- f. 54.8% _____
- g. 45.2% _____

5. Identify Idaho's rank in the nation's agriculture for the following crops, livestock and livestock products.

- a. Honey _____
- b. All cattle and calves _____
- c. Milk production _____
- d. American cheese _____
- e. Milk cows _____
- f. Sheep, lambs, wool _____
- g. Barley _____
- h. Potatoes _____
- i. Sugarbeets _____
- j. Hops _____
- k. All mint _____
- l. Wheat _____
- m. Apples _____

6. Distinguish between primary and secondary food sources by placing a one (1) by the primary food source and a two (2) by the secondary source.

_____ a. Food source deriving energy from plants or animals

_____ b. Food source deriving energy directly from the sun

7. Describe reasons for and against using livestock as a food source.

a. Arguments for using livestock as a food source.

b. Arguments against using livestock as a food source.

8. List three specific careers in each of the following areas of livestock industry employment.

a. Farming/Ranching (1) _____

(2) _____

(3) _____

b. Research (1) _____

(2) _____

(3) _____

c. Industry (1) _____

(2) _____

(3) _____

d. Business (1) _____

(2) _____

(3) _____

- e. Education
 - (1) _____
 - (2) _____
 - (3) _____

- f. Communications
 - (1) _____
 - (2) _____
 - (3) _____

- g. Service
 - (1) _____
 - (2) _____
 - (3) _____

9. List five factors to consider when selecting an animal breed.
- a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____

10. List six major traits to consider when selecting breeding animals.
- a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
 - f. _____

11. Match the mating systems to their description. Write the correct number in the blank.
- | | | |
|---|----|-------------------------|
| _____ a. Mating of purebred animals of the same breed | 1. | Outcrossing |
| _____ b. Mating of two animals from different breeds | 2. | Crisscrossing |
| _____ c. Females produced from two-breed crossbreeding are mated with a third breed | 3. | Two-breed crossbreeding |
| _____ d. Mating of closely related animals | 4. | Linebreeding |

- | | | |
|---|----|----------------------|
| _____e. Mating of animals of different families within the same breed | 5. | Purebred breeding |
| _____f. Mating of animals that can be traced to one common ancestor | 6. | Grading up |
| _____g. Females produced from two-breed crossbreeding are mated with male of the same breed as one of the parents of the female | 7. | Inbreeding |
| | 8. | Closebreeding |
| _____h. Mating of purebred sire with a grade female | 9. | Three-breed rotation |
| _____i. Mating of animals that can be traced to two or more common ancestors | | |

BASIC ANIMAL SCIENCE

AG 120 - C

ANSWERS TO TEST

1.

a.	1	e.	7	i.	3
b.	9	f.	8		
c.	6	g.	5		
d.	2	h.	4		

2. Beef, dairy, sheep, swine, dairy goats, horses, rabbits, fish, fur-bearing animals, poultry

3.

Products--Answer should include four of the following:
Meat, eggs, milk, clothing, medicine, fertilizer, miscellaneous products

Services--Answer should include three of the following:
Power, recreation, transportation

4.

a.	Dairy products
b.	Sheep, lambs, wool
c.	Hogs
d.	Cattle and calves
e.	Other livestock
f.	Total crops
g.	Total livestock

5.

a.	11	h.	1
b.	22	i.	3
c.	13	j.	3
d.	5	k.	3
e.	18	l.	8
f.	11	m.	10
g.	1		

6.

a.	2	b.	1
----	---	----	---

7.

a. Answer should include information from the following:

Usable plant energy would otherwise be wasted--Much of the world's land is not cultivated; Forages provide the majority of livestock feed; 95% of all energy fixed by plants cannot be used by man but can be used by ruminants; Animals use otherwise wasted by-products

Animals provide higher quality food--Higher in protein; More complete protein; More digestible protein; More preferred by consumers

Animals provide other needed products such as medicine, fertilizer, and power

Animals increase flexibility of farm operations--Stimulate grain production; Provide elasticity to grain production

b. Livestock provide a secondary food source and therefore use more energy to produce the same amount of food

8. Answer should include three careers in each category:
- a. Manager; Foreman; Herdsman
 - b. Production; Processing; Marketing; New equipment and use
 - c. Food processing; Pesticides and herbicides; Feed manufacturing; Dairy processing
 - d. Agricultural banking; Farm management; Grading and packaging; Marketing
 - e. Agricultural extension specialist; Vocational agriculture instructor; College instructor; Governmental agencies
 - f. Farm reporting; Market reporting; Radio; Television
 - g. Inspection and regulation; Plant and animal quarantine; Foreign service; Agricultural consultant; Veterinary
9. Answer should include five of the following:
- Market demand in area; Type of operation and breeding program; Cost and availability of good seed stock; Quantity and quality of available feedstuffs; Climatic conditions and topography; Personal preference
10. Answer should include six of the following:
- Reproductive performance; Difficulty at birth and birth weight; Nursing or mothering ability; Growth rate; Efficiency of gain; Longevity; Carcass merit; Conformation and evaluation
- 11.
- | | | | |
|----|---|----|---|
| a. | 5 | f. | 4 |
| b. | 3 | g. | 2 |
| c. | 9 | h. | 6 |
| d. | 7 | i. | 8 |
| e. | 1 | | |

SOIL FORMATIONS AND PROPERTIES

AG 120 - D

UNIT OBJECTIVE

After completing this unit, students should be able to list reasons that soils are important, factors affecting soil formation, the physical properties of soil and the three types of soil particles. This knowledge will be demonstrated by completing a unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. List six reasons that soils are important.
2. Label a drawing showing the composition of an average soil.
3. Discuss factors affecting soil formation.
4. Name the four physical properties of soil.
5. Identify soil particles according to size.

SOIL FORMATIONS AND PROPERTIES

AG 120 - D

SUGGESTED ACTIVITIES

- I. Suggested activities
 - A. Order materials to supplement unit.
 1. Literature
 - a. *Conserving Soil*, 16-page pamphlet including spirit masters and overhead transparencies. Available from: U.S. Department of Agriculture, Soil Conservation Service.
 - b. *Experiments in Soil Science*, 259 pages, VEP, Cal Poly State University, San Luis Obispo, CA 93407; approximate cost \$10.75, order no. 1-522-820.
 - c. *Idaho Soils Atlas*, 148 pages of Idaho soil series with color photos; available from University Press of Idaho, University of Idaho, Moscow, ID 83843.
 - d. *Soils*, instructional unit available from: Agri-Farm Publications, Inc., 1019 Market Street, Gowrie, Iowa 50543; approximate cost \$19.50, order no. 211. Also available, soil class activity packet, approximate cost \$8.25, order no. 1108; and soil guide, approximate cost \$11.30, order no. 2106.
 - e. *Teaching Soil and Water Conservation, A Classroom and Field Guide*, a pamphlet of 12 student activities. Available from: U.S. Department of Agriculture, Soil Conservation Service, no. PA-341.
 2. Filmstrips, slideshows, etc.
 - a. *Introduction to Soils*, 27 slides and cassette; available from Hobar Publications, 1234 Tiller Lane, St. Paul, MN 55112; approximate cost \$36.40, order no. D14.
 - b. *Soil and Its Properties*, slides and script, available from Ohio Agricultural Education Curriculum Material Service, Room 254, 2120 Fyffe Rd., Ohio State University, Columbus, OH 43210; approximate cost \$16.75, order no. 50085.
 - c. *Soil Color*, 47-frame filmstrip available from Vocational Agriculture Service, University of Illinois, 1401 S. Maryland Dr., Urbana, IL 61801; approximate cost \$7.05, order no. F708.
 - d. *Soil Components*, 34 slides and 22-minute cassette; available from Hobar Publications, 1234 Tiller Lane, St. Paul, MN 55112; approximate cost \$46.80, order no. D15.

- e. *Soil Moisture*, 21 slides and 38-minute cassette; available from Hobar Publications, 1234 Tiller Lane, St. Paul, MN 55112; approximate cost \$41.60, order no. D18.
- f. *Soil Structure*, 22 slides and 28-minute cassette; available from Hobar Publications, 1234 Tiller Lane, St. Paul, MN 55112; approximate cost \$41.60, order no. D17.
- g. *Soil Texture*, 44 slides and 34-minute cassette; available from Hobar Publications, 1234 Tiller Lane, St. Paul, MN 55112; approximate cost \$83.20, order no. D16.

- B. Make transparencies.
- C. Provide students with objective sheet.
- D. Provide students with information.
- E. Discuss unit and specific objectives.
- F. Discuss information.
- G. Review and give test.
- H. Reteach and retest if necessary.

II. Instructional materials

- A. Objective sheet
- B. Suggested activities
- C. Information sheet
- D. Transparency masters
 - 1. TM 1--Why Soils Are Important
 - 2. TM 2--Soil-Plant-Animal Cycle
 - 3. TM 3--Composition of Average Soil
 - 4. TM 4--Soil Origins
 - 5. TM 5--Physical Breakdown of Rocks
 - 6. TM 6--The Relative Sizes of Sand, Silt and Clay Particles
 - 7. TM 7--Soil Texture
 - 8. TM 8--Characteristics of the Various Soil Classes
 - 9. TM 9--Permeability Related to Nutrient Capacity

- E. Test
- F. Answers to test

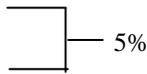
III. Unit references

- A. *Agronomy Curriculum Workshop*, Iowa State University, Department of Agricultural Education, Ames, Iowa, 1980.
- B. Cooper, Elmer L., *Agriscience Fundamentals and Applications*, Delmar Publishers, Inc., Albany, New York, 1990.
- C. *Crops, Soils, and Fertilizers Resource Manual, Vo-Ed No. 73*, University of Idaho, Department of Agricultural Education, Moscow, Idaho, 1978.
- D. Knuti, Williams, and Hide, *Profitable Soil Management*, 4th Edition, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1984.
- E. Loreen, C.O., *Our Soils: Their Management and Conservation*, Northwest Vocational Curriculum Management Center, Olympia, Washington, 1975.
- F. *Oklahoma Curriculum Guides*, Oklahoma State University and the Oklahoma State Board for Vocational Education, Stillwater, Oklahoma.
- G. *Resource Unit on Soils for Core Curriculum*, Montana State University, Agricultural and Industrial Education, Bozeman, Montana, 1975.
- H. *Resource Unit on Soils for Core Curriculum*, No. 10, University of Arizona, Department of Agricultural Education, Tucson, Arizona, 1970.
- I. *Soils Unit for the Plant Science Core Curriculum*, Vol 9, No. 7, University of Missouri-Columbia, Instructional Materials Laboratory, Columbia, Missouri.
- J. *Texas Curriculum Guides*, Vocational Instruction Services, Texas State Board for Vocational Education.
- K. *Western Fertilizer Handbook*, 6th Edition, California Fertilizer Association, Interstate Printers and Publishers.

SOIL FORMATIONS AND PROPERTIES

AG 120 - D

INFORMATION SHEET

- I. Importance of soils (Transparencies 1, 2)
- A. Plants grow in and on soil
 - B. Plants support animal life
 - C. Plants and animals support human life
 - D. World population is rapidly increasing and/or has inadequate nutrition
 - E. Supply of productive soil is limited
 - F. Improved soil management could feed more people
- II. Soil composition (Transparency 3)
- A. Solids--Approximately 50%
 1. Mineral matter 45%
 2. Organic matter
 3. Living organisms
 - B. Pore space--Approximately 50%
 1. Water – 25%
 2. Air – 25%
- III. Factors affecting soil formation (Transparencies 4, 5)
- A. Parent materials (Transparency 4)
 1. Residual
 - a. Igneous--Derived from molten materials in the center of the earth's crust (granitic, basaltic)
 - b. Metamorphic--Formed from the pre-existing rocks through the action of extreme heat and pressure (quartzite, schist)
 - c. Sedimentary--Formed from sediments deposited by wind, water, or ice (shale, sandstone, limestone)

2. Transported
 - a. Wind (loess)
 - b. Water (alluvial)
 - c. Glaciers (glacial drift)
 - d. Gravity (colluvial)
- B. Decomposition by weathering
 1. Physical weathering (Transparency 5)
 - a. Wind
 - b. Plants and animals
 - c. Heating and cooling
 - d. Freezing and thawing
 - e. Wetting and drying
 2. Chemical weathering--Chemical reactions of water, oxygen, and carbon dioxide
 3. Biological weathering--Micro-organisms secrete a gummy substance which aids in decomposing rocks
- C. Climate
 1. Temperature
 2. Rainfall
- D. Vegetation and organisms
 1. Plants--Lichens, mosses, weeds, grasses, shrubs, trees
 2. Animals--Bacteria, fungi, large animals (cattle, horses, etc.), birds, man

E. Slope and drainage

1. Hillsides

- a. Thin topsoil due to soil loss by erosion
- b. Reduced plant growth
- c. Low organic matter
- d. Less leaching (due to runoff)

2. Flat lands

- a. Deeper topsoil
- b. More vegetation
- c. High organic matter
- d. Greater leaching

IV. Physical properties of soil

- A. Soil texture
- B. Soil structure
- C. Soil depth
- D. Soil color

V. Soil particles (Transparencies 6, 7, 8, 9)

A. Sand

1. Diameter--2.00 to 0.05 mm
2. Coarse and gritty
3. When moist, individual grains can be seen
4. Its presence decreases water-holding capacity
5. Its presence decreases nutrient holding capacity

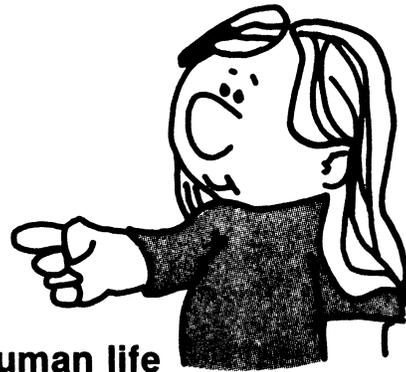
B. Silt

1. Diameter--.05 to .002 mm
2. Its presence increases water-holding capacity
3. Its presence increases nutrient holding capacity
4. Moderate to high exchange capacity
5. Feels smooth and velvety

C. Clay

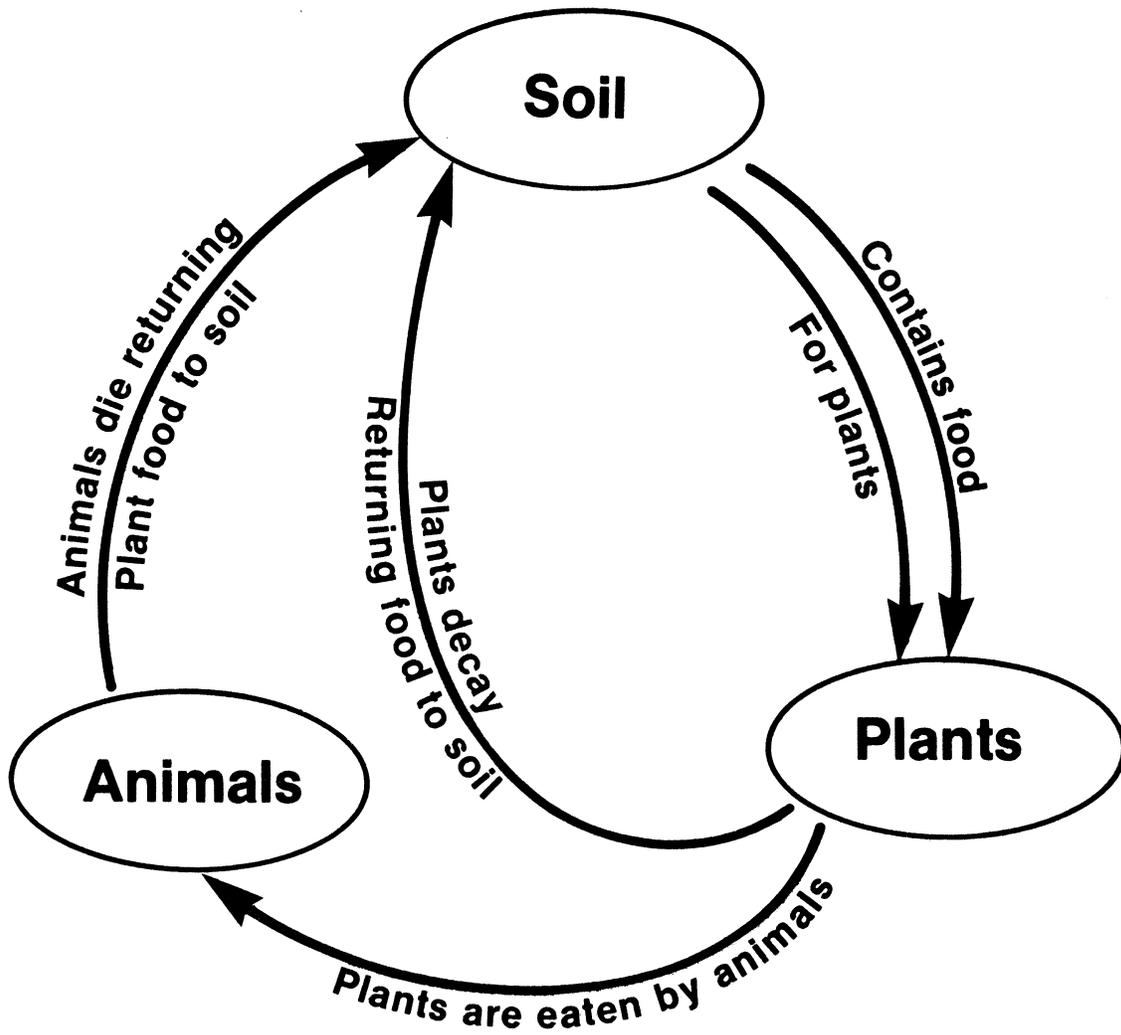
1. Diameter--less than .002 mm
2. Its presence increases water-holding capacity
3. Its presence increases nutrient holding capacity
4. High to very high exchange capacity

Why Soils Are Important

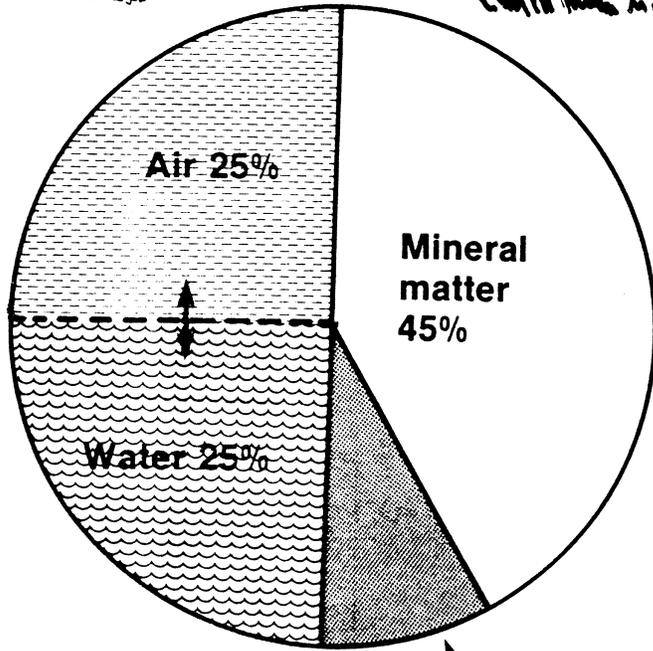
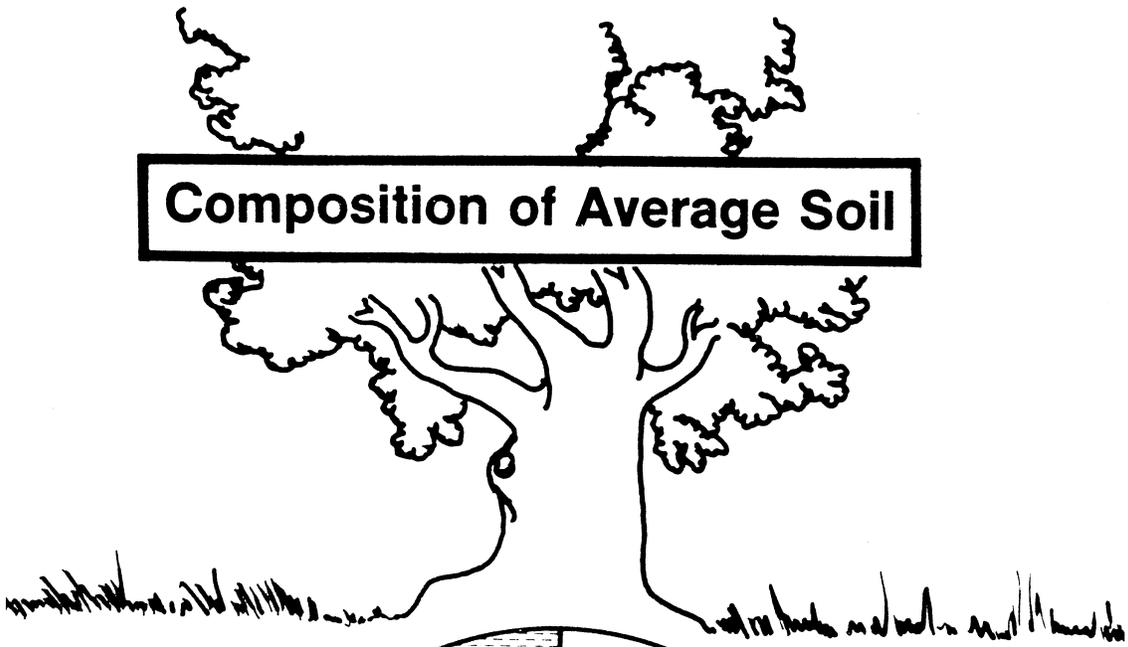


- 1. Plants grow in and on soil**
- 2. Plants support animal life**
- 3. Plants and animals support human life**
- 4. World population is rapidly increasing and/or has inadequate nutrition**
- 5. Supply of productive soil is limited**
- 6. Improved soil management could feed more people**

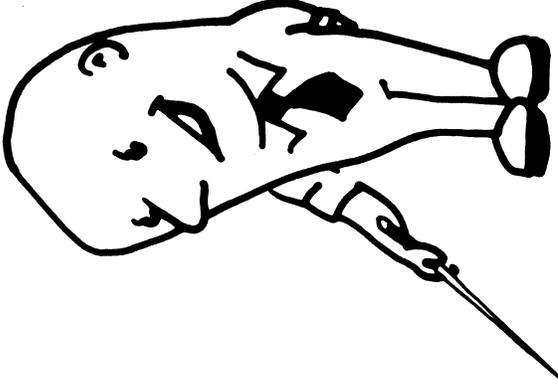
Soil-Plant-Animal-Cycle



Composition of Average Soil



Organic matter 5%
and living organisms.



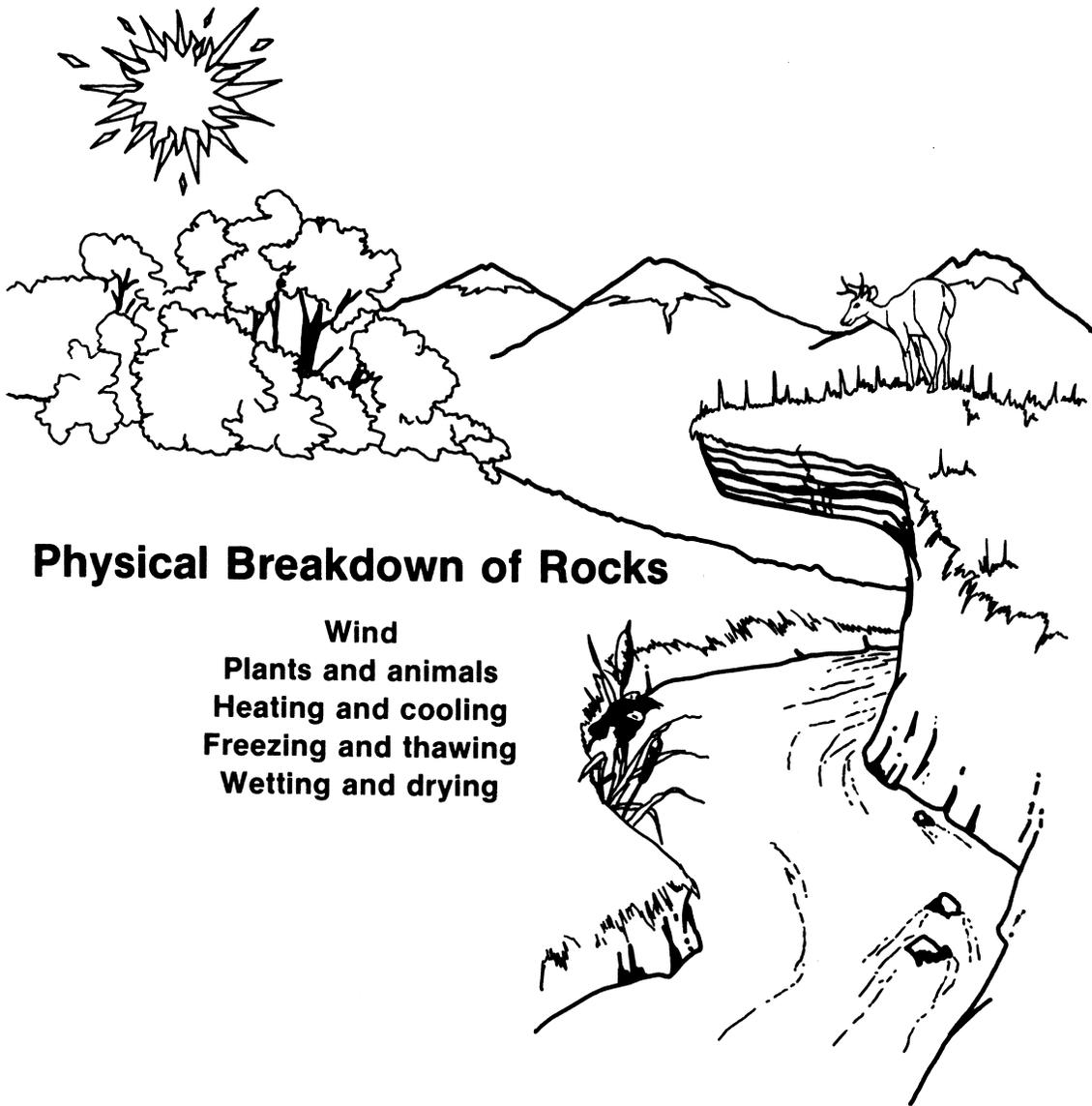
Soil Origins

1. Residual

- a. Igneous
 - b. Sedimentary
 - c. Metamorphic
 - d. Organic - peat (from plant life)
- } From rock

2. Transported

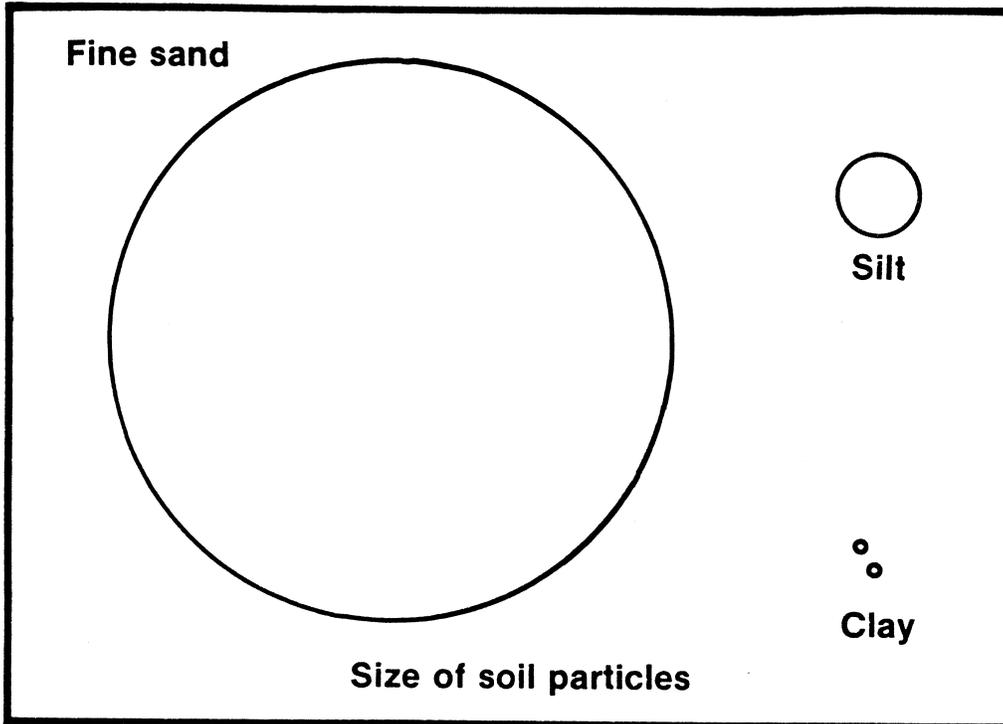
- a. Wind (loess)
- b. Water (alluvial)
- c. Ice (glacial till)



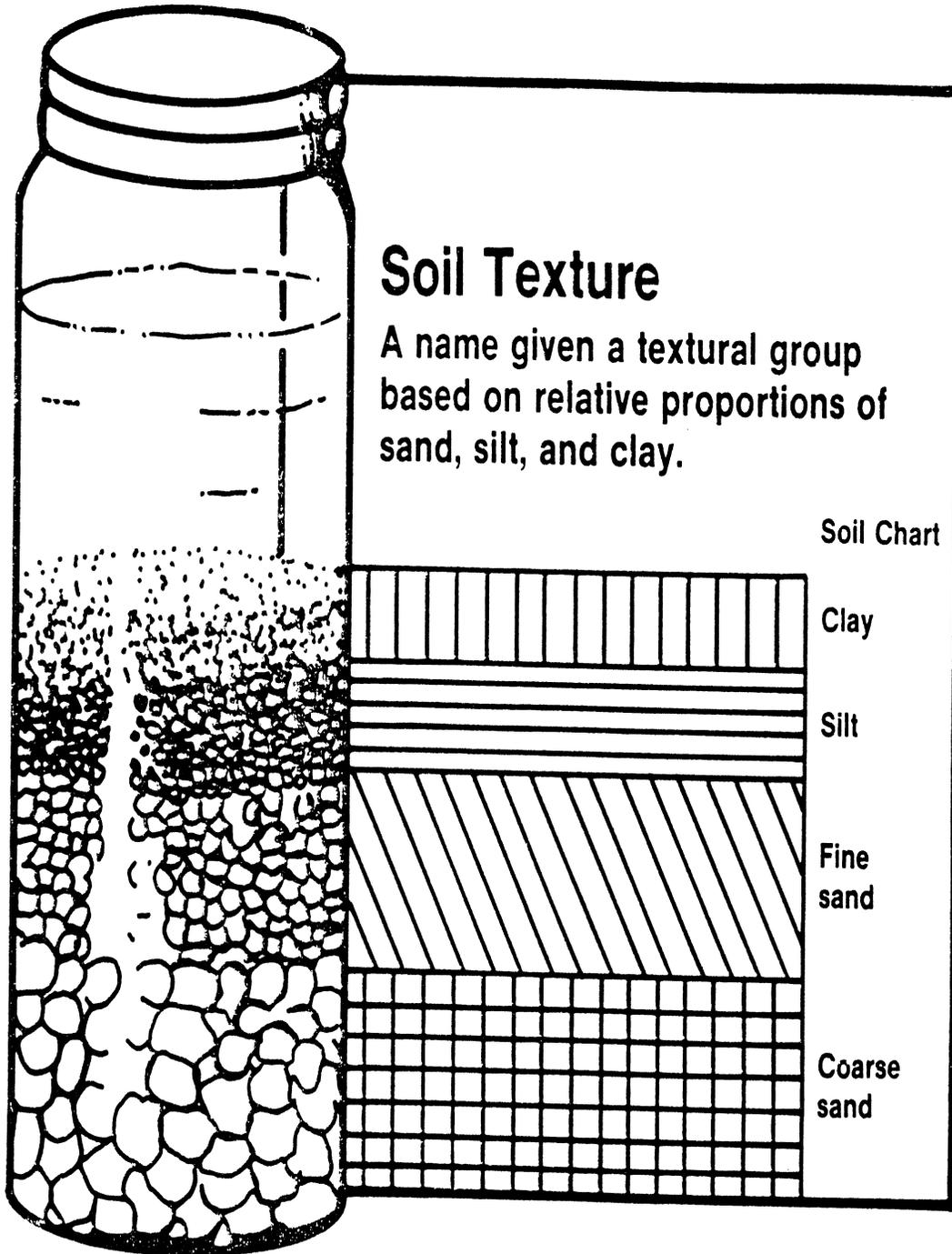
Physical Breakdown of Rocks

- Wind**
- Plants and animals**
- Heating and cooling**
- Freezing and thawing**
- Wetting and drying**

The Relative Sizes of Sand, Silt, and Clay Particles



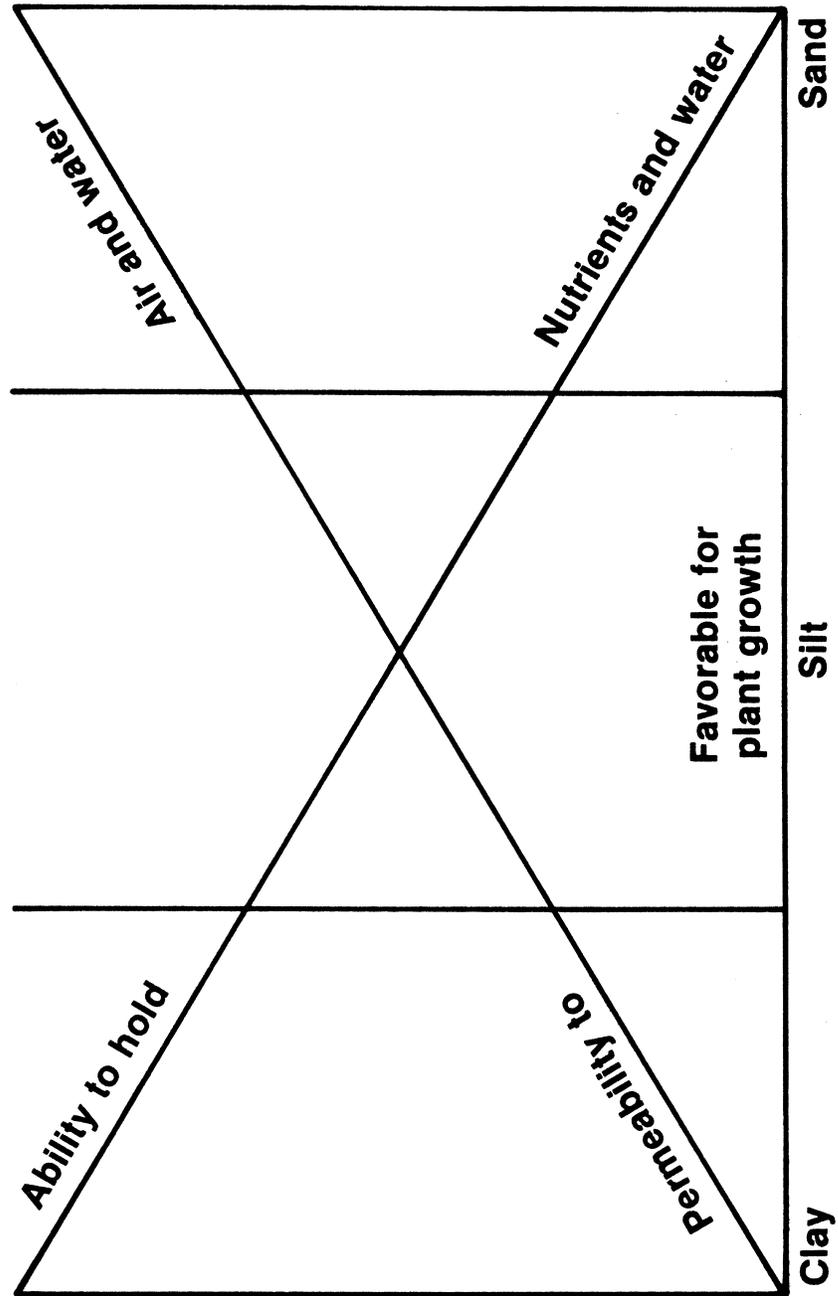
Name	Size, diameter in millimeters
Fine gravel	2 - 1
Coarse sand	1.00 - 0.50
Medium sand	0.50 - 0.25
Fine sand	0.25 - 0.10
Very fine sand	0.10 - 0.05
Silt	0.05 - 0.002
Clay	Less than 0.002



Characteristics of the Various Soil Classes

Characteristics	Sand	Silt	Clay
Looseness	Good	Fair	Poor
Air space	Good	Fair to Good	Poor
Drainage	Good	Fair to Good	Poor
Tendency to form clods	Poor	Fair	Good
Ease of working	Good	Fair to Good	Poor
Moisture holding capacity	Poor	Fair to Good	Good
Fertility	Poor	Fair to Good	Fair to Good

Permeability Related to Nutrient Capacity



SOIL FORMATIONS AND PROPERTIES

AG 120 - D

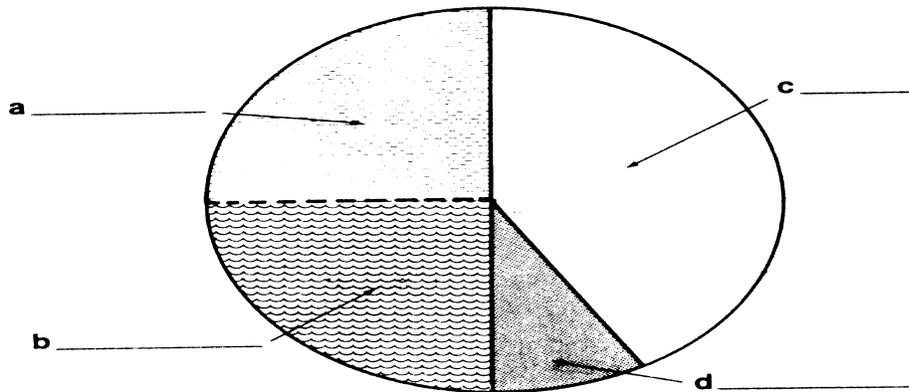
UNIT TEST

Name _____ Score _____

1. List six reasons that soils are important.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

2. Label the drawing below showing the composition of an average soil. Write the correct names in the blanks.



3. Discuss factors affecting soil formation.

4. Name the four physical properties of soils.

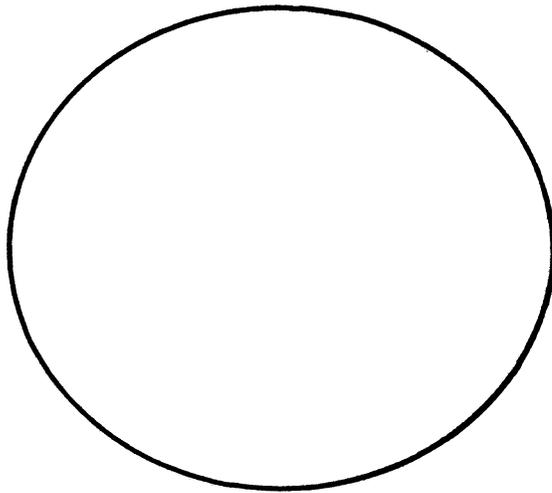
a. _____

b. _____

c. _____

d. _____

5. Identify the soil particles according to size.



a _____

b _____



c _____

SOIL FORMATIONS AND PROPERTIES

AG 120 - D

ANSWERS TO TEST

1. Answer should include the following:
Plants grow in and on soil; Plants support animal life; Plants and animals support human life; World population is rapidly increasing and/or has inadequate nutrition; Supply of productive soil is limited; Improved soil management could feed more people
2.
 - a. Air
 - b. Water
 - c. Mineral matter
 - d. Organic matter and living organisms
3. Discussion should include:
 - a. Parent materials
 1. Residual: Igneous--Derived from molten materials in the center of the earth's crust; Metamorphic--Formed from the pre-existing rocks through the action of extreme heat and pressure; Sedimentary--Formed from sediments deposited by wind, water or ice
 2. Transported by wind, water, glaciers and gravity
 - b. Decomposition by weathering: Physical weathering such as wind, plants and animals, heating and cooling, freezing and thawing, wetting and drying; Chemical weathering (Chemical reactions of water, oxygen and carbon dioxide); Biological weathering (Micro-organisms secrete a gummy substance which aids in decomposing rocks)
 - c. Climate--temperature, rainfall
 - d. Vegetation and organisms: Plants (Lichens, mosses, weeds, grasses, shrubs, trees); Animals (Bacteria, fungi, large animals, birds, man)
 - e. Slope and drainage: Hillsides (Thin topsoil due to soil loss by erosion; Reduced plant growth; Low organic matter; Less leaching); Flat lands (Deeper topsoil; More vegetation; High organic matter; Greater leaching)
4.
 - a. Soil structure
 - b. Soil texture
 - c. Soil depth
 - d. Soil color
5.
 - a. Silt
 - b. Sand
 - c. Clay

BASIC PLANT SCIENCE

AG 120 - E

UNIT OBJECTIVE

After completing this unit, students should be able to list the important plant processes and label a drawing showing the four primary parts of a plant. Students should be able to explain the processes photosynthesis, respiration, absorption, transpiration, and fertilization. This knowledge will be demonstrated by completing the unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completing this unit, the student should be able to:

1. Label a drawing showing the four primary parts of a plant.
2. Match functions of plant parts to the correct part.
3. Name the three stages of plant growth and development.
4. Name three requirements for good seed germination.
5. Select from a list factors that cause poor seed germination.
6. Arrange in order the stages of germination for a monocot and dicot.
7. Name the four most important plant processes in food manufacture and growth.
8. Select from a list reasons photosynthesis is the most important process in the world.
9. Explain the process of photosynthesis.
10. Explain the process of respiration.
11. Classify characteristics as that of photosynthesis or respiration.
12. Explain the process of absorption by plant roots.
13. Explain the process of transpiration.
14. Name the two means of reproduction by plants.
15. Match the types of pollination to the correct descriptions.
16. Name three ways pollen is moved.
17. Explain the process of fertilization in plants.

BASIC PLANT SCIENCE

AG 120 - E

SUGGESTED ACTIVITIES

- I. Suggested activities
 - A. Order materials to supplement unit.
 1. Literature
 - a. *Agronomy Curriculum Materials Packet*, 232 pages; available from: IAVIM, 208 Davidson Hall, Iowa State University, Ames, Iowa 50011; approximate cost \$10.00, order no. 214.
 - b. *Crop Production*, 15 transparency masters; available from IAVIM, 208 Davidson Hall, Iowa State University, Ames, Iowa 50011; approximate cost \$2.25, order no. 517.
 2. Filmstrips, slideshows, etc.
 - a. *Agronomy*, computer program; available from: IAVIM, 208 Davidson Hall, Iowa State University, Ames, Iowa 50011; approximate cost \$15.00, order no. 902.
 - B. Make transparencies.
 - C. Provide students with objective sheet.
 - D. Provide students with information sheet.
 - E. Discuss unit and specific objectives.
 - F. Discuss information sheet.
 - G. Review and give test.
 - H. Reteach and retest if necessary.
- II. Instructional materials
 - A. Objective sheet
 - B. Suggested activities
 - C. Information sheet
 - D. Transparency masters
 1. TM 1--Primary Parts of a Plant
 2. TM 2--Functions of Leaves, Stems, Roots, and Flowers

3. TM 3--Stages in Germination and Emergence of Corn
4. TM 4--Stages in Germination and Emergence of a Bean Seed
5. TM 5--Important Plant Processes
6. TM 6--Importance of Photosynthesis
7. TM 7--Photosynthesis
8. TM 8--Photosynthesis and Respiration in Relation to Dry Weight
9. TM 9--Transpiration
10. TM 10--Root Hairs, Soil Particles, and Moisture
11. TM 11--How a Water Solution From the Soil Moves Within the Root
12. TM 12--Self-pollination and Cross-pollination

E. Test

F. Answers to test

III. Unit references

- A. Cooper, Elmer L., *Agriscience Fundamentals and Applications*, Delmar Publishers, Inc., Albany, New York, 1990.
- B. Delorit, R.J., et al., *Crop Production*, 4th Edition, Englewood Cliffs, New Jersey, Prentice-Hall, Inc.
- C. Fridline, C.R., *Plant Growth and Development*, Ohio State University, Ohio Agricultural Education Curriculum Materials Service, Columbus, Ohio, 1980.
- D. Fridline, C.R., *Seed Production of Corn, Small Grains, and Soybeans*, Ohio Agricultural Education Curriculum Materials Service, Columbus, Ohio, 1977.
- E. Hudson, H.T., et al., *Plant Science - Growth, Development and Utilization of Cultivated Plants*, 2nd Edition, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1988.
- F. Janick, J., et al., *Plant Science*, 2nd Edition, W.H. Freeman and Co., San Francisco, California, 1974.
- G. Raven, P.H., et al., *Biology of Plants*, 3rd Edition, Worth Publishers, Inc., New York, New York, 1981.

BASIC PLANT SCIENCE

AG 120 - E

INFORMATION SHEET

- I. Primary parts of a plant (Transparency 1)
 - A. Roots
 - B. Stems
 - C. Leaves
 - D. Flowers

- II. Functions of plant parts (Transparency 2)
 - A. Roots
 - 1. Absorb water and nutrients
(Note: Most of the absorption takes place through root hairs. The rate at which water is absorbed depends on: (1) the rate at which water is lost from leaves (transpiration), (2) the amount of water in the soil, and (3) the amount of root surface in contact with soil particles.)
 - 2. Anchor and support plants
(Note: The root must anchor the plant to the extent that wind, etc. cannot knock it down.)
 - 3. Storage of food
(Note: Some plants store foods they have manufactured in the roots. Examples are radishes, carrots, sweet potatoes, and sugar beets.)
 - B. Stems
 - 1. Support leaves, flowers, fruit and seeds
 - 2. Conduct water, nutrients and food
(Note: The stem conducts water and minerals in solution from the root system through the xylem tissue to the leaves. It also conducts food made in the leaves through the phloem tissue to the parts of the plant where it is growing or food is being stored.)
 - 3. Storage of food
(Note: Examples of plants that store food in the stem include potatoes and asparagus.)
 - C. Leaves
 - 1. Manufacture food for the plant
(Note: Photosynthesis is the process by which leaves make food from carbon dioxide and water in the presence of sunlight.)

2. Necessary for transpiration
 3. Storage of food
(Note: Examples of plants that store food in the leaves include lettuce, cabbage, celery, rhubarb, and onions.)
- D. Flowers
1. Serve as site of reproduction
 2. Storage of food
(Note: Examples of plants that store food in flowers include grains, fruits, nuts, berries, broccoli and cauliflower.)
- III. Stages of plant growth and development
- A. Seed germination and seedling growth
 - B. Vegetative
 - C. Reproduction
- IV. Requirements for good seed germination
- A. Proper temperature
(Note: This requirement varies for different crops. Cereals will show some germination at 32°F, while corn will not show any germination until 48°F.)
 - B. Sufficient moisture
(Note: This requirement varies for different crops. Cereals will germinate when their moisture content is about 50%. Soybeans will not germinate until their moisture content is about 75%. The range is 26% to 75% for most agronomic crops.)
 - C. Ample supply of oxygen
(Note: Germination will not occur if oxygen is not available for crops such as small grains and peas. Rice seed can germinate in the absence of oxygen.)
- V. Factors that cause poor seed germination
- A. Mechanical injury to seed (cracked grain)
 - B. Disease
 - C. Storage conditions
(Note: Temperature and humidity are important considerations for storage of crop seeds.)
 - D. Age of seed
(Note: Germination percentages will decrease as the age of the seed increases.)
 - E. Soil temperature too cold

- F. Hard seed coat
(Note: Some plants (hard-seeded legumes) produce seeds with a hard seed coat. The seed coat will not allow moisture and oxygen to enter the seed and bring about germination.)
 - G. Soil moisture insufficient
 - H. Planting too deep
 - I. Chemical damage
(Note: Reduced germination percentages may result if seeds come in contact with chemicals such as fertilizers or certain herbicides.)
 - J. Crusting of soil
- VI. Stages of germination (Transparencies 3, 4)
- A. Monocot (corn, small grains) (Transparency 3)
 1. Absorption of water and oxygen into the seed
 2. The seed coat ruptures and the primary root (radicle) begins to grow downward
 3. The epicotyl elongates, the coleoptile pierces the soil as it grows upward
(Note: The leaves of the coleoptile are rolled into tight, pointed buds.)
 4. The coleoptile emerges
(Note: When the coleoptile emerges, the first node on the stem is still underground. It is from this node that the secondary root system develops.)
 5. The coleoptile unfolds
(Note: When the leaves of a seedling emerge above the soil surface and unfold, the plant is then capable of manufacturing its own food.)
 - B. Dicot (beans, peas) (Transparency 4)
 1. Absorption of water and oxygen into the seed
 2. The seed coat ruptures and the primary root (radicle) begins to grow downward
 3. The hypocotyl curves into a loop and pushes through the soil, pulling the cotyledons toward the soil surface
 4. Emergence of seedling occurs
(Note: The curve in the hypocotyl straightens out immediately after emergence so the plant will stand correctly.)

5. The cotyledons spread apart and the stem tip is exposed to air and sunlight
(Note: When the first pair of leaves has emerged, the plant is then capable of manufacturing its own food.)

VII. Important plant processes in food manufacture and growth (Transparency 5)

- A. Photosynthesis
- B. Respiration
- C. Transpiration
- D. Absorption

VIII. Reasons photosynthesis is the most important process in world (Transparency 6)

- A. Plants produce food by photosynthesis
- B. Plants produce food used directly by man
- C. Plants produce food used indirectly by man through meat and milk produced by livestock

(Note: Green plants, through the process of photosynthesis, are the basic factory of the world, on which all life is dependent. A corn plant produces about 5 grams of sugar during 14 hours of sunlight. During a 100-day period, a 20-acre field of corn with 20,000 plants per acre could produce two and one-half tons of sugar. An estimated 150 billion tons of sugars are produced by plants each year by photosynthesis. This would be a pile of sugar 40 miles square at the base and 2 miles high at the peak.)

IX. Process of photosynthesis (Transparency 7)

- A. Carbon dioxide (CO_2) enters the leaf from the surrounding air through the stoma

(Note: After CO_2 enters the stoma, it enters the intercellular spaces of the mesophyll tissue. Here it comes in contact with the wet walls of the mesophyll cells. The CO_2 dissolves in the water of the mesophyll cells.)
- B. Water moves from the soil into the root, stems and leaves through the xylem tissue
- C. The molecules of water (H_2O) and carbon dioxide (CO_2) are synthesized (put together) in the chlorophyll of a plant with energy from sunlight
- D. The end result is the formation of sugar, which is transported by the phloem tissue to the part of the plant where it is used

(Note: The process can be illustrated by the chemical equation which is written: 6 parts carbon dioxide (6 CO_2) + 6 parts water ($6 \text{ H}_2\text{O}$) + 672 K. cal of radiant energy (sunlight) in the presence of chlorophyll of plants = sugar ($\text{C}_6\text{H}_{12}\text{O}_6$) retained by the plant + oxygen (6 O_2) given off into the atmosphere.)

- X. Process of respiration
(Note: As with all living things, plants require energy to carry out their growth and development process. This energy comes from a very complex process called respiration. In a sense, respiration in plants is the reverse of photosynthesis as sugar is broken down to produce energy.)
- A. Sugar is broken down to produce energy for essential plant functions
 - B. Respiration consumes oxygen (O_2) and glucose ($\text{C}_6\text{H}_{12}\text{O}_6$)
 - C. Respiration gives off carbon dioxide (CO_2) and water (H_2O)
(Note: The process can be illustrated by the chemical equation which is written: Sugar ($\text{C}_6\text{H}_{12}\text{O}_6$) + 6 parts oxygen (6 O_2) = six parts carbon dioxide (6 CO_2) + 6 parts water ($6 \text{ H}_2\text{O}$.)

- XI. Relationship between photosynthesis and respiration (Transparency 8)

<u>Photosynthesis</u>	<u>Respiration</u>
1. A building process (+)	1. A destruction process (-)
2. Sugars manufactured	2. Sugars consumed
3. CO_2 is consumed	3. CO_2 is given off
4. Oxygen is given off	4. Oxygen is consumed
5. Requires light	5. Goes on day and night
6. Only takes place in cells containing chlorophyll	6. Carried on in all cells
7. Sugar ($\text{C}_6\text{H}_{12}\text{O}_6$) is the end product	7. Energy produced for plant functions is the end product

(Note: A green plant grown in the dark loses weight because its stored foods are respired and nothing is added through photosynthesis.)

- XII. Process of absorption
- A. The soil solution enters the root hairs by the process of osmosis
(Note: The soil solution is composed of water and minerals in solution.)
 - B. After the soil solution is absorbed by the root hairs, it moves through the epidermal cells, cortex, and phloem to the xylem

C. The xylem conducts the solution to other parts of the plant

XIII. Process of transpiration (Transparencies 9, 10, 11)

A. Water enters plant through root hairs

B. Water passes to xylem and up the stem to the leaves

C. A small amount of water is used in photosynthesis

D. The remainder is lost by transpiration

(Note: Water loss occurs mainly through the stoma on the leaves. When stoma are open, water vapor which is low in carbon dioxide escapes from the leaf and is replaced by dry air higher in carbon dioxide.)

XIV. Means of reproduction

A. Asexual

B. Sexual

(Note: The end result of sexual reproduction in plants is the seed. Seeds are of importance in production of a new crop and as food for both people and livestock.)

XV. Types of pollination (Transparency 12)

A. Self-pollination--Transfer of pollen from the anthers to the stigma of the same flower on the same plant

B. Cross-pollination--Transfer of pollen from the anthers of one plant to the stigmas of another plant

(Note: Cross-pollination usually requires a bee or other insect to transfer the pollen from one plant to the other.)

XVI. Pollen is moved by

A. Gravity

B. Wind

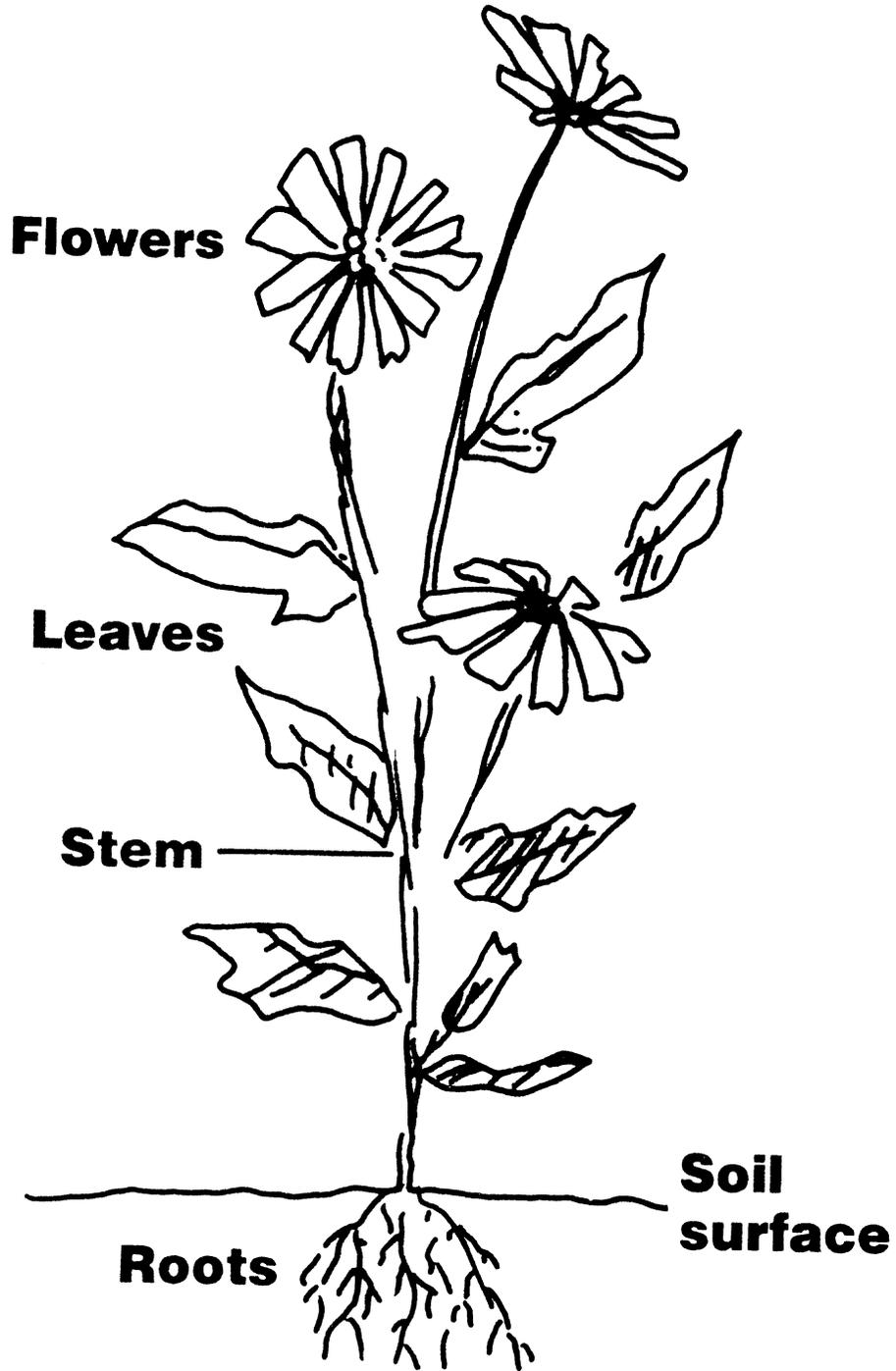
C. Insects

D. Birds

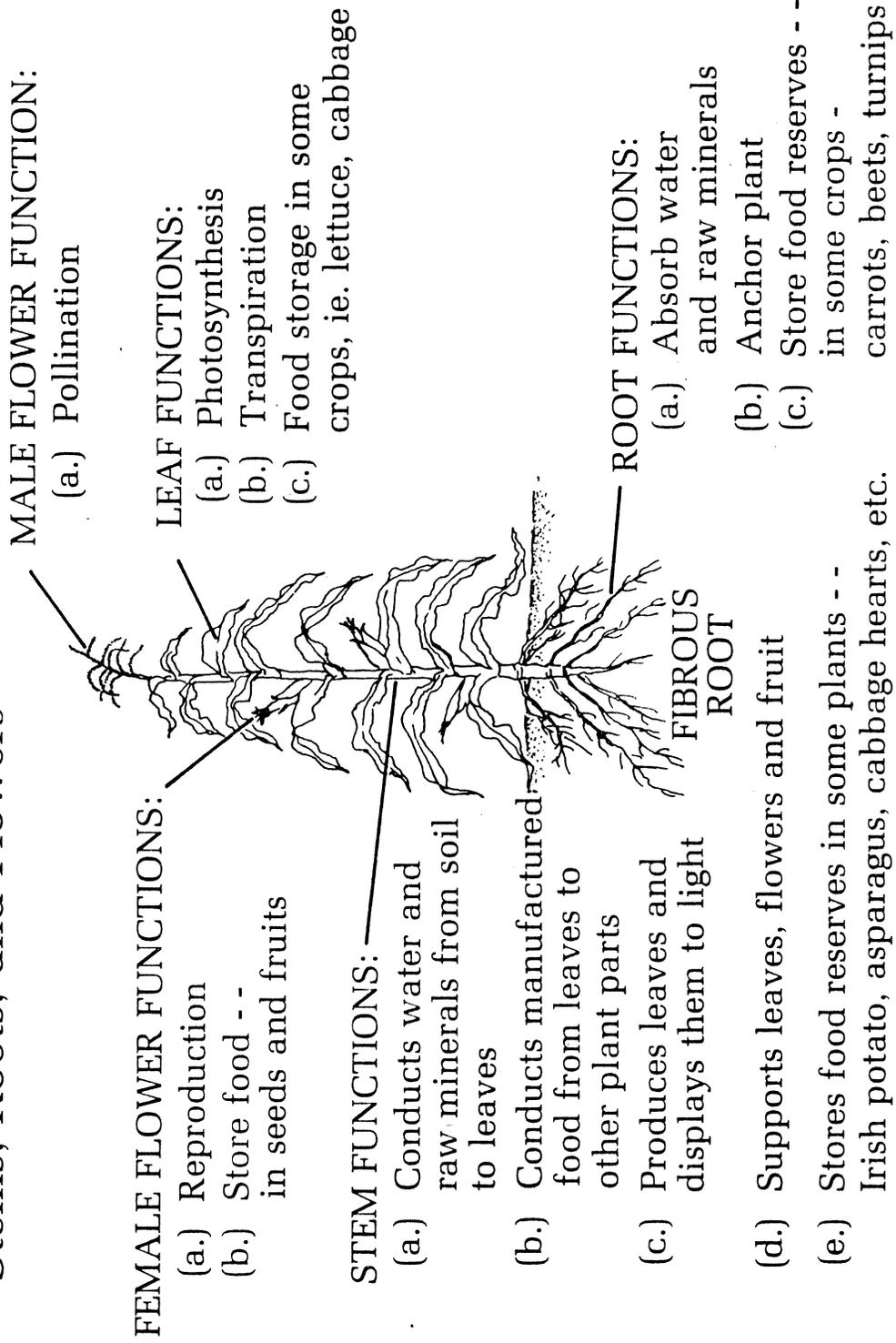
E. Man

XVII. Fertilization--After a pollen grain alights on the surface of the stigma, it forms a pollen tube. The pollen tube grows down the style to the ovary. It penetrates the ovary and the male cell unites with the ovule. This is called fertilization, the union of the male and female cells. The result is a zygote. Cell division takes place and the zygote becomes the embryo of the seed.

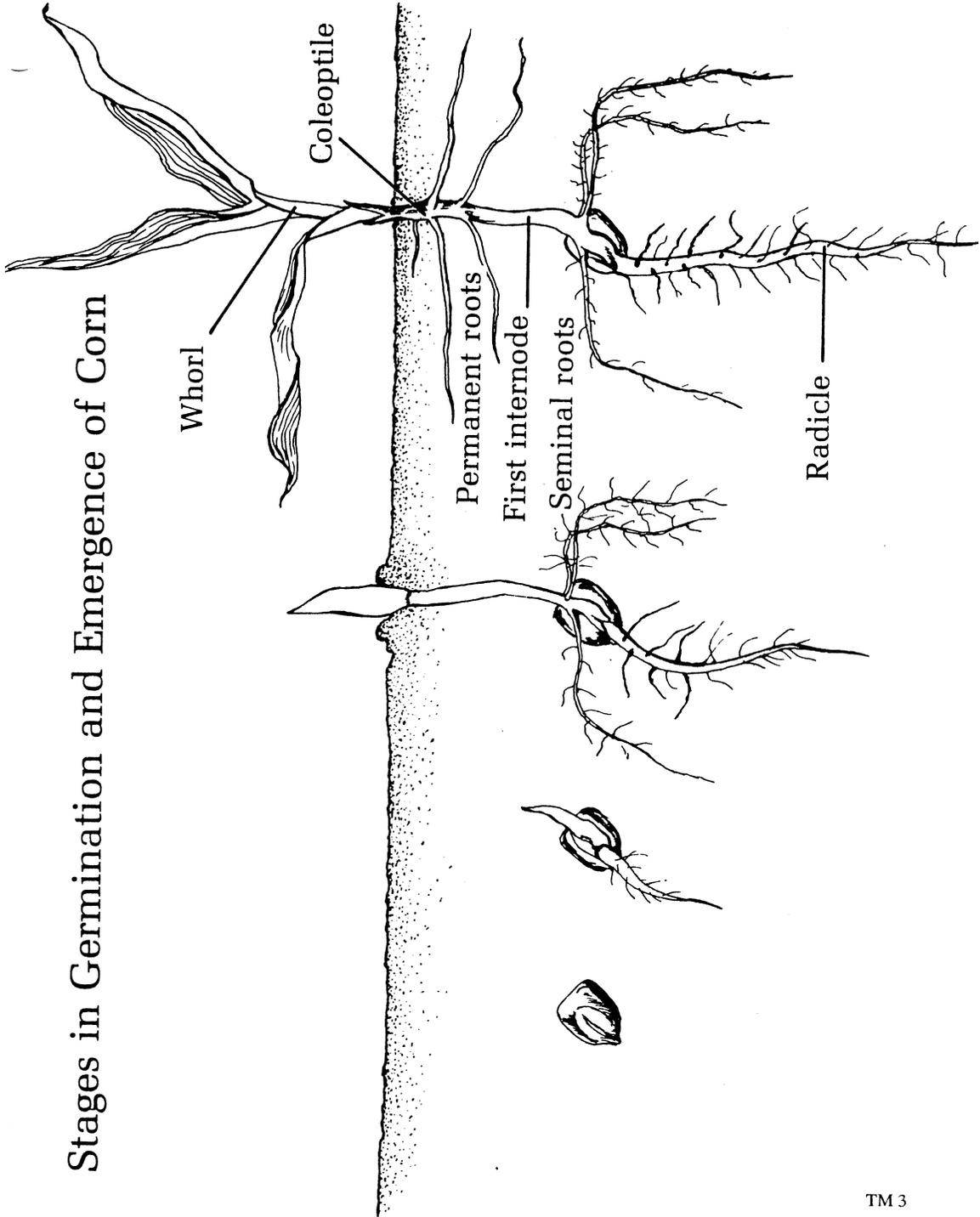
Primary Parts of a Plant



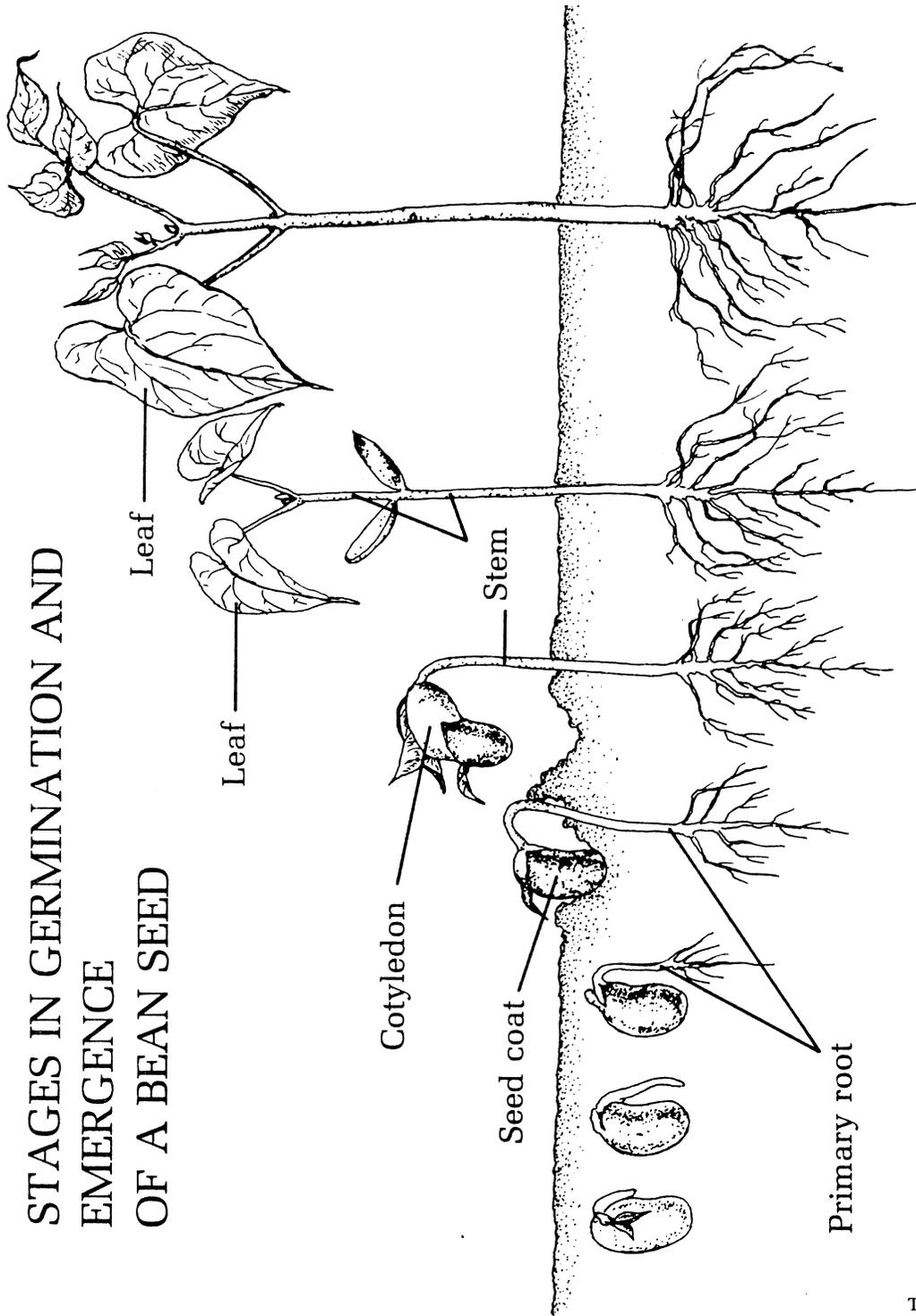
Functions of Leaves, Stems, Roots, and Flowers



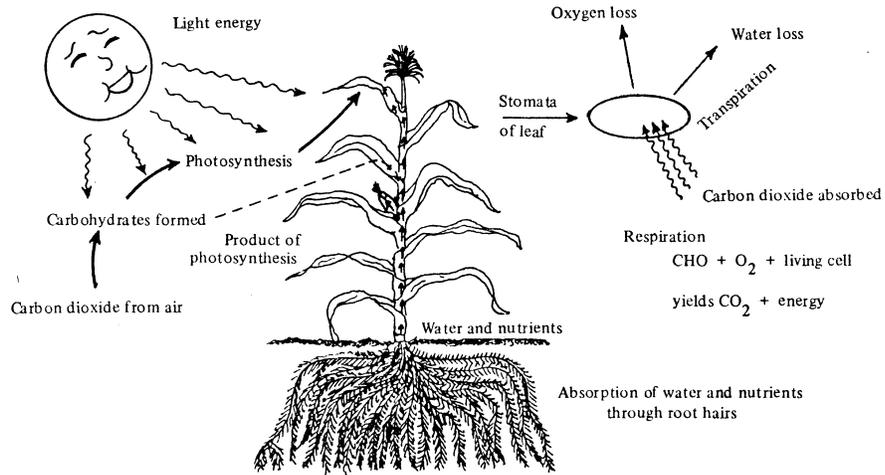
Stages in Germination and Emergence of Corn



STAGES IN GERMINATION AND EMERGENCE OF A BEAN SEED



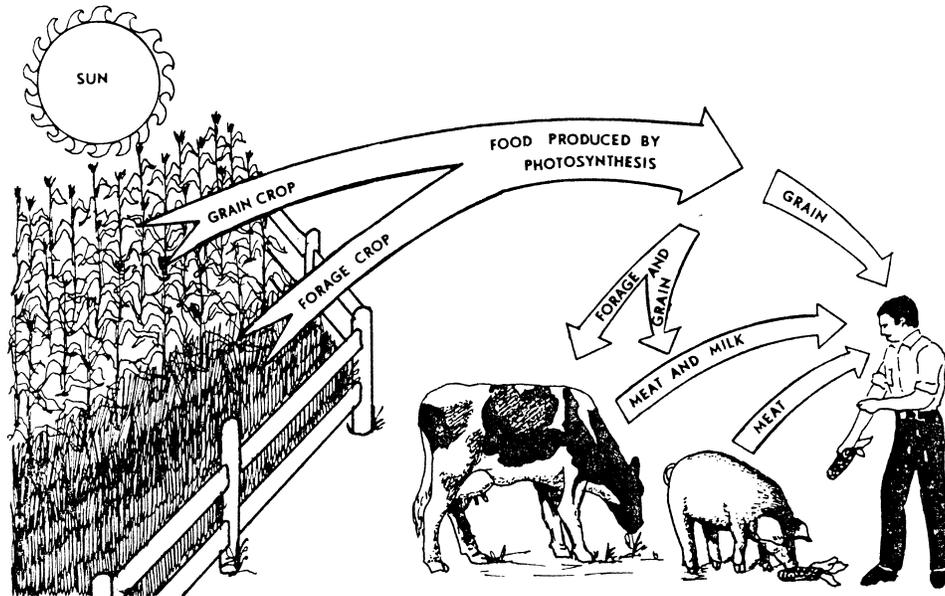
Important Plant Processes



A series of events must take place for plant growth to occur. Important ones are:

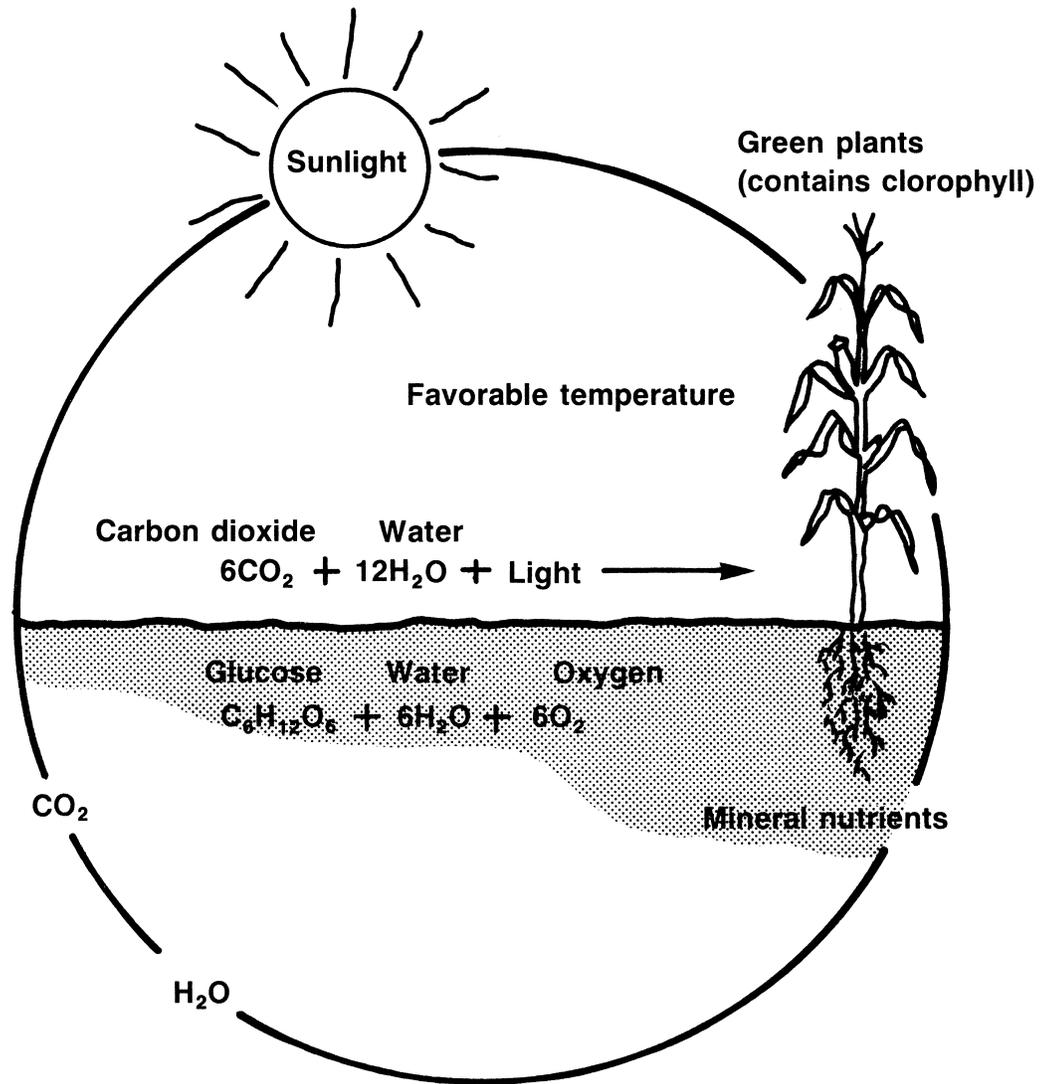
- **Photosynthesis**
- **Respiration**
- **Transpiration**
- **Absorption**

Importance of Photosynthesis

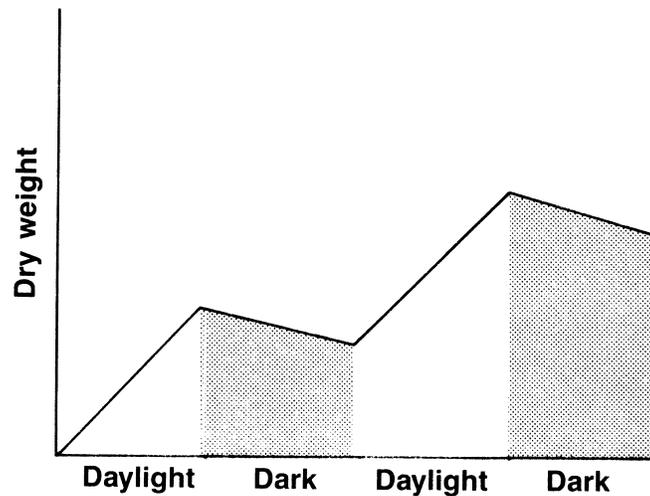


Through the process of photosynthesis, crop plants produce food. This plant-produced food is used directly by man or indirectly through meat and milk produced by livestock.

Photosynthesis



Photosynthesis and Respiration in Relation to Dry Weight



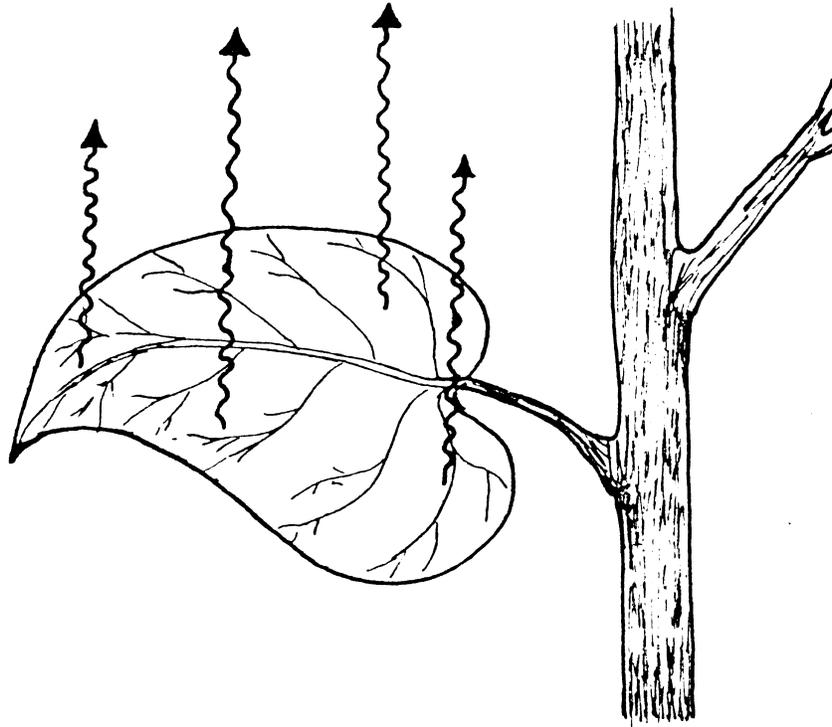
Daylight hours

- **The sugar produced by photosynthesis is greater than the sugar used by respiration.**
- **Result is increase in dry weight.**

Dark hours

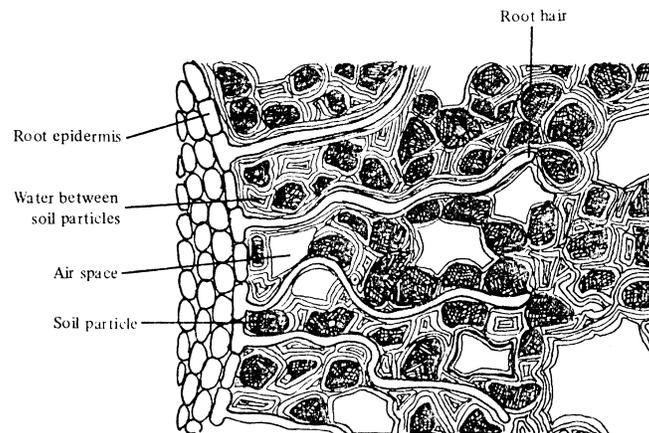
- **No sugar is produced by photosynthesis.**
- **Sugar is used by respiration.**
- **Result is decrease in dry weight.**

Transpiration



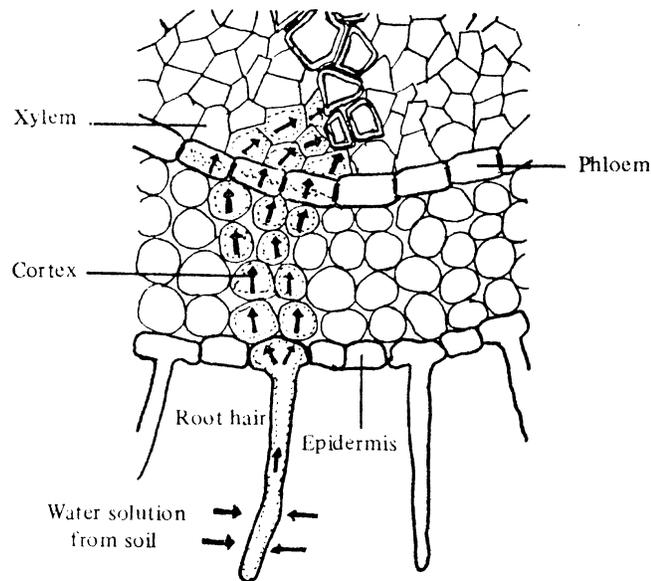
**Is the loss of water
from plants by evaporation**

Root Hairs, Soil Particles and Moisture



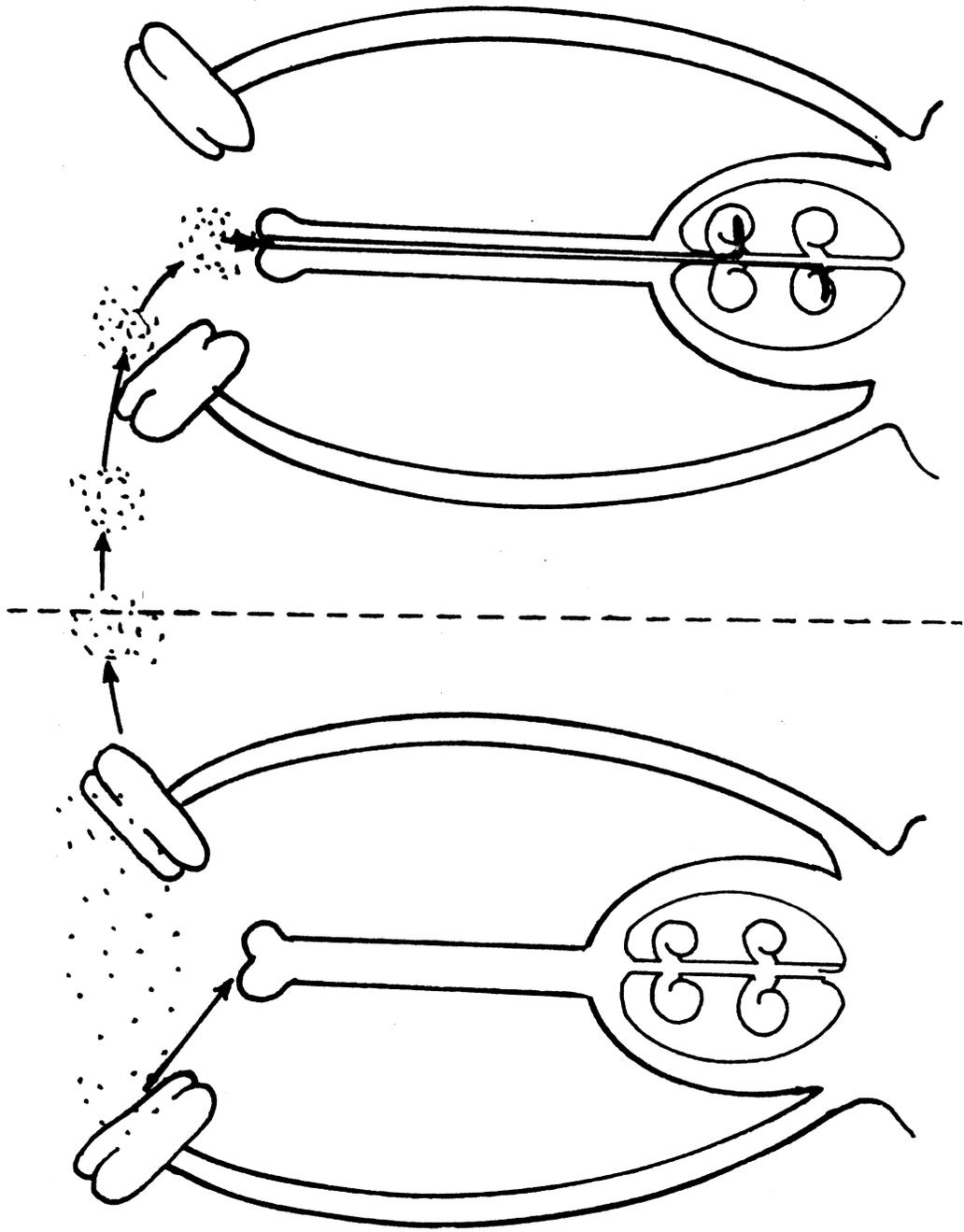
- 1. Root hairs increase the absorption area of the root system 3 to 5 times.**
- 2. Water and minerals in solution enter the plant mainly through the root hairs.**

How a Water Solution From the Soil Moves Within the Root



- 1. Solution enters the root hair by osmosis.**
- 2. Solution moves through the epidermal cells, the cortex and the phloem to the xylem tissue.**
- 3. Solution is transported by the xylem to other parts of the plant.**

SELF-POLLINATION AND CROSS-POLLINATION



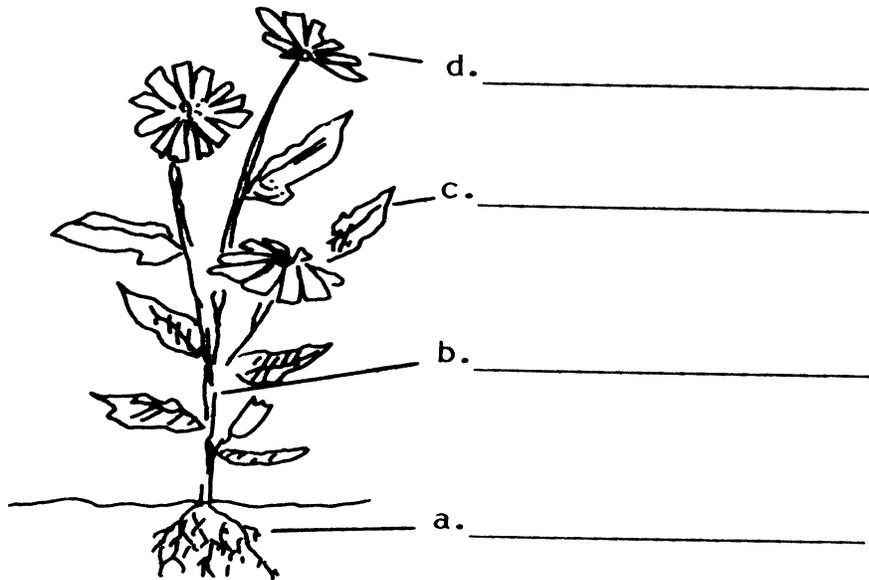
BASIC PLANT SCIENCE

AG 120 - E

UNIT TEST

Name _____ Score _____

1. Label the primary parts of a plant. Write the correct names in the blanks.



2. Match the primary plant part to its correct function. Write the correct numbers in the blanks.

- | | |
|--|------------|
| _____ a. Absorb water and nutrients; anchors for transpiration; site of food storage in carrots | 1. Roots |
| _____ b. Site of photosynthesis; necessary for transpiration; site of food storage in lettuce | 2. Stems |
| _____ c. Support leaves and flowers; conducts water, nutrients, and food; site of food storage in potatoes | 3. Leaves |
| _____ d. Site of reproduction; site of food storage in apples | 4. Flowers |

3. Name the three stages of plant growth and development.
- a. _____
 - b. _____
 - c. _____
4. Name three requirements for good seed germination.
- a. _____
 - b. _____
 - c. _____
5. Select from the following list factors that cause poor seed germination. Write an "X" in the blank before each correct answer.
- _____ a. Number of seeds per pound
 - _____ b. Seeds planted too deeply in soil
 - _____ c. Presence of hardpan in root zone
 - _____ d. Fungal disease
 - _____ e. Low soil temperature
 - _____ f. Low soil moisture
 - _____ g. Damaged seed
 - _____ h. Deficiency of nutrients in soil
 - _____ i. Age of seed
 - _____ j. Conditions under which seed is stored
6. Arrange in order the stages of germination. Write a "1" before the first step, a "2" before the second step, and so on.
- A. Monocot
- _____ a. The coleoptile emerges
 - _____ b. The epicotyl elongates, the coleoptile pierces the soil as it grows upward
 - _____ c. Absorption of water and oxygen into seed
 - _____ d. The coleoptile unfolds
 - _____ e. The seed coat ruptures and the radicle begins to grow downward

B. Dicot

- _____ a. The seed coat ruptures and the radicle begins to grow downward
- _____ b. Emergence of seedling
- _____ c. The hypocotyl pulls the cotyledons toward the soil surface
- _____ d. The cotyledons spread apart and the stem tip is exposed
- _____ e. Absorption of water and oxygen into seed

7. Name the four important plant processes in food manufacture and growth.

- a. _____
- b. _____
- c. _____
- d. _____

8. Select from the following list reasons why photosynthesis is the most important process in the world. Write an "X" in the blank before each correct answer.

- _____ a. Plants produce food by transpiration
- _____ b. Plants produce food used directly by man
- _____ c. Plants produce oxygen through absorption
- _____ d. Plants produce food by photosynthesis
- _____ e. Plants produce food used indirectly by man

9. Explain the process of photosynthesis.

10. Explain the process of respiration.

11. Classify the following characteristics as that of photosynthesis (X) or respiration (O). Write the correct letter in the blank before each statement.

- ____ a. Sugar is the end product
- ____ b. Carbon dioxide is given off
- ____ c. Requires light
- ____ d. A destruction process
- ____ e. Goes on day and night
- ____ f. A building process
- ____ g. Only takes place in cells containing chlorophyll
- ____ h. Carried on in all cells
- ____ i. Oxygen is given off
- ____ j. Sugars consumed

12. Explain the process of absorption by plant roots.

13. Explain the process of transpiration.

14. Name two means of reproduction by plants.

a. _____

b. _____

15. Match the types of pollination to the correct description. Write the correct numbers in the blanks.

_____ a. Transfer of pollen from the anthers to the stigma of the same flower on the same plant	1. Self-pollination
_____ b. Transfer of pollen from the anthers of one plant to the stigmas of another plant	2. Cross-pollination

16. Name three ways pollen is moved.

a. _____

b. _____

c. _____

17. Explain the process of fertilization in plants.

BASIC PLANT SCIENCE

AG 120 - E

ANSWERS TO TEST

1. a. Roots c. Leaves
b. Stem d. Flowers
2. a. 1 b. 3 c. 2 d. 4
3. Seed germination and seedling growth; Vegetative; Reproduction
4. Proper temperature; Sufficient moisture; Ample supply of oxygen
5. b, d, e, f, g, i, j
6. Monocot: a. 4 b. 3 c. 1 d. 5 e. 2
Dicot: a. 2 b. 4 c. 3 d. 5 e. 1
7. Photosynthesis; Respiration; Transpiration; Absorption
8. b, d, e
9. Evaluated to satisfaction of instructor.
10. Evaluated to satisfaction of instructor.
11. a. X e. O i. X
b. O f. X j. O
c. X g. X
d. O h. O
12. Evaluated to satisfaction of instructor.
13. Evaluated to satisfaction of instructor.
14. a. Asexual b. Sexual
15. a. 1 b. 2
16. Answer should include three of the following: Gravity; Wind; Insects; Birds; Man
17. Evaluated to satisfaction of instructor.

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

UNIT OBJECTIVE

After completing this unit, students should be able to list types of soil erosion, results of soil erosion, practices for water pollution reduction, and eight sources of energy. Students should also be able to select from a list factors that influence soil erosion and conservation practices for reducing wind erosion. This knowledge will be demonstrated by completing the assignment sheets and unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. Match terms associated with conservation practices to the correct definitions.
2. Name the three types of soil erosion.
3. Select from a list factors that influence soil erosion.
4. Select from a list conservation practices for reducing wind erosion.
5. Select from a list mechanical and cropping practices used in water erosion conservation.
6. List seven results of soil erosion.
7. Explain the water cycle.
8. List two important results of water pollution reduction.
9. List five practices for water pollution reduction.
10. List eight sources of energy.
11. List four methods of energy conservation.

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

SUGGESTED ACTIVITIES

- I. Suggested activities
 - A. Order materials to supplement unit.
 1. Literature
 - a. *Conserving Soil: Teaching Soil and Water Conservation*, available through Soil Conservation Service, United States Department of Agriculture.
 - b. Several CIS publications on soil conservation available through the Cooperative Extension Service, University of Idaho, College of Agriculture.
 - c. *Soil and Water Conservation*, 250-page loose-leaf packet, available from: IAVIM, 208 Davidson Hall, Iowa State University, Ames, Iowa 50011; approximate cost \$12.50, order no. 229.
 2. Filmstrips, slideshows, etc.
 - a. Conservation Farming, slide set available from John Deere Service Publications, Dept. F, John Deere Rd, Moline, Illinois 61265; approximate cost \$109.00.
 - b. Conservation Tillage, 2 cassettes, 2 filmstrips and program guide; available from: Teaching Aids, Inc., P.O. Box 1798, Costa Mesa, California 92626; approximate cost \$70.00, order no. P1319.
 - c. Universal Soil Loss Equation, filmstrip with script, available from: IAVIM, 208 Davidson Hall, Iowa State University, Ames, Iowa 50011; approximate cost \$15.00, order no. 336.
 - B. Make transparencies.
 - C. Provide students with objective sheet.
 - D. Provide students with information and assignment sheets.
 - E. Discuss unit and specific objectives.
 - F. Discuss information and assignment sheets.
 - G. Take students on field trips to see types of erosion and cropping systems.
 - H. Invite person from SCS to address the class on combating erosion in your community.

- I. Review and give test.
- J. Reteach and retest if necessary.
- II. Instructional materials
 - A. Objective sheet
 - B. Suggested activities
 - C. Information sheet
 - D. Transparency masters
 - 1. TM 1--Generalized Soil Erosion Map of the United States
 - 2. TM 2--Soil Detachment by Raindrops
 - 3. TM 3--Water Erosion - Infiltration Rate Effects Erosion Due to Runoff
 - 4. TM 4--Factors Influencing Soil Erosion
 - 5. TM 5--Wind Erosion Control Practices
 - 6. TM 6--Water Erosion Control Practices
 - E. Assignment sheets
 - 1. AS 1--How Do You Rate as an FFA Conservationist?
 - 2. AS 2--Conserving Soil Crossword Puzzle
 - 3. AS 3--Locating Good and Poor Conservation Practices
 - F. Answers to assignment sheets
 - G. Test
 - H. Answers to test
- III. Unit references
 - A. *Applied Biology/Chemistry: Natural Resources*, Center for Occupational Research and Development, Waco, Texas 76710, 1989.
 - B. *Conserving Soil*, United States Department of Agriculture, Soil Conservation Service.
 - C. Cooper, Elmer L., *Agriscience Fundamentals and Applications*, Delmar Publishers, Inc., Albany, New York, 1990.
 - D. *Crops, Soils, and Fertilizer Resource Manual*, Vo-Ed No. 73, University of Idaho, Department of Agricultural Education, Moscow, Idaho, 1978.

- E. Dorf, Richard C., *The Energy Factbook*, McGraw-Hill Book Company, New York, 1981.
- F. *Instructional Materials for Vocational Agriculture*, Texas A & M University, Agriculture Education Department, Teaching Material Center, College Station, Texas.
- G. Knuti, Williams, and Hide, *Profitable Soil Management*, 4th edition, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1984.
- H. *Oklahoma Curriculum Guide for Vocational Agriculture*, Oklahoma State University and the Oklahoma State Board for Vocational-Technical Education, Stillwater, Oklahoma.

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

INFORMATION SHEET

- I. Terms and definitions
 - A. Erosion--Removal of soil by tillage, wind and/or water
 - B. Water outlet--Ditch which carries the excess water from farm
 - C. Terracing--Structure designed to slow down running water and control erosion on sloping land
 - D. Crop rotation--Rotation of crops on a field from one crop to another
 - E. Strip-cropping--Practice of growing soil-conserving and soil-depleting crops in alternate strips running perpendicular to the slope of the land or the direction of prevailing winds for the purpose of reducing erosion
 - F. Diversion ditch--Ditch which prevents erosion by diverting water around a field rather than across
 - G. Cover crop--Crop used to cover the soil surface to decrease erosion
- II. Types of erosion (Transparencies 1, 2, 3)
 - A. Water erosion
 - B. Wind erosion
 - C. Tillage erosion
- III. Factors influencing soil erosion (Transparency 4)
 - A. The nature of the soil
 - 1. Texture
 - 2. Structure
 - 3. Organic matter content
 - B. Climate

(Note: Climate is the combined effect of wind, temperature and rainfall. When soil is frozen, the permeability of the soil is greatly reduced. If rainfall comes at this time, and other conditions are conducive, severe erosion may occur.)

C. Vegetative cover

(Note: Vegetation will hold the soil particles together, cushion the impact of raindrops, and increase infiltration, all of which will decrease wind and water erosion.)

D. Slope and horizontal length

(Note: The steepness and horizontal length of land will have a great effect on erosion. As water moves down a slope, it increases in velocity and carrying capacity. For example, doubling the percent of slope will increase the soil loss 2.5 times. Doubling the length of slope will increase soil loss 1.4 times.)

E. Management of the soil

(Note: The way a soil has been managed will determine, to a large degree, the amount of erosion. The good farmer recognizes erosion as a problem and works to overcome it.)

IV. Wind erosion conservation practices (Transparency 5)

A. Strip-cropping

B. Prevention of burning (except on sod)

C. Prevention of overgrazing

D. Moisture conservation

E. Emergency cover crops

F. Emergency tillage operations

G. Windbreak tree planting

H. Shelter belt of trees

V. Water erosion conservation practices (Transparency 6)

A. Mechanical

(Note: Mechanical measures are designed to supplement the cropping program as well as control the movement of large quantities of rainfall on steeper slopes.)

1. Terracing

2. Diversions

3. Grass waterways

4. Land drainage
5. Land preparation
6. Construction of ponds and dams

B. Cropping

(Note: Cropping practices recommended are an attempt to give as much protection to the ground surface as possible while lands are being used, and also to increase the absorption of rainfall.)

1. Subsoiling or chiseling
2. Contour furrowing
3. Contour listing
4. Stubble mulching
5. Strip-cropping
6. Crop rotation

VI. Results of soil erosion

- A. Topsoil loss
- B. Crop yield reduction
- C. Need for greater fertilizer use
- D. Gully formation
- E. Covering of rich bottom lands with soil from poor highlands
- F. Roadbank and bridge destruction
- G. Silting (ditches, streams, dams, lakes, reservoirs)
- H. Increased flooding
- I. Wasted water

VII. Water cycle

- A. Water evaporates
 1. Earth
 2. Freshwater
 3. Oceans

- B. Clouds formed
- C. Warm masses meet cold masses
- D. Water vapor changes to liquid and falls
 - 1. Rain
 - 2. Sleet
 - 3. Snow

VIII. Results of water pollution reduction practices

- A. Increased water supplies
- B. Decreased usage and pollution

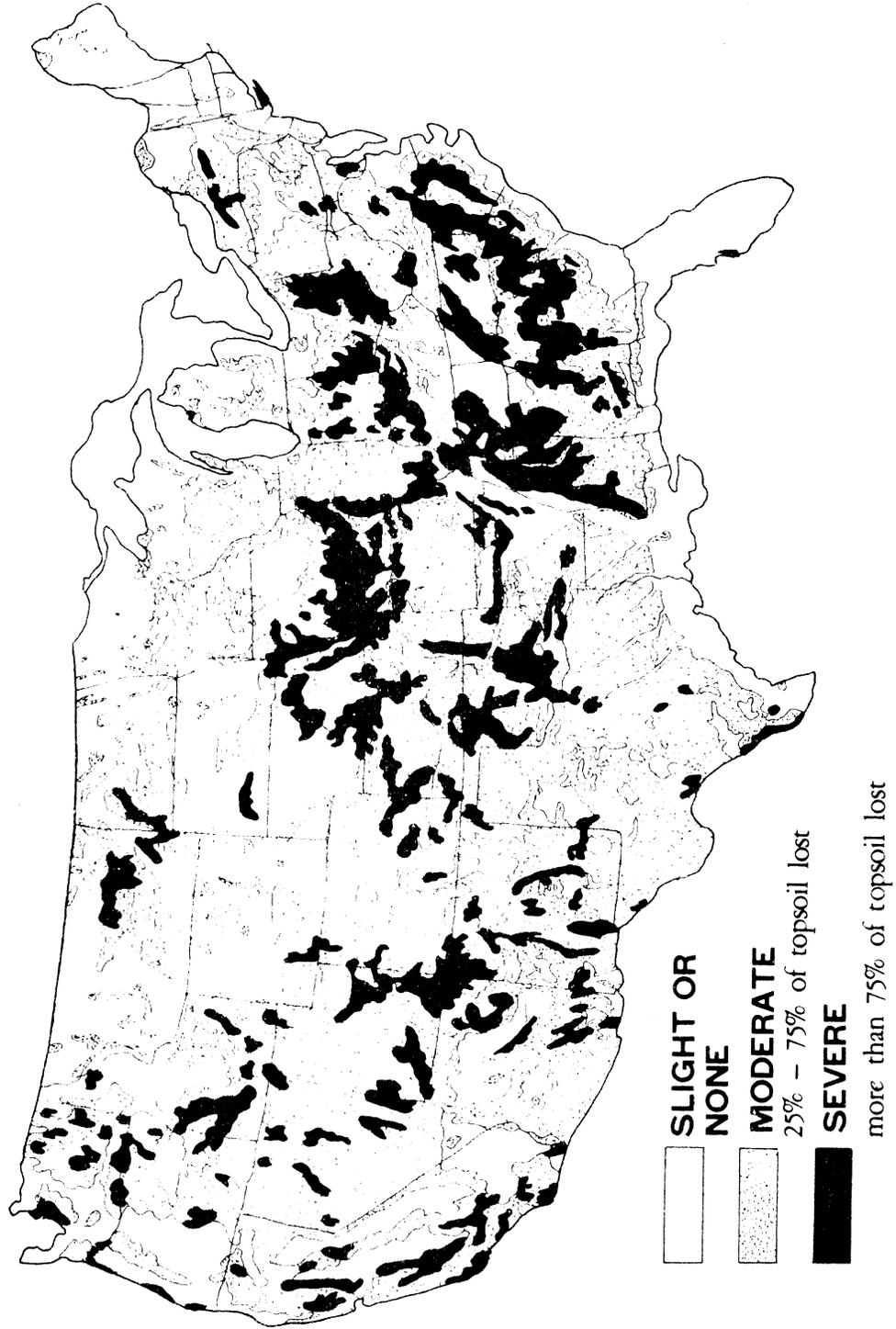
IX. Practices for water pollution reduction

- A. Save clean water (conserve water during household and farm use)
- B. Dispose of household products carefully so they can't eventually enter water supply
- C. Carefully care for lawns, gardens and farmland
 - 1. Organic matter
 - 2. Mulch plants
 - 3. Lime and fertilizer
 - 4. Minimum tillage
 - 5. Don't over-water
- D. Sensible pest control (use cultural practices when possible)
- E. Control water run-off from lawns, gardens, feedlots, and fields
- F. Control soil erosion
- G. Avoid spilling fuel or oil on ground
- H. Keep chemical spills from running or seeping away
- I. Properly maintain septic tanks

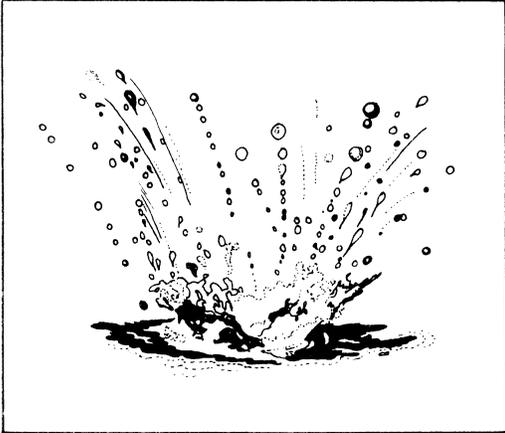
- X. Energy sources
 - A. Gas
 - B. Coal
 - C. Oil
 - D. Electricity
 - E. Geothermal energy
 - F. Nuclear energy
 - G. Solar power
 - H. Wind power

- XI. Methods for energy conservation
 - A. Eliminate waste
 - 1. Repair hot water leaks
 - 2. Repair broken windows
 - 3. Winterize home
 - 4. Turn off unused lights
 - B. Shift to less energy-intensive processes
 - 1. Mass transportation
 - 2. Recycle materials
 - C. Reduce energy-consuming activities (life-style changes)
 - 1. Reduce automobile use
 - 2. Reduce airplane use
 - 3. Eliminate or reduce air conditioners
 - D. Improve efficiency of energy-consuming activities
 - 1. Heating and cooling systems
 - 2. Industrial processes

GENERALIZED SOIL EROSION MAP OF THE UNITED STATES

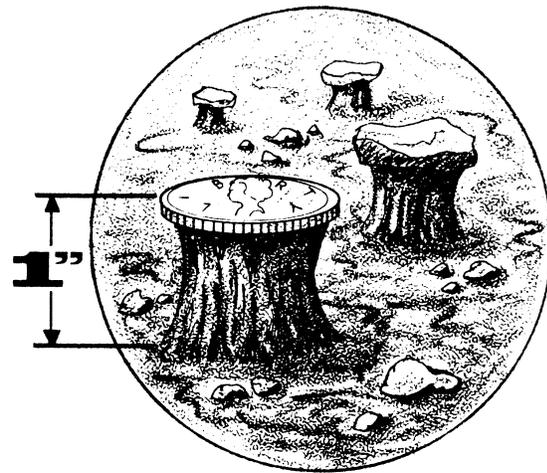


SOIL DETACHMENT BY RAINDROPS

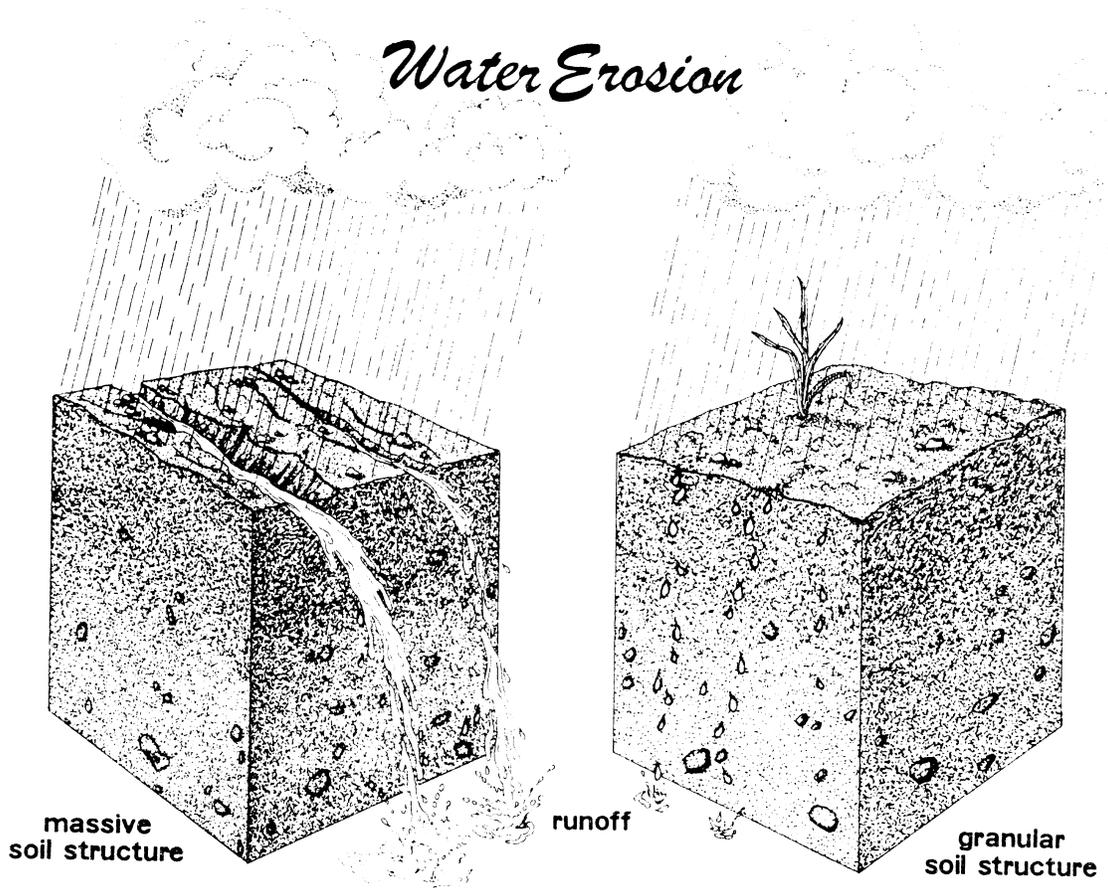


a raindrop may splash soil as far as 5 feet

a 1 inch rain may remove 1 inch of soil per acre (150 tons)



Water Erosion



infiltration rate affects erosion due to runoff

Factors Influencing Soil Erosion

- A. Nature of the soil**
 - 1. Texture**
 - 2. Structure**
 - 3. Depth of soil**
 - 4. Organic matter content**
- B. Climate**
- C. Vegetative cover**
- D. Slope and horizontal length**
- E. Management of the soil**

WIND EROSION

- A. STRIP CROPPING
- B. PREVENTION OF BURNING
- C. PREVENTION OF GRAZING
- D. MOISTURE CONSERVATION
- E. EMERGENCY COVER CROPS
- F. EMERGENCY TILLAGE OPERATIONS
- G. WINDBREAK TREE PLANTING
- H. SHELTER BELT OF TREES

. CONTROL PRACTICES

WATER EROSION CONTROLS

MECHANICAL

TERRACING

DIVERSIONS

GRASSED WATERWAYS

LAND DRAINAGE

**LAND PREPARATION (SHAPING,
SMOOTHING, LEVELING)**

CONSTRUCTION OF PONDS & DAMS

CROPPING

SUBSOILING OR CHISELING

CONTOUR FURROWING

CONTOUR LISTING

STUBBLE MULCHING

STRIP CROPPING

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

ASSIGNMENT SHEET #1--HOW DO YOU RATE AS AN FFA CONSERVATIONIST?

Name _____ Score _____

Answer each of the questions below and on the following pages. Turn in to the instructor. If the question applies to you or your farming operation, answer YES; if it does not apply to you, answer NO.

		YES	NO
1.	Are droughts on your farm less severe than they used to be?	___	___
2.	Can you cultivate as soon after a rain as you once could?	___	___
3.	Do the rains seem to soak into your soil faster and deeper than they once did?	___	___
4.	Do streams flood less frequently?	___	___
5.	Do your fields drain properly?	___	___
6.	Are your crop yields increasing?	___	___
7.	When you plow, does your soil seem darker in color than it was few years ago?	___	___
8.	Do you notice fewer clay spots in the fields when you plow?	___	___
9.	Are gullies getting smaller in size and fewer in number?	___	___
10.	Does your soil drift against the fences less now than it once did?	___	___
11.	When you dig post holes, do you find plant roots all the way to the bottom of the holes?	___	___
12.	After a beating rain, does the surface of your soil still appear open and porous like a sponge?	___	___
13.	Is it becoming less difficult to prepare a good seedbed?	___	___
14.	Does your soil crust over less now than it once did?	___	___
15.	Do you spread manure on your land as fast as it is produced?	___	___
16.	Do you grow a soil-building legume at least one year in three?	___	___
17.	Do you plow under or incorporate all crop residues into your soil?	___	___
18.	Do your crops grow better in dry weather than they once did?	___	___
19.	Does it take less power to plow your fields than it did a few years ago?	___	___

		YES	NO
20.	Do you cultivate just often enough to control weeds?	___	___
21.	Do you use a disk and chisel more now than you do a turning plow?	___	___
22.	Do you follow the recommended planting dates for all farm crops?	___	___
23.	Do you follow a recommended crop rotation plan for all fields?	___	___
24.	Do you plant the highest yielding varieties of crops?	___	___
25.	Does your cropping system produce the most possible forage for your livestock?	___	___
26.	Are your yields per acre as high as any in your neighborhood?	___	___
27.	Have you increased the productivity of all of your fields and pastures?	___	___
28.	Do you use as much limestone as any farmer on similar land in the neighborhood?	___	___
29.	Do you fertilize your fields and pastures as much as do any of your neighbors?	___	___
30.	Do you graze the right number of livestock on your range and pasture land?	___	___
31.	Are your livestock healthy?		
32.	Do you have a home garden as good as any in your neighborhood?	___	___
33.	Have you had your soil tested on all gardens, fields and pastures within the past three years?	___	___

Your rating as an FFA conservationist:

Total answers which are YES _____ NO _____

I am Good _____(22-33 YES answers)
 Fair _____(11-21 YES answers)
 Poor _____(0-10 YES answers)

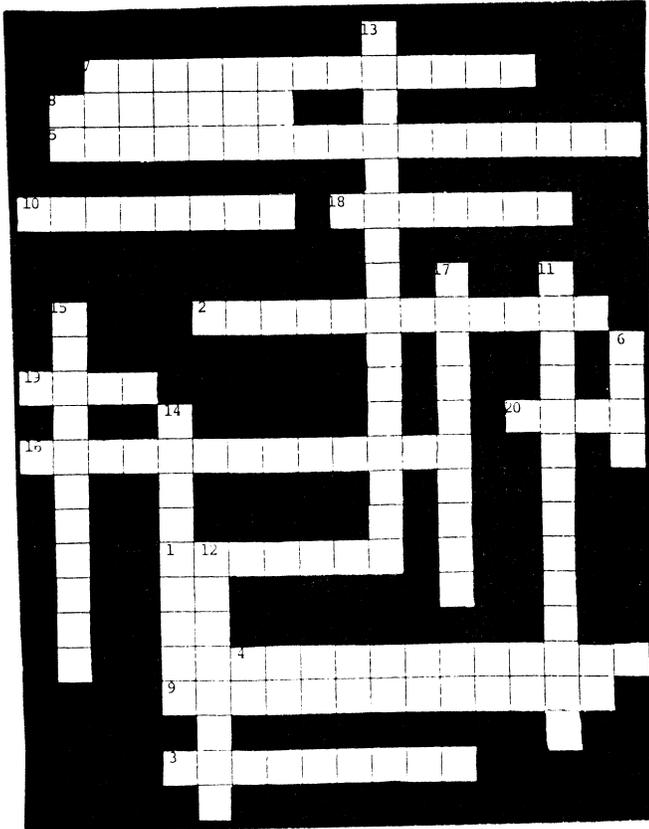
*The contents of Assignment Sheet #1 have been reprinted by permission from *Our Soils and Their Management* by Roy L. Donahue, published by The Interstate Printers and Publishers, Inc., Danville, Illinois.

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

ASSIGNMENT SHEET #2--CONSERVING SOIL CROSSWORD PUZZLE

Name _____ Score _____



DOWN

6. _____ erosion is characterized by many small channels cut in to the soil by running water.
11. Farming around the slopes rather than up and down.
12. Alternating row crops with sod type crops to increase organic matter and reduce annual sod loss.
13. Office will give assistance free of charge for conservation planning.
14. A good ground cover (decreases, increases) water intake.
15. _____ protects the soil's surface during parts of the season that crops are not grown.
17. The shape of the ground surface, as determined by major features such as hills, mountains, or plains.

ACROSS

1. The wearing away of the soil by forces of water and wind.
2. Removal of soil in a uniform layer.
3. A crop grown to cover and protect the soil for a certain part of the year.
4. Advanced stage of rill erosion.
5. The wearing away of the soil by forces which are natural and without interference by man is called _____.
7. Erosion caused by raindrops.
8. Measure to intercept running water and move it around the slope or into a tile line.
9. Practice of planting strips of row crops with strips of meadow, small grains, etc. to slow down water.
10. Grassed ditch-like structure to carry excess water.
16. Soils with high _____ content have increased absorption capacity.
18. _____ is usually dark in color.
19. Structure to hold or impound water.
20. The natural medium for the growth of plants. A mixture of minerals, organic matter and reduce annual sod loss.

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

ASSIGNMENT SHEET #3--LOCATING GOOD AND POOR CONSERVATION PRACTICES

Name _____ Score _____

Survey your home community and list five examples of good conservation practices.

1.

2.

3.

4.

5.

List five examples of poor conservation practices.

1.

2.

3.

4.

5.

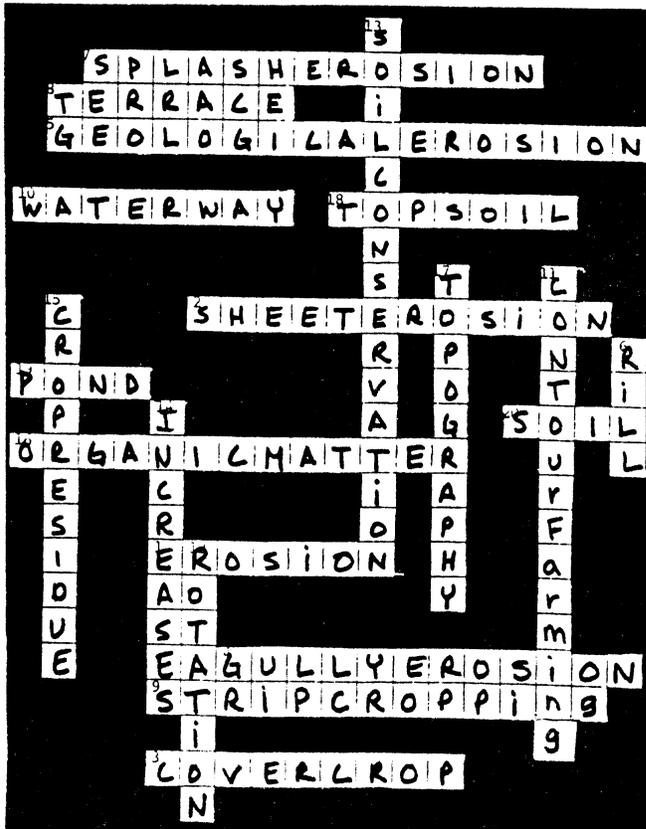
SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

ANSWERS TO ASSIGNMENT SHEETS

1. Evaluated to the satisfaction of the instructor.

2.



3. Evaluated to the satisfaction of the instructor.

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

UNIT TEST

Name _____ Score _____

1. Match terms associated with conservation practices to the correct definitions. Write the correct numbers in the blanks.

_____ a. Rotation of crops on a field from one crop to another	1. Erosion
_____ b. Ditch which prevents erosion by diverting water around a field rather than across	2. Water outlet
_____ c. Removal of soil by tillage, wind and/or water	3. Terracing
_____ d. Structure designed to slow down running water and control erosion on sloping land	4. Crop rotation
_____ e. Crop used to cover the soil surface to decrease erosion	5. Strip cropping
_____ f. Practice of growing soil-conserving and soil-depleting crops in alternate strips for the purpose of reducing erosion	6. Diversion ditch
_____ g. Ditch which carries excess water from farm	7. Cover crop

2. Name three types of erosion.

a. _____

b. _____

c. _____

3. Select from the following list factors that influence soil erosion. Write an "X" in the blank before each correct answer.

_____ a. Soil texture

_____ b. Amount of annual precipitation

_____ c. Slope of field

_____ d. Soil depth

_____ e. Vegetative cover

_____f. Management practices used

_____g. Frozen soil

_____h. Tillage

4. Select from the following list conservation practices for reducing wind erosion. Write an "X" in the blank before each correct answer.

_____a. Strip-cropping

_____b. Terracing

_____c. Construction of ponds and dams

_____d. Prevention of overgrazing

_____e. Emergency cover crops

_____f. Prevention of burning

_____g. Crop rotation

_____h. Grass waterways

5. Select from the following list mechanical and cropping practices used in water erosion conservation. Write an "X" in the blank before each correct answer.

_____a. Construction of ponds and dams

_____b. Stubble mulching

_____c. Grass waterways

_____d. Prevention of overgrazing

_____e. Windbreak tree planting

_____f. Strip-cropping

_____g. Terracing

_____h. Crop rotation

_____i. Contour furrowing

_____j. Chiseling

6. List seven results of soil erosion.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

7. Explain the water cycle.

8. List two important results of water pollution reduction.

a. _____

b. _____

9. List five practices for water pollution reduction.

a. _____

b. _____

c. _____

d. _____

e. _____

10. List eight sources of energy.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

11. List four methods of energy conservation.

a. _____

b. _____

c. _____

d. _____

SOIL, WATER AND ENERGY CONSERVATION

AG 120 - F

ANSWERS TO TEST

1.

a.	4	e.	7
b.	6	f.	5
c.	1	g.	2
d.	3		
2. water, wind, tillage
3. a, b, c, e, f, g, h
4. a, d, e, f
5. a, b, c, f, g, h, i, j
6. Answer should include 7 of the following:
 Topsoil loss; Crop yield reduction; Need for greater fertilizer use; Gully formation; Covering of rich bottom lands with soil from poor highlands; Roadbank and bridge destruction; Silting; Increased flooding; Wasted water
7. Answer should include the following information:
 Water evaporates from the earth, freshwater, oceans; Clouds formed; Warm masses meet cold masses; Water vapor changes to liquid and falls in the form of rain, sleet, snow
8. Increased water supplies, decreased usage and pollution
9. Answer should include five of the following:
 Save clean water (conserve water during household and farm use); Dispose of household products carefully so they can't eventually enter water supply; Carefully care for lawns, gardens and farmland (organic matter, mulch plants, lime and fertilizer, minimum tillage, don't over-water); Sensible pest control (use cultural practices when possible); Control water run-off from lawns, gardens, feedlots, and fields; Control soil erosion; Avoid spilling fuel or oil on ground; Keep chemical spills from running or seeping away; Properly maintain septic tanks
10. Gas; Coal; Oil; Electricity; Geothermal energy; Nuclear energy; Solar power; Wind power
11. Eliminate waste; Shift to less energy-intensive processes; Reduce energy-consuming activities (life-style changes); Improve efficiency of energy-consuming activities

PESTICIDES AND ENVIRONMENTAL PROTECTION

AG 120 - G

UNIT OBJECTIVE

After completion of this unit, students should be able to determine the effects of agricultural chemicals on the environment, identify the requirements for the proper use of agricultural chemicals, and identify methods of protecting the environment. This knowledge will be demonstrated by completing an assignment sheet and unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completing this unit, the student should be able to:

1. Match terms associated with pesticides and environmental protection to the correct definitions.
2. List two functions of agricultural chemicals.
3. Name three main groups of pests.
4. Match the pesticide with the pest controlled.
5. Select from a list results of discontinued pesticide use.
6. Match EPA classification of pesticides to the correct definition.
7. State EPA guidelines for acceptable risk of pesticide use to the public.
8. Select from a list resources necessary for man to exist.
9. Name two ways pesticides are beneficial to the environment.
10. Name two ways improper use of pesticides can harm the environment.
11. Explain how the amount of money that the U.S. spends on food would be affected if no pesticides were used.
12. State when a pesticide is considered an environmental pollutant.
13. List eight causes for a pesticide to become an environmental pollutant.
14. List six natural resources that can be contaminated from improper pesticide use.
15. Describe four possible "Direct Kill" effects on the environment from misuse of pesticides.
16. List the three main factors affecting potential groundwater contamination by agrichemicals.
17. Select from a list facts contained on a pesticide label.

18. Match signal words found on labels with the correct toxicity.
19. List four safety precautions when mixing and handling pesticides.
20. Name two climatic factors that affect pesticide application.
21. Name the two causes of most pesticide poisonings.
22. List three ways pesticides enter the body.
23. List the most important routes of pesticide entry for applicators and small children.
24. List three steps to follow in case of pesticide poisoning.
25. Select from a list the protective clothing and equipment needed for pesticide applications.
26. Select from a list ways to prevent exposure during application.
27. Name four methods for disposal of pesticides and pesticide containers.
28. Describe proper pesticide storage site, building and conditions.
29. List five methods of protecting the environment.

PESTICIDES AND ENVIRONMENTAL PROTECTION

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SUGGESTED ACTIVITIES

- I. Suggested activities
 - A. Order materials to supplement unit.
 1. Literature
 - a. *Crop Chemicals*, an FMO publication by John Deere; 9 chapters; order from John Deere Service Publications, Dept. F, John Deere Rd., Moline, Illinois 62165.
 - b. *Principles of Pesticide Use, Handling and Application*, basic requirements for private applicator pesticide certification, available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402; approximate cost \$5.90, stock no. 055-004-00012-9.
 - c. *Apply Pesticides Correctly: Instructors Manual*, available from United States Environmental Protection Agency, National Audiovisual Center, Government Services Administration, Washington, D.C. 20409.
 2. Filmstrips, slideshows, etc.
 - a. *Crop Chemicals* slide set available from John Deere Service Publications, Dept. F, John Deere Rd., Moline, IL 62165; approximate cost \$112.00.
 - b. *Pesticides: Safe Handling and Use*, 6 cassettes, 6 film strips and study guide; available from Teaching Aids, Inc., P.O. Box 1798, Costa Mesa, CA 92626; approximate cost \$229.00, order no. B260.
 - c. *Pesticide Use Training*, 420 slides with cassettes and scripts; available from United States Environmental Protection Agency, National Audiovisual Center, Government Services Administration, Washington, D.C. 20409.
 - d. *Be a Pro with Pesticides*, 72 slides with cassette and script; available from Visual Communications, 4125 Roberts Hall, Cornell University, Ithaca, New York 14853. Used in conjunction with Be a Pro with Pesticides, 16mm film, 22 1/2 minutes, available from same address.
 - e. *Be A Pro: Avoid Pesticide Accidents*, 79 slides with cassette and script; available from Cornell University, Ithaca, New York 14853.

- f. *Proper Pesticide Use Series: Pesticides*, color videocassettes; available from Oregon State University, Corvallis, OR 97331.
 - g. *Applying Pesticides Properly*, color videocassettes; available from Kansas State University, Manhattan, KS 66506.
 - B. Make transparencies.
 - C. Provide students with objective sheet.
 - D. Provide students with information and assignment sheet.
 - E. Discuss unit and specific objectives.
 - F. Discuss information and assignment sheets.
 - G. Invite a resource person to visit with class concerning the importance of private pesticide applicator certification and applicable federal, state, and local laws and regulations.
 - H. Ask students to clip magazine and newspaper articles which demonstrate ways that pesticides improve the environment.
 - I. Ask students to list the pesticides on their farms and in their homes. Have them list them according to type, such as insecticide or herbicide.
 - J. Invite a local pest management specialist to speak to class about on-going projects. Ask the specialist to bring examples of natural enemies and beneficial plants and animals found in your area.
 - K. Secure pesticide labels and make them available to students.
 - L. Contact a trained medical person at the local hospital or poison control center that provides treatment for pesticide poisoning and ask the person to speak to class.
 - M. Assemble the different types of respirators and demonstrate proper use, clean up and storage of each.
 - N. Assemble the basic types of protective clothing and equipment. Give students a sample label, target pest and application site and ask them to put on the necessary clothing and equipment for the job. Allow class to critique both over and under protection for the job.
 - O. Review and give test.
 - P. Reteach and retest if necessary.
- II. Instructional materials
- A. Objective sheet
 - B. Suggested activities

- C. Information sheet
- D. Transparency masters
 - 1. TM 1--Pesticides and Pest Controlled
 - 2. TM 2--Without Pesticides
 - 3. TM 3--Existing Pesticide Label
 - 4. TM 4--Signal Words
 - 5. TM 5--Ways Pesticides Enter Body
 - 6. TM 6--Protective Clothing and Equipment
 - 7. TM 7--Container Classification
 - 8. TM 8--Disposal of Containers
- E. Assignment sheet
 - 1. AS 1--Environmental Pollution Report
- F. Test
- G. Answers to test

III. Unit references

- A. *Applying Pesticides Correctly - A Guide for Private Applicators*, U.S. Environmental Protection Agency, U.S. Department of Agriculture.
- B. Colvin, Thomas S., Turner, J. Howard, *Applying Pesticides: Management - Application - Safety*, American Association for Vocational Instructional Materials, Engineering Center, Athens, Georgia 30602, 1980.
- C. Cooper, Elmer L., *Agriscience Fundamentals and Applications*, Delmar Publishers, Inc., Albany, New York, 1990.
- D. *Idaho State Board for Vocational Education Curriculum in Crop and Soil Science*, The University of Idaho and the Idaho State Board for Vocational Education.
- E. Nebel, Bernard J., *Environmental Science - The Way it Works*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632.

PESTICIDES AND ENVIRONMENTAL PROTECTION

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INFORMATION SHEET

- I. Terms and definitions
 - A. Hazard (risk)--Relationship between the toxicity of the pesticide and the exposure or use of the pesticide
 - B. Toxicity--Measure of how poisonous a chemical is
 - C. Acute toxicity--Immediate effects (within 24 hours) of a single exposure to a chemical
 - D. Chronic toxicity--Measures the effects of a chemical over a long period of time
 - E. Adsorption--Process by which chemicals are held on the surface of a mineral or soil particle
 - F. Absorption--Process by which a chemical is taken into plants, animals or minerals
 - G. Carcinogenic--Material capable of producing a cancerous tumor
 - H. Contaminate--To make impure or pollute
 - I. EPA (Environmental Protection Agency)--Governmental agency responsible for interpretation and administration of federal laws concerning pesticide handling and use
 - J. Drift--Movement of pesticide through the air to nontarget sites
 - K. Vapor drift--Movement of pesticide vapors due to chemical volatilization of the product
 - L. Pesticide--Chemical or other substance that will prevent, repel, destroy, or control a pest or protect something from a pest
 - M. Tolerance--Maximum amount of pesticide which can legally remain on or in any food or feed crop at harvest or animal at slaughter
 - N. Certification--Recognition by certifying agency that a person is competent and thus authorized to use or supervise the use of restricted-use pesticides
 - O. Phytotoxicity--Causing injury to plant life
 - P. Target--Area, building, plant, animal, or pest intended to be treated with pesticide

- Q. Short-term (non-persistent)--Pesticide that breaks down almost immediately into non-toxic by-products
 - R. Residual (persistent)--Pesticide that remains in the environment for a fairly long time
 - S. LD₅₀--Lethal dose or amount of a pesticide which would kill half a large number of test animals if eaten or absorbed through the skin
(Note: The lower the LD value, the more poisonous the pesticide. LD stands for lethal dose.)
 - T. Oral--Through the mouth
 - U. Dermal--Absorbed through the skin
 - V. Inhalation--Breathed in through the lungs
- II. Functions of agricultural chemicals
- A. Improve crop growth
 - B. Protect crop against pests
- III. Main groups of pests
- A. Insects
 - B. Mites, ticks and spiders
 - C. Bacteria, fungi and viruses
(Note: The plant disease is not the pest; the causal agent is.)
 - D. Nematodes
 - E. Vertebrate animals, i.e. rodents, coyotes, squirrels, etc.
 - F. Weeds
- IV. Pesticides and pest controlled (Transparency 1)
- A. Herbicides--Control weeds
 - B. Insecticides--Control insects
 - C. Fungicides--Control fungal diseases
 - D. Bactericides--Control bacterial diseases
 - E. Nematicides--Control nematodes

- F. Acaricides--Control mites, ticks and spiders
- G. Rodenticides--Control rats, mice and other rodents

V. Economic importance of pesticide use (Transparency 2)

- A. Large quantity used each year

(Note: In 1980, 846 million pounds of pesticide active ingredients were used on U.S. farms--about .81 pounds per acre. These materials cost \$3.6 billion, approximately \$16 for every person in the U.S.)

- B. Without the use of pesticides

1. Yields would be reduced
2. Food would be more expensive
3. Food would be less available
4. Food would be of lower quality
5. Labor requirements would increase
6. Exports would decrease
7. Lower standard of living
8. More of work force involved in food production

VI. EPA classifications of pesticides

(Note: EPA will classify the use of each pesticide as either general or restricted.)

- A. General use--Pesticide use which will not cause excessive damage in the environment or endanger the applicator or other persons when applied according to label directions

(Note: No certification requirements are necessary on the part of the applicator.)

- B. Restricted use--Pesticide use which may cause damage in the environment or endanger the applicator or other persons unless label directions are followed

(Note: Certification is necessary on the part of the applicator to purchase and apply restricted use pesticides.)

VII. EPA currently defines acceptable risk to the public at one death per million due to pesticide exposure

VIII. Resources necessary for man to exist

(Note: The surroundings in which man lives and the resources he depends on make up his environment.)

- A. Place to live
- B. Clean water
- C. Clean air
- D. Food
- E. Clean soil

IX. Ways pesticides are beneficial to the environment

- A. Enable more food to be produced on same area
- B. Control plant diseases, parasites, insects and weeds
- C. Control animal diseases, parasites and insects
- D. Preserve outdoor activities

X. Ways improper use of some pesticides might harm the environment

- A. Cause nature imbalance
- B. Pollute streams and water supply
- C. Pollute crops
- D. Pollute soil
- E. Injure desirable plants
- F. Persistent residues in food chain

(Note: For more information on chemicals and the environment, contact your local office of the Environmental Protection Agency.)

XI. It is estimated that the average total income spent on food in the U.S. would increase from 17 percent to 30 percent without the protection that pesticides provide

XII. A pesticide is considered an environmental pollutant when it moves away from the designated or target area

XIII. Causes for a pesticide to become an environmental pollutant

- A. Drift
- B. Soil leaching

- C. Runoff
 - D. Improper disposal and storage
 - E. Improper application
 - F. Erosion (movement of the soil particles)
 - G. Carried out as residues in crop and livestock
 - H. Evaporation and then movement with air currents
- XIV. Natural resources that can be contaminated from improper pesticide use
- A. Ground water
 - B. Surface water
 - C. Soil
 - D. Air
 - E. Fish
 - F. Wildlife
- XV. Possible "Direct Kill" effects on the environment from pesticide misuse
- A. Fine mists of herbicides drifting to and killing nearby crops or landscape plants
 - B. Bees and other pollinators can be killed if pesticides are applied while they are in the field
 - C. Natural enemies of pest insects can be killed
 - D. Life in streams or ponds can be wiped out
 - 1. Accidental spraying of ditches or waterways
 - 2. Runoff from sprayed fields
 - 3. Careless tank filling or draining
 - 4. Careless container disposal
- XVI. Factors affecting potential groundwater contamination by agrichemicals
- A. Soil types and other geological characteristics
 - B. The pesticide's persistence and mobility within the soil
 - C. Production and application methods of pesticide users

XVII. Facts contained on a pesticide label (Transparency 3)

- A. Name and address of chemical company
- B. Brand (trade) name
- C. Name and amounts of all active ingredients
(Note: The label will also list the amounts of inert ingredients.)
- D. Type of pesticide
- E. Kind of formulation
- F. EPA registration and establishment numbers
- G. Storage and disposal precautions
- H. Hazard statement

(Note: This statement describes environmental hazards, human hazards, animal and plant hazards, and physical and chemical hazards.)

- I. Directions for use
- J. Net content
- K. Words: "Keep Out of Reach of Children"
- L. Signal word
- M. Days to harvest or slaughter
- N. Re-entry interval, if applicable
- O. General use or restricted use classification statement

XVIII. Signal words found on labels (Transparency 4)

- A. Danger--Highly toxic pesticides; the word "poison" printed in red and the skull and crossbones symbol are also required on labels of highly toxic pesticides
- B. Warning--Moderately toxic pesticides
- C. Caution--Slightly toxic to relatively non-toxic pesticides

XIX. Safety precautions when mixing and handling pesticides

- A. Follow all safety precautions stated on the label
- B. Use protective clothing and equipment as stated on the label
- C. Rinse empty containers and measuring cups to remove any residue

- D. Read the label or consult an expert to make sure mixes of two or more pesticides are compatible
 - E. Avoid splashes, spills, and leaks
(Note: Clean up any splashes, spills, or leaks.)
 - F. Wash all contaminated areas of clothing or equipment
 - G. Dispose of empty containers properly
- XX. Climatic factors that affect pesticide application
- A. Soil moisture
(Note: Pesticides work best with moderate soil moisture. Wetness may keep the pesticide from contacting the soil particles.)
 - B. Rain
(Note: Rain often causes pesticides to leach out of or run off the application site. It also may wash pesticides off foliage. However, pre-emergence herbicides and protectant or preventive fungicides are sometimes purposely applied just before or soon after rain.)
 - C. Humidity
(Note: Herbicides work best when weeds are growing fast. High humidity and warm temperatures help cause this growth.)
 - D. Temperature
(Note: High temperatures cause some pesticides to evaporate more quickly than is desirable. Low temperatures may slow down or stop the activity of some pesticides.)
 - E. Light
(Note: Light aids in breaking down pesticides.)
- XXI. Cause of most pesticide poisoning
- A. Careless practices
 - B. Ignorance
(Note: Learn safe procedures; it is for your own good!)

XXII. Ways pesticides enter the body (Transparency 5)

- A. Oral
- B. Dermal
- C. Inhalation

XXIII. Most important routes of entry for pesticides

- A. Applicator--Dermal and inhalation
- B. Small children--Oral and dermal

(Note: You can be poisoned no matter which way the pesticide enters your body. It may enter and poison you through all three routes of entry at the same time.)

XXIV. Steps to follow in case of pesticide poisoning

- A. Check to see if the patient is breathing
- B. Call doctor or take victim to doctor or hospital
- C. Locate pesticide label and have available for doctor

XXV. Protective clothing and equipment needed for pesticide applications (Transparency 6)

(Note: Use protective clothing and equipment called for on the label.)

- A. Gloves
 - 1. Obtain unlined, elbow length neoprene or natural rubber gloves
(Note: Some chemicals will dissolve rubber or make it sticky.)
 - 2. Make sure sleeves are outside your gloves
(Note: This should be done unless spraying overhead.)
 - 3. Discard the gloves if any holes appear
 - 4. Wash gloves with detergent and water before removing

(Caution: Never use cotton or leather gloves unless specified on the label. These can be more hazardous than no protection at all because they hold the pesticide close to your skin.)

B. Coveralls

1. Wear clean, tightly woven fabric coveralls that cover entire body or long sleeved shirt and long legged trousers

(Note: Most applicators who apply pesticides regularly have special coveralls kept just for pesticide applications.)

2. Wear waterproof suit or apron when mixing highly toxic pesticides
3. Wear waterproof suit when you may be drenched during application
4. Wash clothes with detergent and water; separate from other laundry

C. Boots

1. Wear light weight, unlined neoprene or natural rubber boots

(Note: Boots should cover your ankles.)

2. Put pant legs outside of boots

(Note: This will keep pesticide from draining into boot.)

3. Wash and dry boots inside and out after each use

D. Goggles and face shield

1. Wear tight-fitting goggles or a face shield when pesticide spray or dust could get on your face or in your eyes
2. Wear goggles or face shield when pouring and mixing
3. Wash goggles and face shield after each use

E. Head and neck covering

1. Protect hair and skin on neck from pesticide spray
2. Wear waterproof, wide-brimmed hats or hard hats

(Note: In cool weather, a hooded, waterproof parka and a bill cap are also good.)

XXVI. Ways to prevent exposure during application

- A. Wear protective clothing and equipment

- B. Do not wipe hands on clothing

(Note: Carry a special towel for wiping hands.)

(Caution: Do not wipe gloves on your clothing, especially if chemicals are on gloves. Your clothing can become contaminated and the chemicals may soak through to your skin.)

- C. Never blow out clogged hoses, nozzles, or lines with your mouth
- D. Never eat, drink, or smoke when handling pesticides
- E. Work in pairs when handling hazardous pesticides or at least let someone know where you will be working
- F. Keep people, livestock and pets out of spray area

(Note: When working with pesticides day after day, even moderately toxic chemicals can poison you. Wear protective equipment, especially a respirator.)

(Caution: Do not let children or pets play around sprayers, dusters, filler tanks, storage areas, or old pesticide containers. Use proper rates. Overdose won't kill the pest twice, but may injure humans, crops or wildlife.)

XXVII. Methods of disposal of pesticides and pesticide containers (Transparencies 7, 8)

- A. Open burning

(Note: Check local regulations. In some areas, burnable containers may be burned on the farm in small quantities, usually the amount emptied in one day. Never burn containers which held 2, 4-D type herbicides because the smoke could injure sensitive plants.)

- B. Burial

(Note: Many landfills will accept triple-rinsed pesticide containers, especially if broken, crushed, or cut apart. Otherwise, the burial site should be selected in an area where water will not be contaminated and where public health and the environment will not be harmed. Do not bury pesticides and unrinsed pesticide containers that contain mercury, lead, cadmium, arsenic, or inorganic pesticides unless they are encapsulated. Some landfills will take these containers if they have been triple-rinsed.)

- C. Recycling

(Note: Some non-burnable containers, such as plastic and steel drums, may be returned to the manufacturer for reuse.)

- D. Incineration in a special pesticide-approved incinerator

(Note: Some pesticides and pesticide containers may be made harmless using this method. However, this method may not be used for pesticides or pesticide containers with mercury, lead, cadmium, arsenic, or inorganic pesticides.)

E. Chemical degradation

(Note: Sometimes pesticides can be chemically broken down into non-toxic materials. These methods are specific for each chemical and cannot be described here. Check with the manufacturer or local Environmental Protection Agency officials for specific methods.)

F. Soil injection

(Note: Use soil injection methods only when recommended by state or federal regulatory officials.)

G. Encapsulation

(Note: This is usually the only method of disposal of pesticides or unrinsed containers with mercury, lead, cadmium, arsenic, or inorganic pesticides.)

XXVIII. Pesticide storage

A. Site

1. Separate from other equipment or material storage facilities
2. Not located on floodplain
3. Spill and drainage containment for large storage facilities

B. Building

1. Fire resistant
2. Cement floor
3. Exhaust fan for ventilation
4. Sufficient lighting
5. Locked door
6. Sufficient storage area

C. Conditions

1. Keep products off floor
2. Store containers so the labels remain in good condition
3. Keep pesticides dry, cool, and out of direct sunlight

XXIX. Methods of protecting environment

A. Reduce/eliminate runoff from fertilizers, pesticides, and sewage outlets

B. Control chemical leaching from landfills

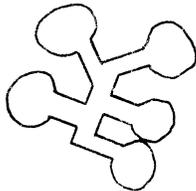
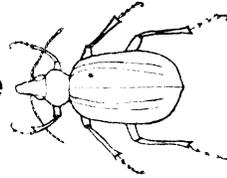
- C. Eliminate chemicals discharged from industrial processing
- D. Greater precautions to eliminate oil and fuel spills
- E. Reduce particles discharged by automobiles, power plants, factories, home furnaces, and waste incinerator plants
 - F. Eliminate cigarette smoking
 - G. Eliminate chlorofluorocarbons emitted from aerosol cans
 - H. Use conservation techniques to reduce soil erosion
 - I. Develop wildlife habitats to protect wildlife
 - J. Others

Pesticide and Pest Controlled



Herbicide

Insecticide



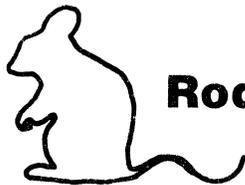
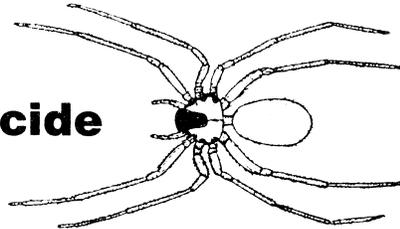
Fungicide

Bactericide



Nematicide

Acaricide



Rodenticide

Without Pesticides

1. Yield would be reduced
2. Food would be more expensive
3. Food would be less available
4. Food would be of lower quality
5. Labor requirements would increase
6. Exports would decrease
7. Lower standard of living
8. More of work force involved in food production

Existing Pesticide Label

SAMPLE LABEL — FRONT PANEL

NOMITE^R 50W

Miticide

Wettable Powder Formulation
For Control of Plant-Feeding Mites

ACTIVE INGREDIENT
Methylethylbutyl phos (metbutin) 50.0%

INERT INGREDIENTS 50.0%

E.P.A. Registration No. 1576-491
E.P.A. Establishment No. 1576-NC-1

POISON  **DANGER**

DANGER: KEEP OUT OF REACH OF CHILDREN
See other cautions on side panel

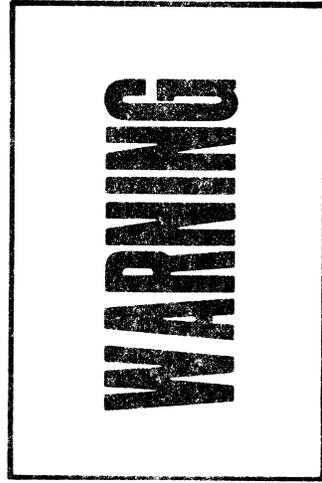
THE MOW CHEMICAL COMPANY
SNOWBALL, N.C. 27000

Brand Name

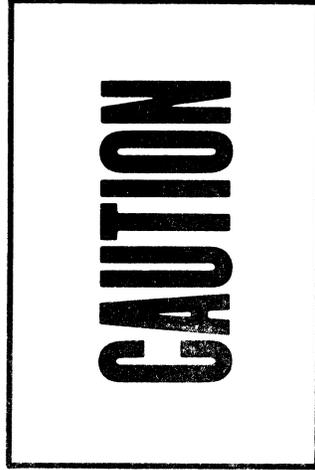
Common Name

Chemical Name

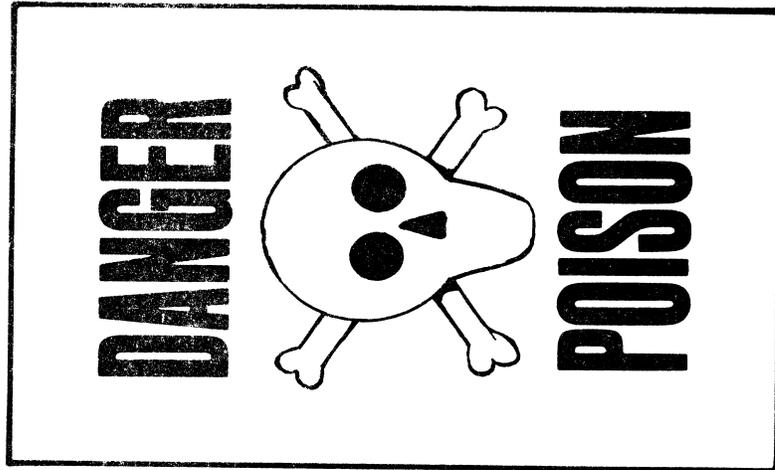
Signal Words



Moderately Toxic

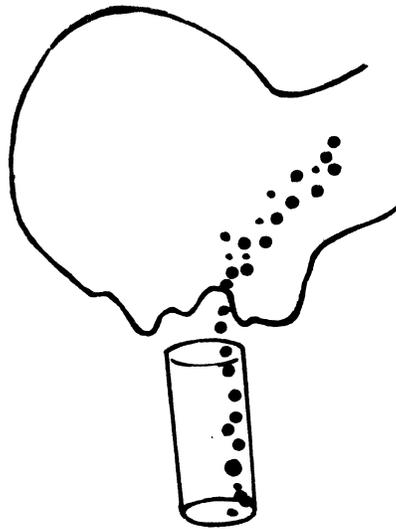


Slightly Toxic to
Relatively Nontoxic

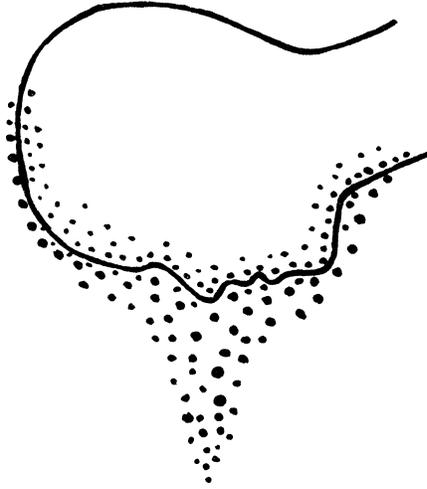


Highly Toxic

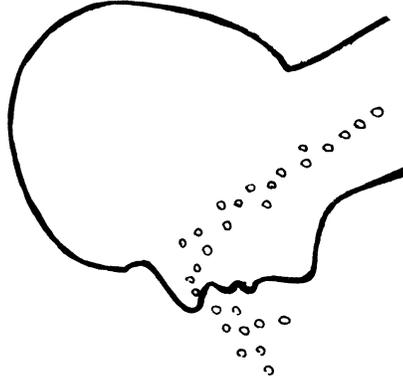
Ways Pesticides Enter Body



Oral

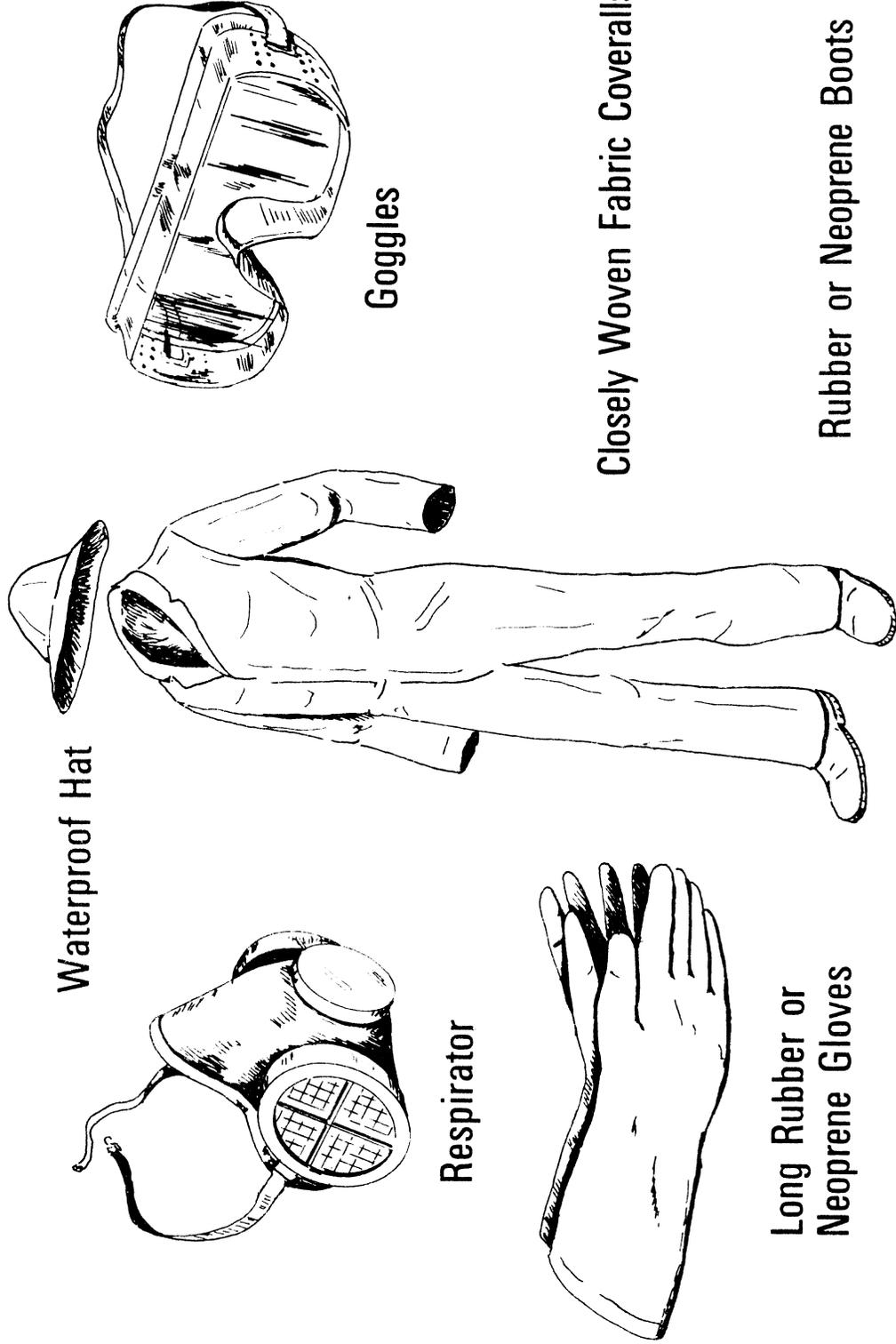


Dermal



Inhalation

Protective Clothing and Equipment



Waterproof Hat

Goggles

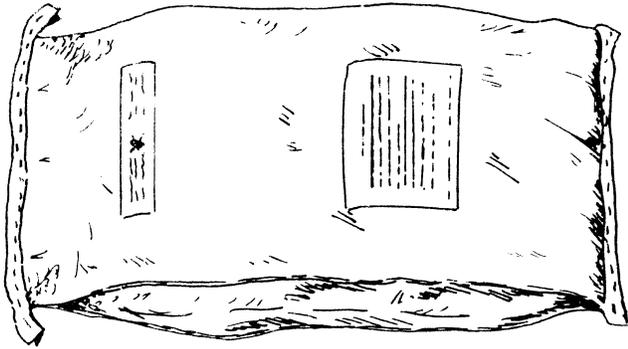
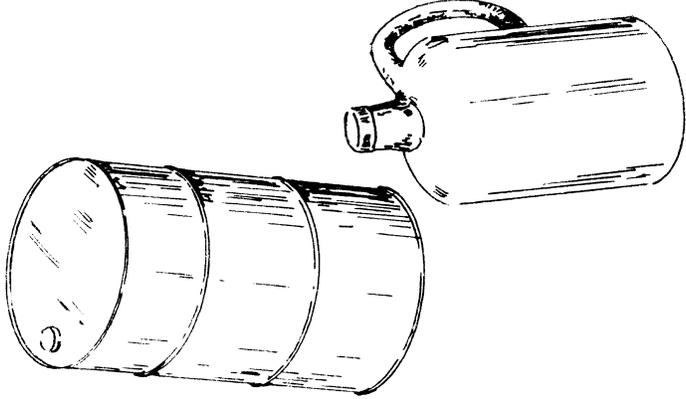
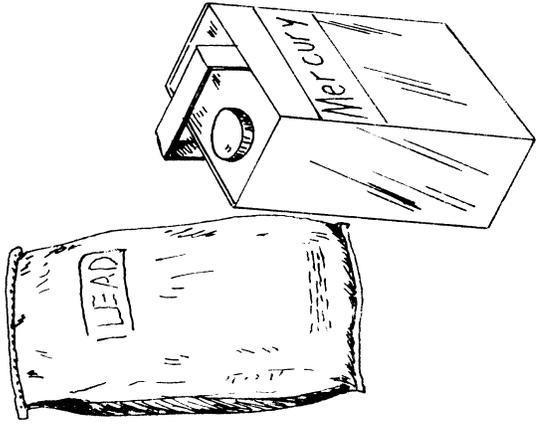
Closely Woven Fabric Coveralls

Rubber or Neoprene Boots

Respirator

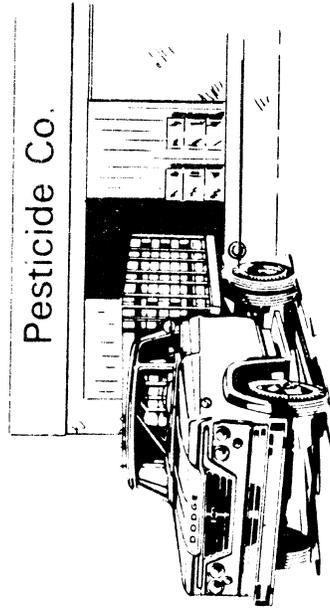
Long Rubber or Neoprene Gloves

Container Classification

<p>Burnable</p> 	<p>Nonburnable</p> 	<p>Mercury, Lead, Arsenic Cadmium and Inorganic Pesticides</p> 
--	--	---

Disposal of Containers

Recycling



Break, Crush, or Cut Apart



Burn



Then Bury



PESTICIDES AND ENVIRONMENTAL PROTECTION

AG 120 - G

ASSIGNMENT SHEET #1--ENVIRONMENTAL POLLUTION REPORT

Name _____

Score _____

1. Identify one area of environmental pollution.
2. Write a report describing how the environment is being damaged by this pollutant and outline steps to protect the environment from this pollutant.
3. Orally report your findings to the class.

PESTICIDES AND ENVIRONMENTAL PROTECTION

AG 120 - G

UNIT TEST

Name _____ Score _____

1. Match terms associated with pesticides and environmental protection to the correct definitions. Write the correct numbers in the blanks.

_____ a. Area, building, plant, animal, or pest intended to be treated with pesticide	1.	Pesticide
_____ b. Causing injury to plant life	2.	Tolerance
_____ c. Through the mouth	3.	Certification
_____ d. Measure of how poisonous a chemical is	4.	Phytotoxicity
_____ e. Governmental agency responsible for interpretation and administration of federal laws concerning pesticide handling and use	5.	Hazard
	6.	EPA
_____ f. Maximum amount of pesticide which can legally remain on or in any food or feed crop at harvest or animal at slaughter	7.	Drift
	8.	Target
_____ g. Movement of pesticide vapors due to chemical volatilization of the product	9.	Short-term
	10.	Residual
_____ h. Process by which a chemical is taken into plants, animals, or minerals	11.	LD ₅₀
_____ i. Pesticide that remains in the environment for a fairly long time	12.	Oral
	13.	Dermal
_____ j. Relationship between the toxicity of the pesticide and the exposure or use of the pesticide	14.	Inhalation
_____ k. Absorbed through the skin	15.	Toxicity
_____ l. Immediate effects (within 24 hours) of a single exposure to a chemical	16.	Acute toxicity
	17.	Chronic toxicity
_____ m. To make impure or pollute	18.	Adsorption
_____ n. Lethal dose of a pesticide which would kill half a large number of test animals if eaten or absorbed through the skin	19.	Absorption
	20.	Carcinogenic
_____ o. Measures the effects of a chemical over a long period of time	21.	Contaminate

- _____p. Chemical or other substance that will prevent, repel, destroy, or control a pest or protect something from a pest
- _____q. Pesticide that breaks down almost immediately into non-toxic by products
- _____r. Material capable of producing a cancerous tumor
- _____s. Breathed in through the lungs
- _____t. Process by which chemicals are held on the surface of a mineral or soil particle
- _____u. Recognition by certifying agent that a person is competent and thus authorized to use or supervise the use of restricted-use pesticides
- _____v. Movement of pesticide through the air to nontarget sites

- 22. Vapor drift
- 23. OSHA

2. List two functions of agricultural chemicals.

- a. _____
- b. _____

3. Name three main groups of pests.

- a. _____
- b. _____
- c. _____

4. Match the pesticide with the pest it controls. Write the correct numbers in the blanks.

- | | |
|--|----------------|
| _____a. Nematode | 1. Herbicide |
| _____b. Spiders, ticks, and mites | 2. Insecticide |
| _____c. Fungal infections | 3. Fungicide |
| _____d. Plants; mainly weeds | 4. Bactericide |
| _____e. Rats and mice | 5. Nematicide |
| _____f. Flies, mosquitos and other insects | 6. Acardicide |
| _____g. Bacterial infection | 7. Rodenticide |

5. Select from the following list results of discontinued pesticide use. Write an "X" in the blank before each correct answer.

- _____ a. Yields would increase
- _____ b. Food would be more expensive
- _____ c. Food would be more available
- _____ d. Food would be of lower quality
- _____ e. Labor requirements would decrease
- _____ f. More of work force involved in agriculture
- _____ g. Exports would increase

6. Match the EPA classification of pesticides to the correct definition. Write the correct number in the blank.

- | | |
|--|-------------------|
| _____ a. Pesticide use which will not cause excessive damage in the environment or endanger the applicator or other persons when applied according to label directions | 1. General use |
| | 2. Endangered use |
| | 3. Restricted use |
| _____ b. Pesticide use which may cause damage in the environment or endanger the applicator or other persons unless label directions are followed | 4. Labeled use |

7. State EPA guidelines for acceptable risk of pesticide use to the public.

8. Select from the following list resources necessary for man to exist. Write an "X" in the blank before each correct answer.

- _____ a. High paying job
- _____ b. Clean water
- _____ c. Food
- _____ d. Companionship
- _____ e. Clean air
- _____ f. Place to live

9. Name two ways pesticides are beneficial to the environment.
- a. _____
 - b. _____
10. Name two ways improper use of pesticides can harm the environment.
- a. _____
 - b. _____
11. Explain how the amount of money that the U.S. spends on food would be affected if no pesticides were used.
- _____
- _____
12. State when a pesticide is considered an environmental pollutant.
- _____
- _____
13. List eight causes for a pesticide to become an environmental pollutant.
- a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
 - f. _____
 - g. _____
 - h. _____
14. List six natural resources that can be contaminated from improper pesticide use.
- a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____

f. _____

15. Describe four possible "Direct Kill" effects on the environment from misuse of pesticides.

a. _____

b. _____

c. _____

d. _____

16. List the three main factors affecting potential groundwater contamination by agrichemicals.

a. _____

b. _____

c. _____

17. Select from the following list facts contained on a pesticide label. Write an "X" in the blank before each correct answer.

____ a. Name and address of chemical company

____ b. Active ingredients

____ c. Kind of formulation

____ d. Crops the pesticide may be used on

____ e. Type of pesticide

____ f. Chemicals the pesticide may be mixed with

____ g. Storage and disposal precautions

_____h. Net content

_____i. Inspection number

_____j. Signal word

_____k. Directions for use

18. Match signal words found on labels with the correct toxicity level. Write the correct numbers in the blanks.

1. Danger

2. Warning

3. Caution

4. Restricted

_____a. Slightly toxic to relatively non-toxic pesticides

_____b. Moderately toxic pesticides

_____c. Highly toxic pesticides

19. List four safety precautions when mixing and handling pesticides.

a. _____

b. _____

c. _____

d. _____

20. Name two climatic factors that affect pesticide application.

a. _____

b. _____

21. Name the two causes of most pesticide poisoning.

a. _____

b. _____

22. List three ways pesticides enter the body.

a. _____

b. _____

c. _____

23. List the most important routes of pesticide entry for:

a. Applicators_____

b. Small children_____

24. List three steps to follow in case of pesticide poisoning.
- a. _____
 - b. _____
 - c. _____
25. Select from the following list protective clothing and equipment needed for pesticide application. Write an "X" in the blank before each correct answer.
- ____ a. Sturdy leather boots
 - ____ b. Unlined, neoprene gloves
 - ____ c. Tightly woven fabric coveralls
 - ____ d. Unlined, neoprene boots
 - ____ e. Protective cotton gloves
 - ____ f. Tight fitting goggles or face shield
 - ____ g. Pant legs on inside of boots for protection
 - ____ h. Waterproof hat
 - ____ i. Waterproof suit when mixing highly toxic pesticides
26. Select from the following list ways to prevent exposure during application. Write an "X" in the blank before each correct answer.
- ____ a. Keep livestock out of spray area
 - ____ b. Wipe gloves off on clothing if they become contaminated
 - ____ c. Never eat, drink, or smoke when handling pesticides
 - ____ d. Do not wipe hands on clothing
 - ____ e. Work in pairs when handling hazardous pesticides
 - ____ f. Keep all kids on the tractor while you fill the spray tank
 - ____ g. Never blow out clogged lines with your mouth
 - ____ h. Wear protective clothing and equipment
27. Name four methods for disposal of pesticides and pesticide containers.
- a. _____
 - b. _____

PESTICIDES AND ENVIRONMENTAL PROTECTION

AG 120 - G

ANSWERS TO TEST

- | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| 1. | a. | 8 | g. | 22 | m. | 21 | s. | 14 |
| | b. | 4 | h. | 19 | n. | 11 | t. | 18 |
| | c. | 12 | i. | 10 | o. | 17 | u. | 3 |
| | d. | 15 | j. | 5 | p. | 1 | v. | 7 |
| | e. | 6 | k. | 13 | q. | 9 | | |
| | f. | 2 | l. | 16 | r. | 20 | | |
2. Improve crop growth; Protect against crop pest
3. Answer should include three of the following:
Insects; Mites, ticks and spiders; Bacteria, fungi and viruses; Nematodes; Vertebrate animals; Weeds
- | | | | | |
|----|----|---|----|---|
| 4. | a. | 5 | e. | 7 |
| | b. | 6 | f. | 2 |
| | c. | 3 | g. | 4 |
| | d. | 1 | | |
5. b, d, f
- | | | | | |
|----|----|---|----|---|
| 6. | a. | 1 | b. | 3 |
|----|----|---|----|---|
7. EPA currently defines acceptable risk to the public at one death per million due to pesticide exposure
8. b, c, e, f
9. Answer should include two of the following:
Enable more food to be produced on same area; Control plant diseases, parasites, insects and weeds; Control animal diseases, parasites and insects; Preserve outdoor activities
10. Answer should include two of the following:
Cause nature imbalance; Pollute streams and water supply; Pollute crops; Pollute soil; Injure desirable plants; Persistent residues in food chain
11. It is estimated that the average total income spent on food in the U.S. would increase from 17% to 30% without that protection that pesticides provide
12. A pesticide is considered an environmental pollutant when it moves away from the designated or target area
13. Drift; Soil leaching; Runoff; Improper disposal and storage; Improper application; Erosion; Carried out as residues in crop and livestock; Evaporation and then movement with air currents

14. Ground water; Surface water; Soil; Air; Fish; Wildlife
15. Fine mists of herbicides drifting to and killing nearby crops or landscape plants; Bees and other pollinators can be killed if pesticides are applied while they are in the field; Natural enemies of pest insects can be killed; Life in streams or ponds can be wiped out
16. Soil type and other geological characteristics; Pesticide's resistance and mobility within the soil; Production and application methods of pesticide use
17. a, b, c, e, g, h, j, k
18. a. 3 b. 2 c. 1
19. Answer should include four of the following:

Follow all safety precautions stated on label; Use protective clothing and equipment as stated on the label; Rinse empty containers and measuring cups to remove any residue; Read the label or consult an expert to make sure mixes of two or more pesticides are compatible; Avoid splashes, spills and leaks; Wash all contaminated areas of clothing or equipment; Dispose of empty containers properly
20. Answer should include two of the following:

Soil moisture; Rain; Humidity; Temperature; Light
21. Careless practices; Ignorance
22. Oral; Dermal; Inhalation
23. a. Dermal and inhalation
b. Oral and dermal
24. Check to see if patient is breathing; Call doctor or take victim to doctor or hospital; Locate pesticide label and have available for doctor
25. b, c, d, f, h, i
26. a, c, d, e, g, h
27. Answer should include four of the following:

Open burning; Burial; Recycling; Chemical degradation; Soil injection; Encapsulation; Pesticide-approved incinerator
28. Answer should include the following information:

Site--Separate from other equipment or material storage facilities; Not located on floodplain; Spill and drainage containment for large storage facilities

Building--Fire resistant; Cement floor; Exhaust fan for ventilation; Sufficient lighting; Locked door; Sufficient storage area

Conditions--Keep products off floor; Store containers so the labels remain in good condition;
Keep pesticides dry, cool, and out of direct sunlight

29. Answer should include five of the following:

Reduce/eliminate runoff from fertilizers, pesticides and sewage outlets; Control chemical leaching from landfills; Eliminate chemicals discharged from industrial processing; Greater precautions to eliminate oil and fuel spills; Reduce particles discharged by automobiles, power plants, factories, home furnaces and waste incinerator plants; Eliminate cigarette smoking; Eliminate chlorofluorocarbons emitted from aerosol cans; Use conservation techniques to reduce soil erosion; Develop wildlife habitats to protect wildlife; Other logical answers

EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

UNIT OBJECTIVE

After completion of this unit, students should be able to list the major areas of agricultural mechanics and safety procedures related to agricultural mechanics. Students should also be able to calculate board feet and identify fasteners. This knowledge will be demonstrated by completing a unit test with a minimum score of 85 percent accuracy.

SPECIFIC OBJECTIVES AND COMPETENCIES

After completion of this unit, the student should be able to:

1. List the five major areas in agricultural mechanics.
2. List 10 rules for keeping an orderly and safe shop.
3. Describe the Idaho state rules regarding eye and face protection in the shop.
4. List the three components necessary for a fire to occur.
5. Match the classes of fires to statements defining each class.
6. Match types of fire extinguishers to their uses.
7. Select steps to free someone receiving an electrical shock.
8. Describe first aid for a shock victim.
9. Describe the steps to be taken involving an accident and first aid for the victim.
10. Match terms associated with bills of materials to the correct definitions.
11. Identify the actual width of lumber when given the rough width.
12. Calculate board feet.
13. Define fastener.
14. Identify types of nails.
15. Match types of nails to their uses.
16. Identify types of screw heads.
17. Identify common types of screws.
18. Match types of screws to their uses.
19. Identify types of bolts.

20. Match types of bolts to their uses.
21. Identify types of washers.
22. Identify types of nuts.
23. Identify types of hinges.
24. Match types of hinges to their uses.
25. Identify types of rivet heads.
26. List types of rivets.
27. Define pitch, run, rafter, common rafter and bottom cut.
28. Identify the parts of a framing square.
29. Identify the various tables found on the framing square and name one use for each.
30. Identify five types of roofs from an illustration of each.
31. Identify four kinds of rafters when given a drawing illustrating the various kinds.
32. Name three methods of determining the length of common rafters.
33. Demonstrate the ability to lay out and cut common rafters.

EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

SUGGESTED ACTIVITIES

- I. Suggested activities for the instructor
 - A. Make transparencies and necessary copies of materials.
 - B. Provide students with objective sheet.
 - C. Provide students with information sheets, laboratory exercise and assignment sheet.
 - D. Discuss unit and specific objectives.
 - E. Discuss information, laboratory exercise and assignment sheet.
 - F. Review and give test.
 - G. Reteach and retest if necessary.

- II. Instructional materials
 - A. Objective sheet
 - B. Suggested activities
 - C. Information sheets
 - D. Transparency masters
 - 1. TM 1--The Fire Triangle
 - 2. TM 2--Types of Fire Extinguishers
 - 3. TM 3--Safety Precautions
 - 4. TM 4--Types of Nails
 - 5. TM 5--Types of Screws
 - 6. TM 6--Types of Bolts
 - 7. TM 7--Types of Washers
 - 8. TM 8--Types of Nuts
 - 9. TM 9--Types of Hinges
 - 10. TM 10--Parts of a Roof

11. TM 11--Parts of a Steel Framing Square
 12. TM 12--Framing Square Tables
 13. TM 13--Types of Roofs
 14. TM 14--Kinds of Rafters
 15. TM 15--Cutting a Rafter
- E. Assignment sheet
1. AS 1--Calculate Board Feet
- F. Laboratory exercise
1. LE 1--Lay Out and Cut Common Rafters
- G. Answers to assignment sheets
- H. Test
- I. Answers to test
- III. Unit references
- A. *Idaho State Board for Vocational Education Curriculum Guide in Agricultural Mechanics*, University of Idaho and the Idaho State Board for Vocational Education.
 - B. *Oklahoma Curriculum Guide*, Oklahoma State University and the Oklahoma State Board for Vocational Education, Stillwater, Oklahoma, 1984.

EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

INFORMATION SHEET

I. Major areas of agricultural mechanics

Agricultural mechanics--All unspecialized mechanical activities performed on the farm and in the home

A. Agricultural mechanics skills

(Note: This includes areas such as selection, sharpening, care, and correct use of shop tools and equipment; woodwork and simple carpentry; sheet metal work; elementary forge work; electric arc and oxyacetylene welding; pipe fitting; simple plumbing repairs; and rope work.)

B. Agricultural power and machinery

(Note: This includes selection, management, adjustment, operation, maintenance, and repair (excluding major repair requiring specialized equipment and services) of engines, trucks, tractors, trailers, and machinery used in farming and agriculturally-oriented businesses and services.)

C. Agricultural electrical power and processing

(Note: This includes utilization of electricity in the home and in productive enterprises and selection, installation, operation, and maintenance of electrical equipment.)

D. Agricultural structures

(Note: This includes elementary scale drawing and plan reading; farmstead layout; functional requirements of houses, shelters, and storages; water systems; and septic tanks and sewage disposals.)

E. Soil and water management

(Note: This includes elementary leveling; land measurement and mapping; drainage; irrigation; terracing; and contouring.)

II. Rules for keeping an orderly and safe shop

A. Think safety at all times

B. Wear clean, protective clothing while in the shop

C. Wear safety glasses

D. Use the right tools and equipment for the job

E. Return all tools and equipment to their proper places

- F. Be aware of others when doing a task that might hurt someone

(Note: This is particularly important when children are around. Children will watch an arc welder, for example, out of curiosity.)
- G. Keep work areas clean
- H. Do not use equipment unless instructed in its use
- I. Report all accidents to instructor
- J. Conduct oneself in a mature manner at all times; the shop is no place for playing games!

III. Idaho rules regarding eye and face protection

(Note: These rules could become more specific as new laws are passed. Be sure to check current regulations.)

- A. Protective eye and face equipment shall be required when there is a reasonable probability of injury that can be prevented by such equipment
- B. No unprotected person shall knowingly be subjected to a hazardous environmental condition
- C. Suitable eye protectors shall be provided where machines or operations present the hazard of flying objects, glare, harmful liquids or radiation
- D. Eye and face protection shall meet the American National Standards for Occupational and Educational Eye and Face Protection, Z87.1-1968

IV. Components necessary for fire to occur (Transparency 1)

- A. Fuel
- B. Oxygen
- C. Heat

(Note: To produce fire these three elements are necessary and must be present at the same time. If any one of the three is missing, a fire cannot be started, or with the removal of any one of them, the fire will be extinguished.)

V. Classes of fires

- A. Class A--Fires that occur in ordinary combustible materials

Examples: Wood, rags and rubbish
- B. Class B--Fires that occur with flammable liquids

Examples: Gasoline, oil, grease, paints and thinners

C. Class C--Fires that occur in or near electrical equipment

Examples: Motors, switchboards, and electrical wiring

D. Class D--Fires that occur with combustible metals

Example: Magnesium

VI. Types of fire extinguishers (Transparency 2)

A. Pressurized water--Used on Class A fires

(Note: This type of fire extinguisher is usually operated by squeezing a handle or trigger.)

B. Soda acid--Used on Class A fires

(Note: This type is operated by turning the extinguisher upside down.)

C. Carbon dioxide (CO₂)--Used on Class B and C fires

(Note: This type is usually operated by squeezing a handle or trigger.)

D. Dry chemical--Used on Class B, C, and D fires

(Note: This type is usually operated by squeezing a handle, trigger or lever.)

E. Foam--Used on Class A and B fires

(Note: This type is operated by turning the extinguisher upside down.)

VII. Ways to free someone from receiving electrical shock (Transparency 3)

(Note: Less than 1/4 ampere will stop the heart. Current flowing in a 25-watt lamp at 115 volts is enough to stop the heart of an average man.)

A. 120-140 volts

1. Locate line wire or source of electrical current and disconnect if possible

(Caution: Do not take hold of the person's body with your bare hand.)

2. Decide immediately whether it would be easier to move person or move conductor

(Caution: If conductor is to be moved, use some type of non-conductive material. If person's body is to be moved, use several thicknesses of paper or cloth as an insulator.)

3. Grasp person's arm or leg with paper or cloth in hand and quickly pull the person free of the conductor

- B. Over 240 volts
 - 1. Assume a downed wire is hot and can kill you
 - 2. Protect the scene by posting a guard to keep passersby at least 200 feet away
 - 3. Call power supplier immediately and give exact location of the trouble

VIII. First aid for electrical shock

- A. Call doctor or ambulance
- B. Treat with mouth-to-mouth resuscitation if breathing has stopped
(Note: If heart has stopped beating, CPR is the only way to revive the victim.)

IX. Steps to be taken involving accidents and first aid for the victim

- A. Accidents
 - 1. Report all accidents to the teacher immediately
 - 2. Do not attempt to move victim unless absolutely necessary to protect a life
 - 3. Leave accident scene alone; do not move anything
- B. First aid
 - 1. Stop the bleeding
 - 2. Clear the airway
 - 3. Treat for shock

X. Terms associated with bills of materials

- A. Bill of materials--Itemized list of the number and kind of pieces needed and the dimensions of each for the construction of a project
- B. Board foot--Piece of lumber one inch thick, 12 inches long, and 12 inches wide
- C. Running foot--Foot length of a material regardless of thickness and width
- D. Square foot--Equal to a 12-inch by 12-inch surface regardless of thickness
- E. Cubic foot--Measurement 12 inches long by 12 inches wide by 12 inches thick
- F. Square--Unit of measurement equal to 100 square feet of material
- G. Surfaced lumber--Lumber that has been surfaced by running through a planer

- H. Rough stock--Lumber that has been sawed to dimension but not planed; usually thicker and wider
- I. Planer--Machine that smoothes the surface of rough lumber
- J. Gauge--Unit of measure for thickness of metal

XI. Lumber width

	Rough	Actual
A.	4 inches	3 1/2 inches
B.	6 inches	5 1/2 inches
C.	8 inches	7 1/2 inches
D.	10 inches	9 1/2 inches
E.	12 inches	11 1/2 inches

XII. Formula for calculating board feed (Assignment Sheet #1)

$$\frac{\text{No. of pieces} \times \text{thickness in inches} \times \text{width in inches} \times \text{length in feet}}{12}$$

Example: One board 1" thick X 4" wide X 12' long

$$\frac{1 \times 1" \times 4" \times 12'}{12} = 4 \text{ board feet}$$

XIII. Fastener--Any device (such as a nail, screw, rivet or bolt) used to construct or give stability to an object

XIV. Types of nails (Transparency 4)

- A. Common
- B. Box
- C. Finishing
- D. Flooring
- E. Shingle
- F. Roofing
- G. Plaster board
- H. Hinge
- I. Duplex

- J. Wire staple
- K. Lead head
- L. Concrete

XV. Types of nails and their uses

- A. Common--Used for nailing sheeting, shiplap, and fencing
- B. Box--Used for nailing siding
- C. Finishing--Used for interior finishing, for ceiling, and for cabinet work
- D. Flooring--Used in flooring work
- E. Shingle--Used in nailing shingles
- F. Roofing--Used in nailing rolled roofing and composition shingles
- G. Plaster board--Used in nailing plaster board
- H. Hinge--Used in fastening hinges
- I. Duplex--Used in form construction
- J. Wire staple--Used in fence construction
- K. Lead head--Used in nailing galvanized iron
(Note: Neoprene rings are more effective.)
- L. Concrete--Used to fasten wood to concrete

XVI. Types of screw heads

A. Flat head



B. Pan head



C. Round head



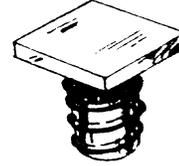
D. Hex head



E. Oval head



F. Square head



(Note: Other screw heads are for special purposes.)

XVII. Common types of screws (Transparency 5)

- A. Lag
- B. Flat head
- C. Oval head
- D. Round head
- E. Phillips

XVIII. Types of screws and their uses

- A. Lag--Used in fastening wood to brick or concrete
- B. Flat head--Used for strength in wood work (usually countersunk)
- C. Oval head--Used in cabinet work and for attaching hinges
- D. Round head--Used for flush mounting wood
- E. Phillips--Usually used in auto industry

XIX. Types of bolts (Transparency 6)

- A. Machine
- B. Carriage
- C. Sove
 - 1. Round head
 - 2. Flat head
- D. Plow
- E. Toggle

F. Expansion

(Note: The following are special-made bolts designed for specific purposes.)

1. U-bolt
2. Eye bolt
3. Hook bolt
4. Turnbuckle

XX. Types of bolts and their uses

- A. Machine--Used in assembling machinery
- B. Carriage--Used in fastening wood and other soft materials
- C. Round head stove--Used in sheet metal work; general purpose bolt
- D. Flat head stove--Used in sheet metal work; general purpose bolt; is countersunk
- E. Plow--Used for fastening tillage implements
- F. Toggle--Used in fastening objects to hollow walls
- G. Expansion--Used in fastening material to concrete walls or floors

XXI. Types of washers (Transparency 7)

- A. Plain (flat)
- B. Lock
 1. Common
 2. External
 3. Internal
 4. Internal-External
 5. Countersunk

XXII. Types of nuts (Transparency 8)

- A. Square
- B. Hexagon
- C. Acorn or cap
- D. Jam or lock

- E. Castle
- F. Wing
- G. Self-locking

XXIII. Types of hinges (Transparency 9)

- A. Strap
- B. T
- C. Butt
- D. Screw hook and strap
- E. Cabinet
- F. Hasp

XXIV. Types of hinges and their uses

- A. Strap--Used in heavy construction
- B. T--Used when butt end is fastened into a studding
- C. Butt--Used in cabinet work
- D. Screw hook and strap--Used in hinging gates
- E. Cabinet--Used in cabinet work
- F. Hasp--Used in fastening doors; provides a place for a lock

XXV. Types of rivet heads

- A. Flat



- B. Round



- C. Countersunk



XXVI. Types of rivets

- A. Solid
- B. Hollow
- C. Explosive
- D. Two-part (male and female)
- E. Blind or pop

(Note: Rivets are made of several kinds of materials: aluminum, copper, brass, mild steel or black iron, and magnesium. They also come in various sizes and lengths.)

XXVII. Terms and definitions of rafter framing (Transparency 10)

- A. Span--The distance over the plates
- B. Run--The shortest horizontal distance measured from a plumb line through the center of the ridge to the outer edge of the plate
- C. Rise--The vertical distance from the top of the ridge to the level of the foot, rise = pitch times 2 times the run
- D. Pitch--The slope or slant of a roof expressed as rise in inches per foot of run
- E. Plate--The roof member to which rafters are framed at the lower end
- F. Ridge board--A horizontal roof member used for connecting the upper ends of the rafters
- G. Rafter--A supporting roof member
- H. Common rafter--The rafter extending at right angles from the plate to ridge
- I. Hip rafter--A rafter extending diagonally from the corner of the plate to the ridge
- J. Valley rafter--A rafter extending diagonally from plate to ridge at the point of intersection of two roof surfaces
- K. Jack rafter--A rafter that does not extend from plate to ridge
- L. Hip jack--The rafters which extend from the plate to the hip rafters
- M. Valley jack--The rafters which extend from the ridge to the valley rafters
- N. Top cut--The cut end which rests against the ridge
- O. Bottom cut--The cut end which rests against the plate

- P. Side cuts--The fittings for other roof members
Example: Hip, valley, and jack rafters have side cuts where they fit against other roof members
- Q. Measuring line--A line on which the rafter length is measured
- R. Tail--The position of a rafter extending beyond the plate
- S. Foot line--The horizontal plane level with the top of the plate
- T. Cripple jack--The rafters which extend from a hip rafter to a valley rafter

XXVIII. Steel framing square (Transparency 11)

- A. Made in form of right angle
- B. Has two arms
 - 1. Body--24 inches long, 2 inches wide
 - 2. Tongue--16 inches long, 1 1/2 inches wide
- C. Heel--Where the tongue and body meet
- D. Face--The visible side when body is held in left hand and the tongue in right hand, with heel up
- E. Back--Opposite side of face

XXIX. Tables found on framing square (Transparency 12)

- A. Essex
 - 1. Located on back of the body
 - 2. Used in figuring board feet
- B. Octagon
 - 1. Located on face of tongue
 - 2. Used to lay off an eight-sided figure from a four-sided figure
- C. Brace
 - 1. Located on back of tongue
 - 2. Used in figuring the length of common braces

- D. Rafter
 - 1. Located on face of body
 - 2. Used in determining length and cuts of all rafters

XXX. Types of roofs (Transparency 13)

- A. Lean-to
- B. Gable
- C. Hip
- D. Gable and valley
- E. Hip and valley
- F. Flat
- G. Quonset
- H. Deck

XXXI. Kinds of rafters (Transparency 14)

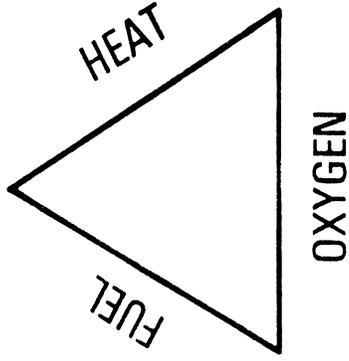
- A. Common
- B. Jack
- C. Valley
- D. Hip

XXXII. Finding lengths of common rafters (Transparency 15)

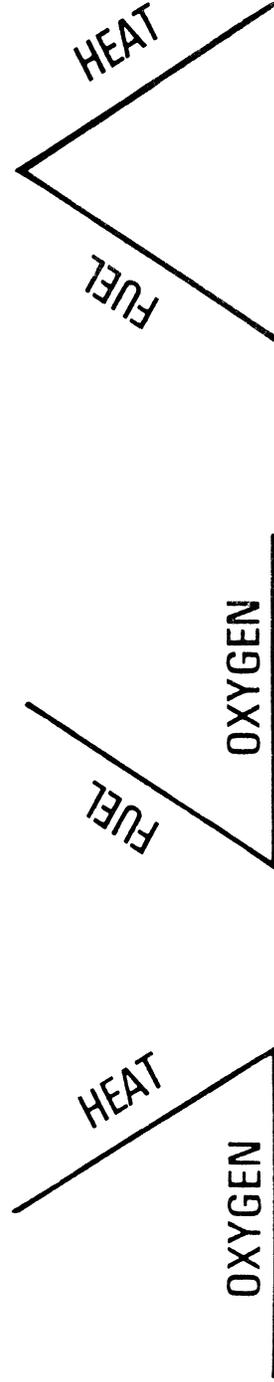
- A. Mathematical method
- B. Scaling method
- C. Stepping method
- D. Rafter table method

The Fire Triangle

To produce fire, three things must be present at the same time.



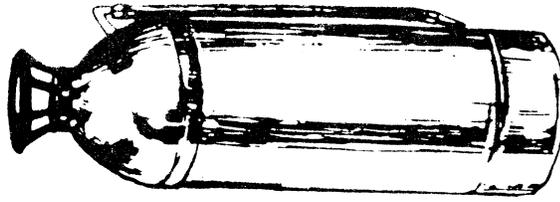
If any one of the three is missing, a fire cannot be started or, with the removal of any one, the fire will be extinguished.



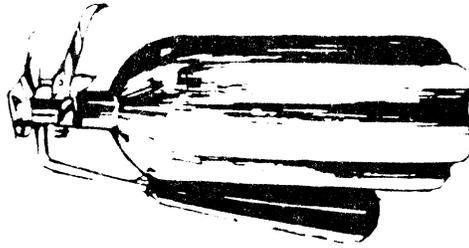
Types of Fire Extinguishers



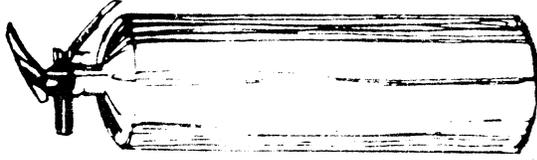
**Pressurized
Water**



Soda-Acid



**Carbon
Dioxide**

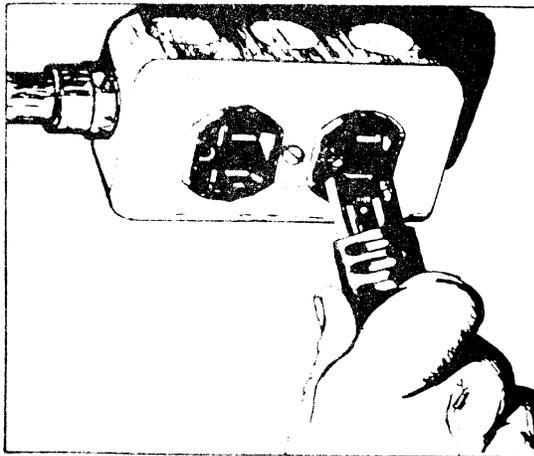


**Dry
Chemical**

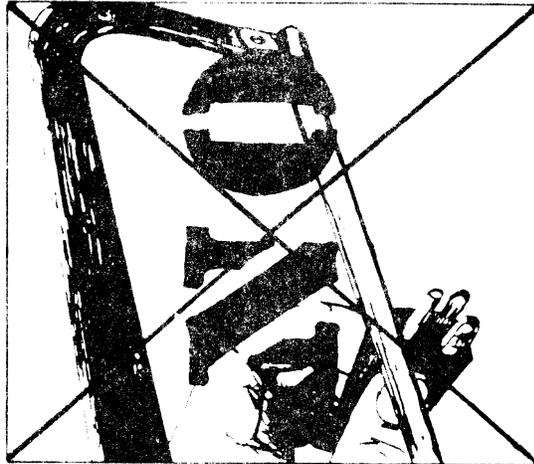


Foam

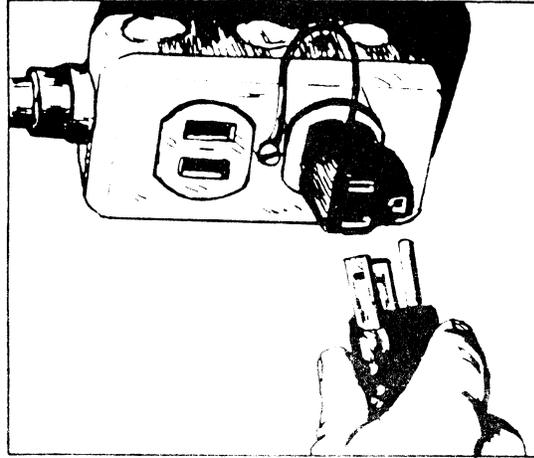
Safety Precautions



Modern homes have three-wire receptacles

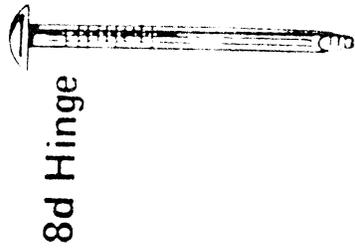


Never cut off the third prong



Use adaptor on old-type receptacle

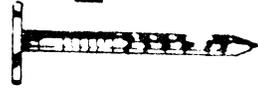
Types of Nails



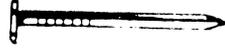
8d Hinge



Plaster Board



Roofing



Shingle



Lead Head



Wire Staple



6d Flooring



6d Finishing



6d Box

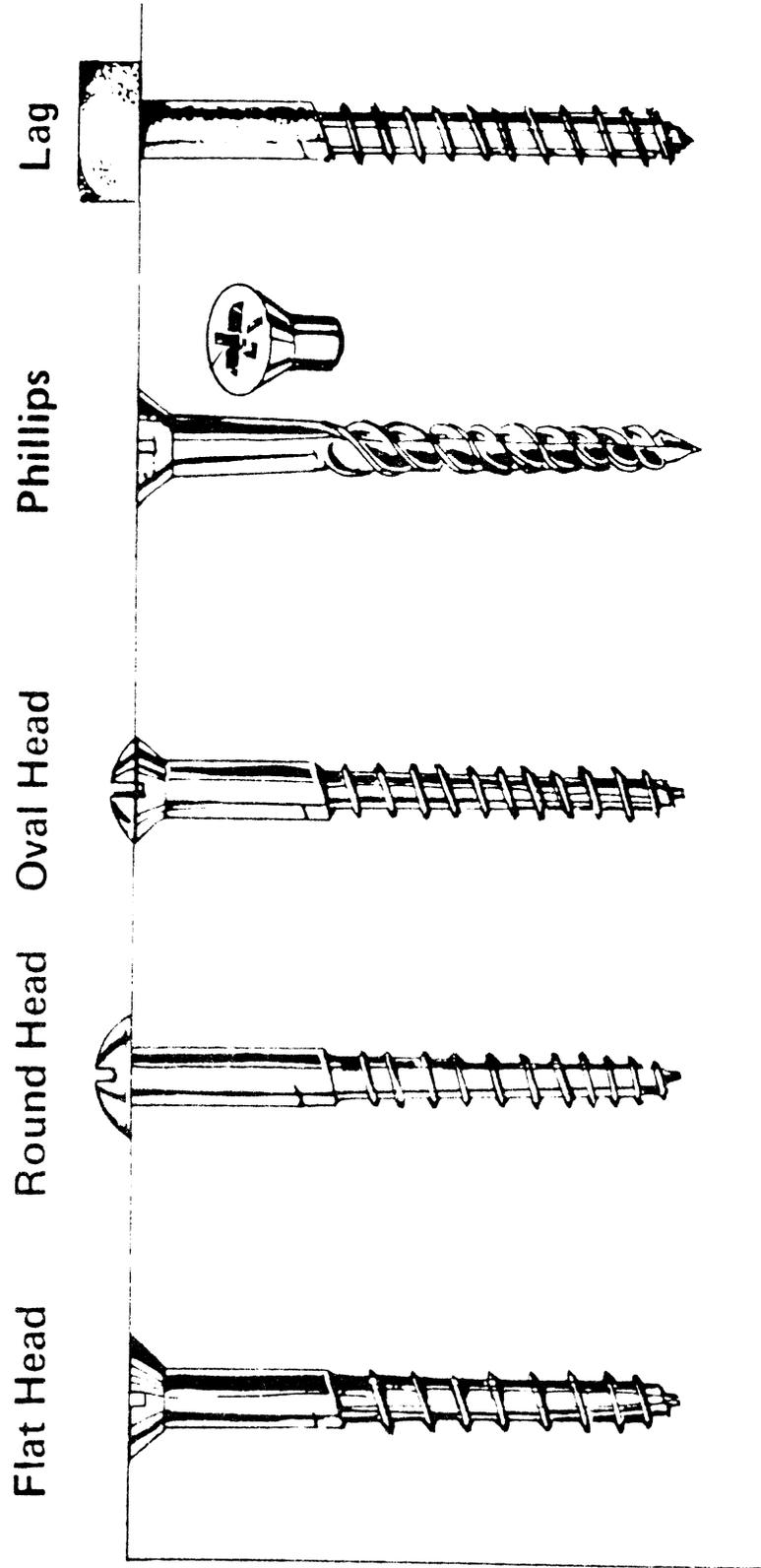


6d Common

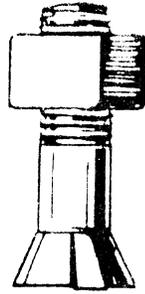


Duplex

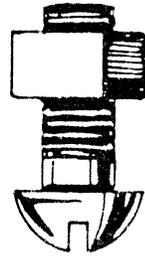
Types of Screws



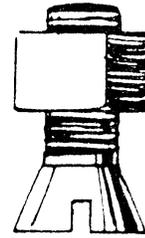
Types of Bolts



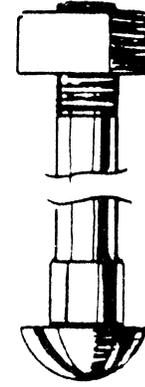
Plow



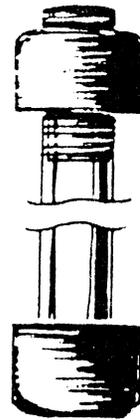
Round Head Stove



Flat Head Stove



Carriage



Machine



Expansion



Toggle



Eye Bolt



Hook Bolt

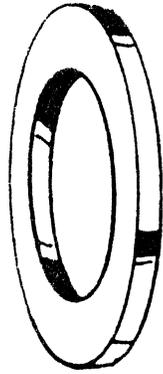


U Bolt

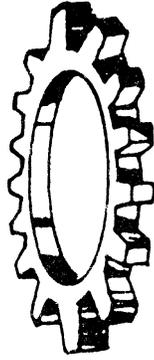


Turnbuckle

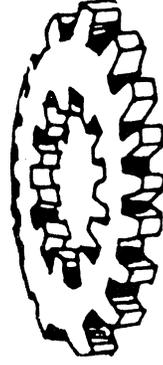
Types of Washers



Plain Flat Washer



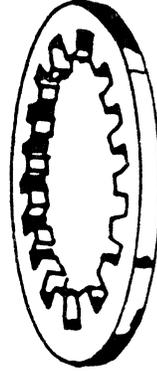
Lock Washer
External



Lock Washer
Internal-External



Common
Lock Washer

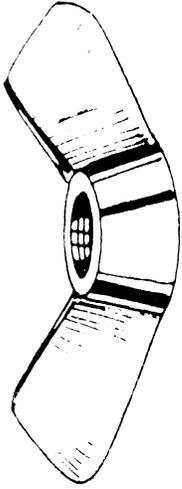


Lock Washer
Internal

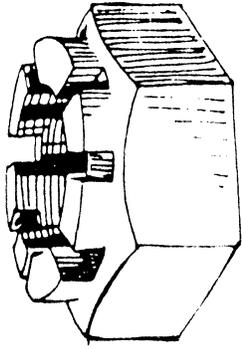


Lock Washer
Countersunk

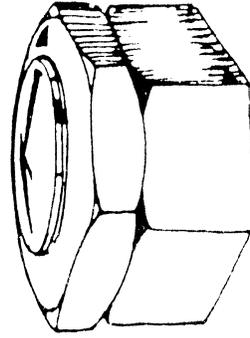
Types of Nuts



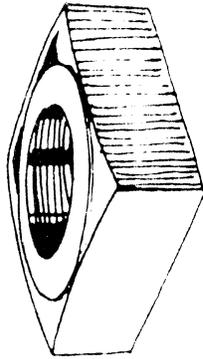
Wing Nut



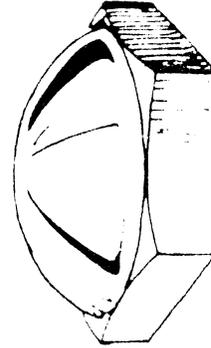
Castle



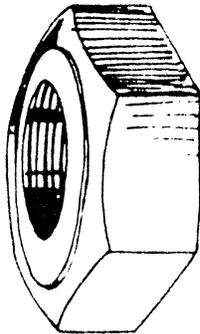
Jam or
Lock



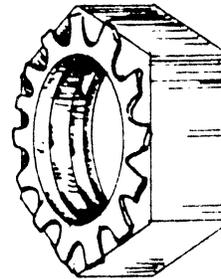
Square



Acorn or Cap

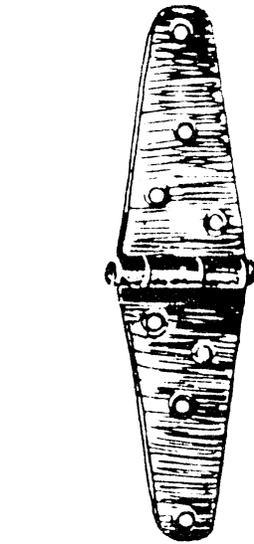


Hexagon

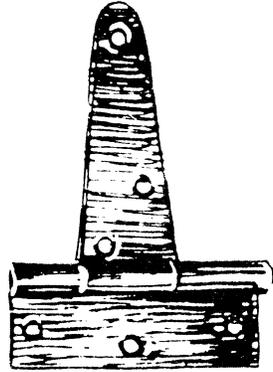


Self-Locking

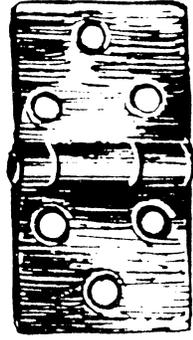
Types of Hinges



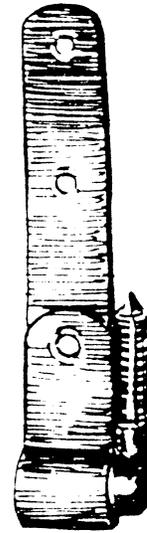
Strap



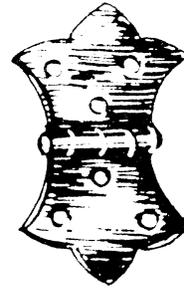
T



Butt



Screw Hook and Strap

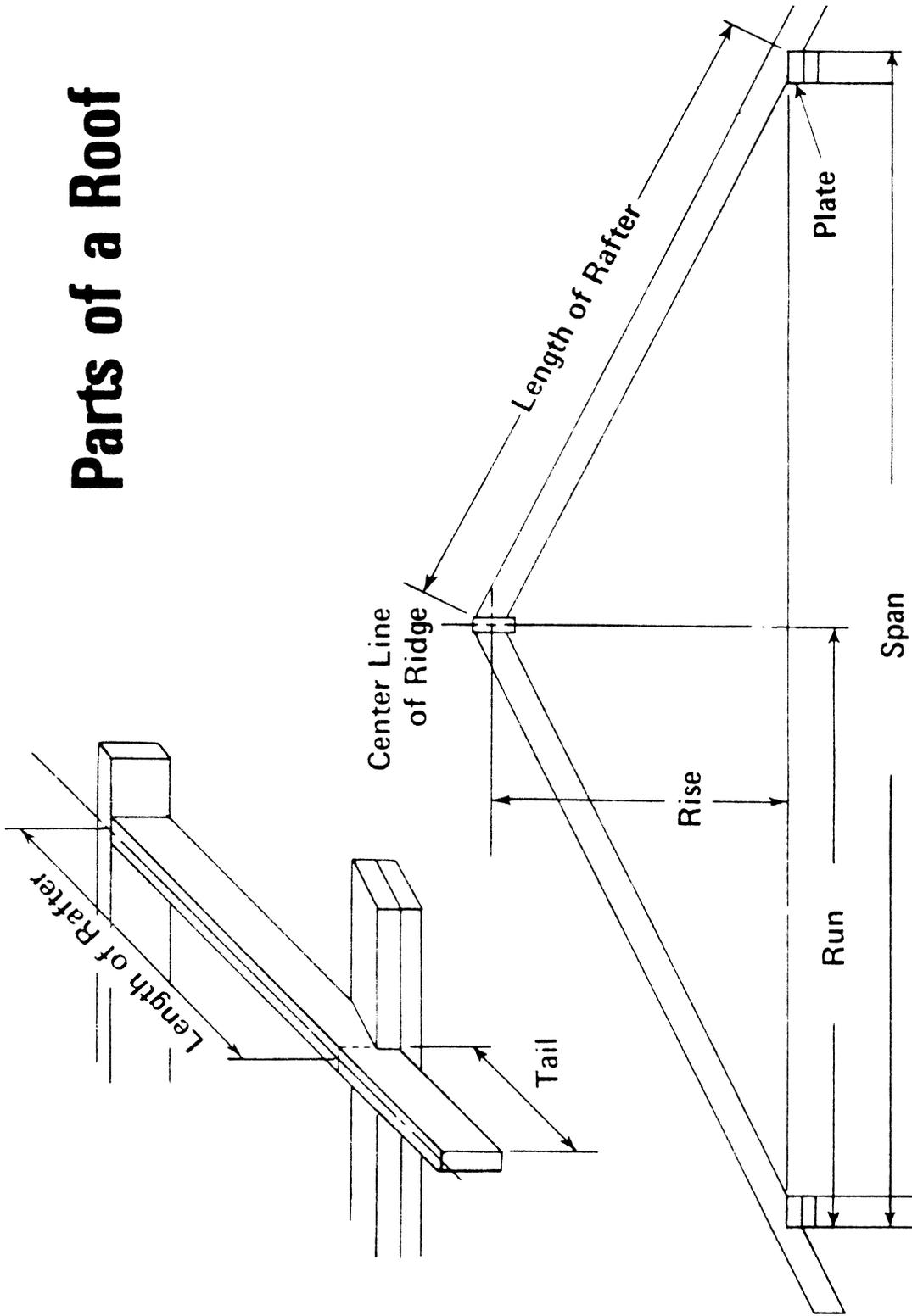


Cabinet

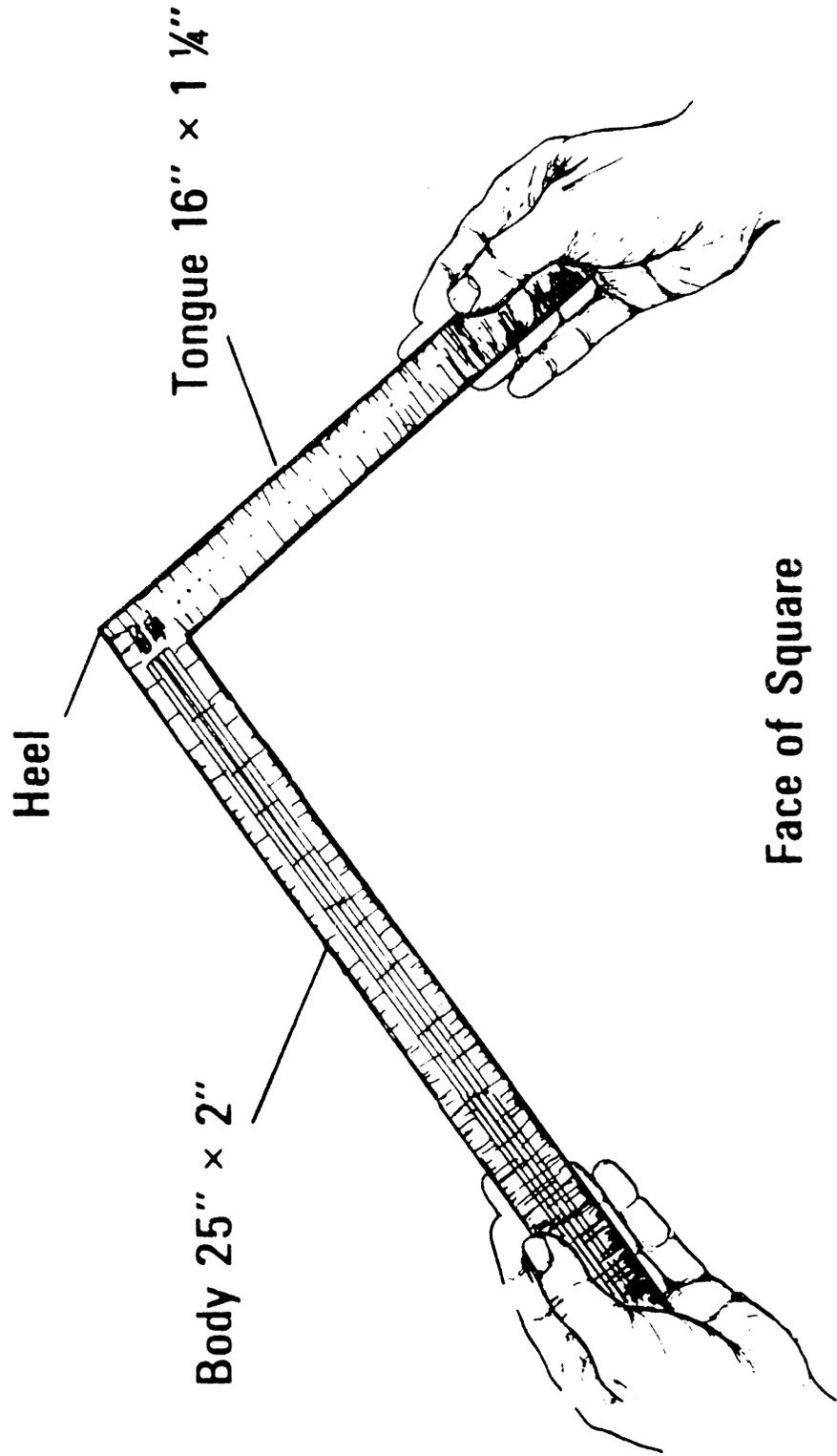


Hasp

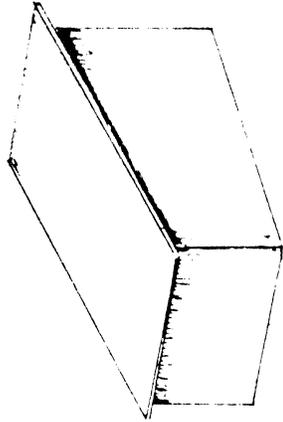
Parts of a Roof



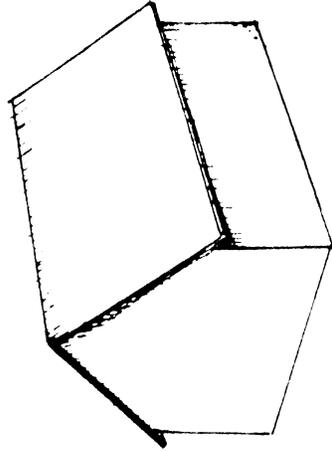
Parts of Steel Framing Square



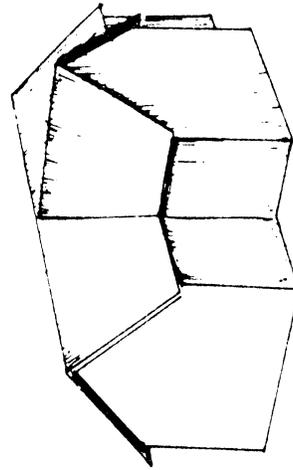
Types of Roofs



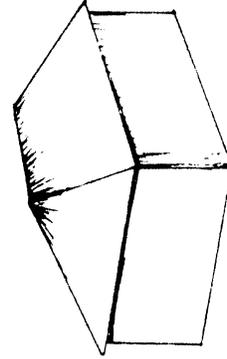
Lean-To



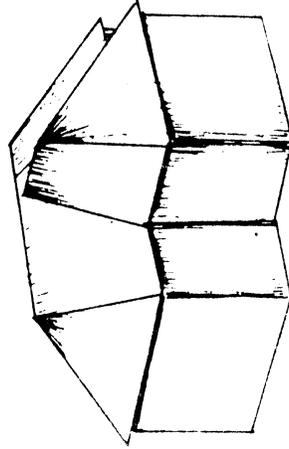
Gable



Gable and Valley

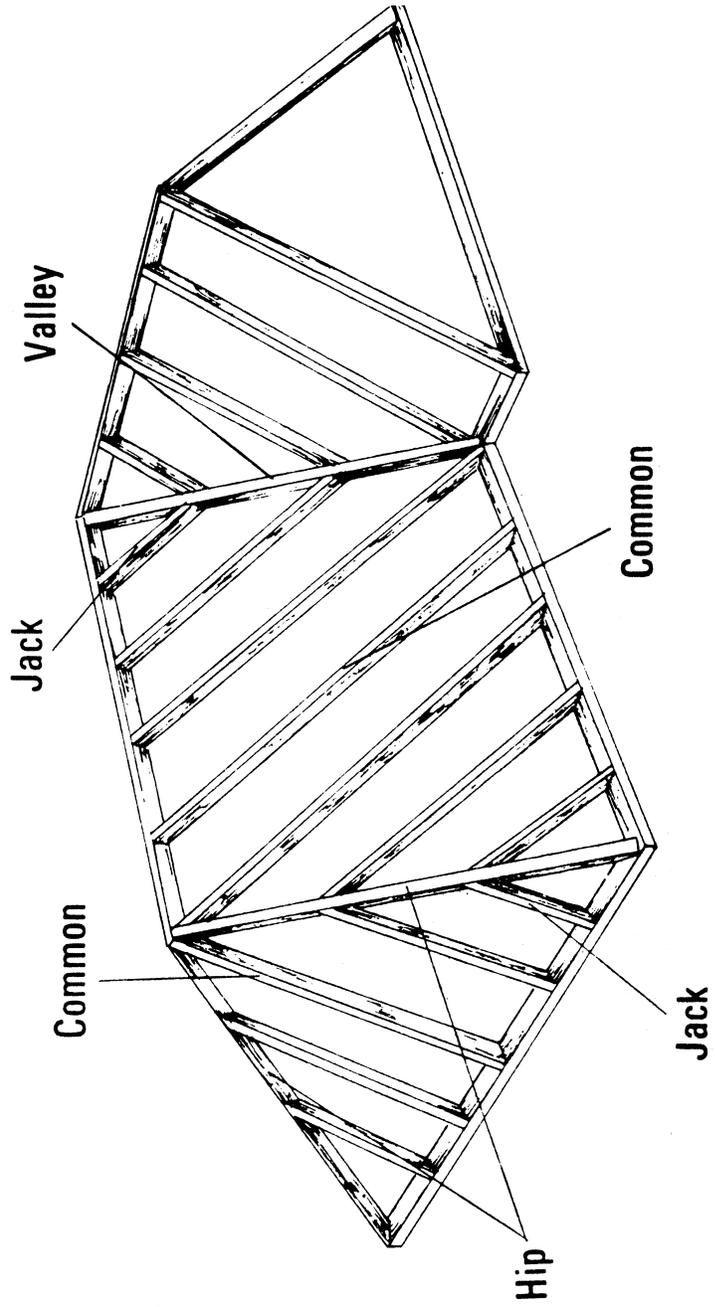


Hip



Hip and Valley

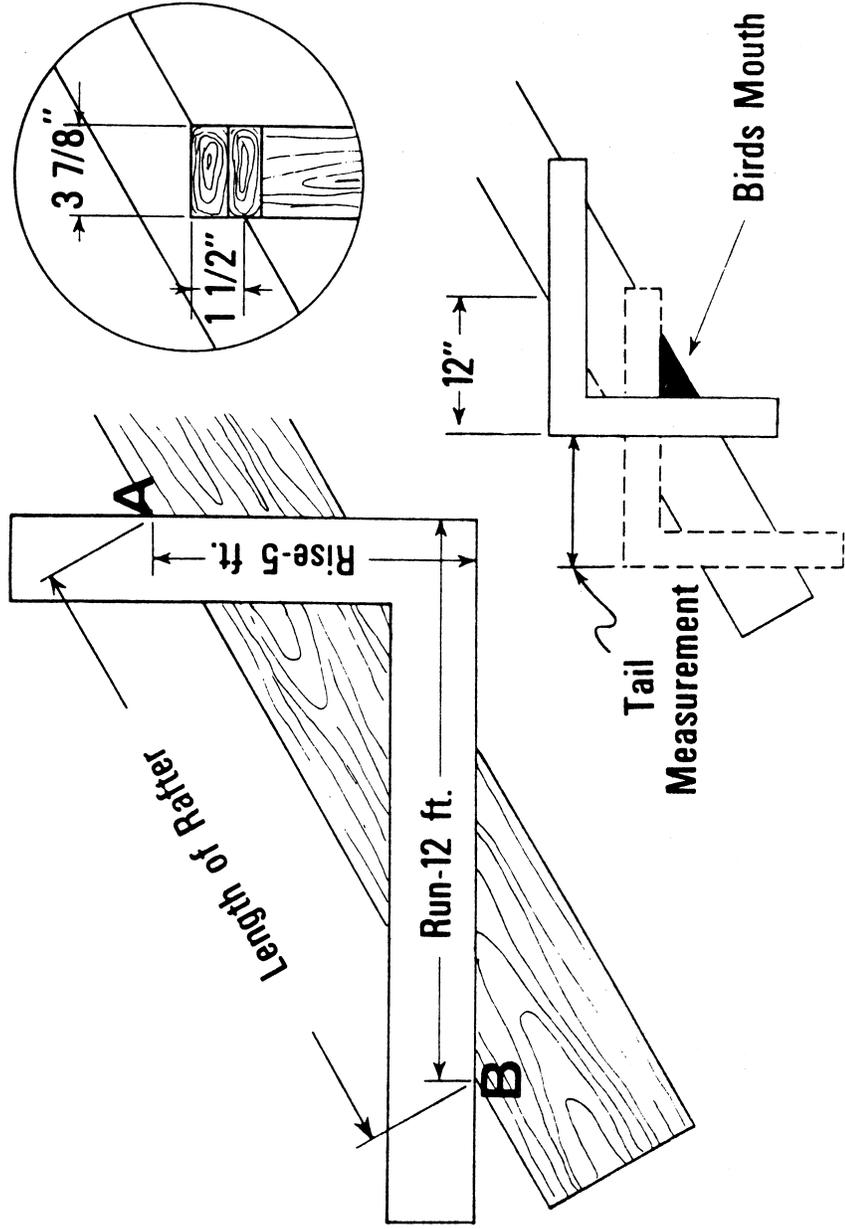
Kinds of Rafters



TM 14

TM 14

Cutting a Rafter



TM 15

TM 15

EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

ASSIGNMENT SHEET #1--CALCULATE BOARD FEET

Name _____ Score _____

Calculate the total board feet in each of the problems listed below.

Formula:

No. of pieces X thickness in inches X width in inches X length in feet
12

1. 1 piece 1" X 10" X 10' =
2. 1 piece 1" X 4" X 14' =
3. 1 piece 2" X 6" X 8' =
4. 1 piece 2" X 8" X 10' =
5. 2 pieces 2" X 4" X 8' =
6. 5 pieces 1" X 8" X 8' =
7. 10 pieces 4" X 6" X 10' =
8. 1 piece 2" X 4" X 18' =

EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

ANSWERS TO ASSIGNMENT SHEET

1. 8.3 board feet
2. 4.7 board feet
3. 8 board feet
4. 13.3 board feet
5. 10.7 board feet
6. 26.7 board feet
7. 200 board feet
8. 12 board feet

EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

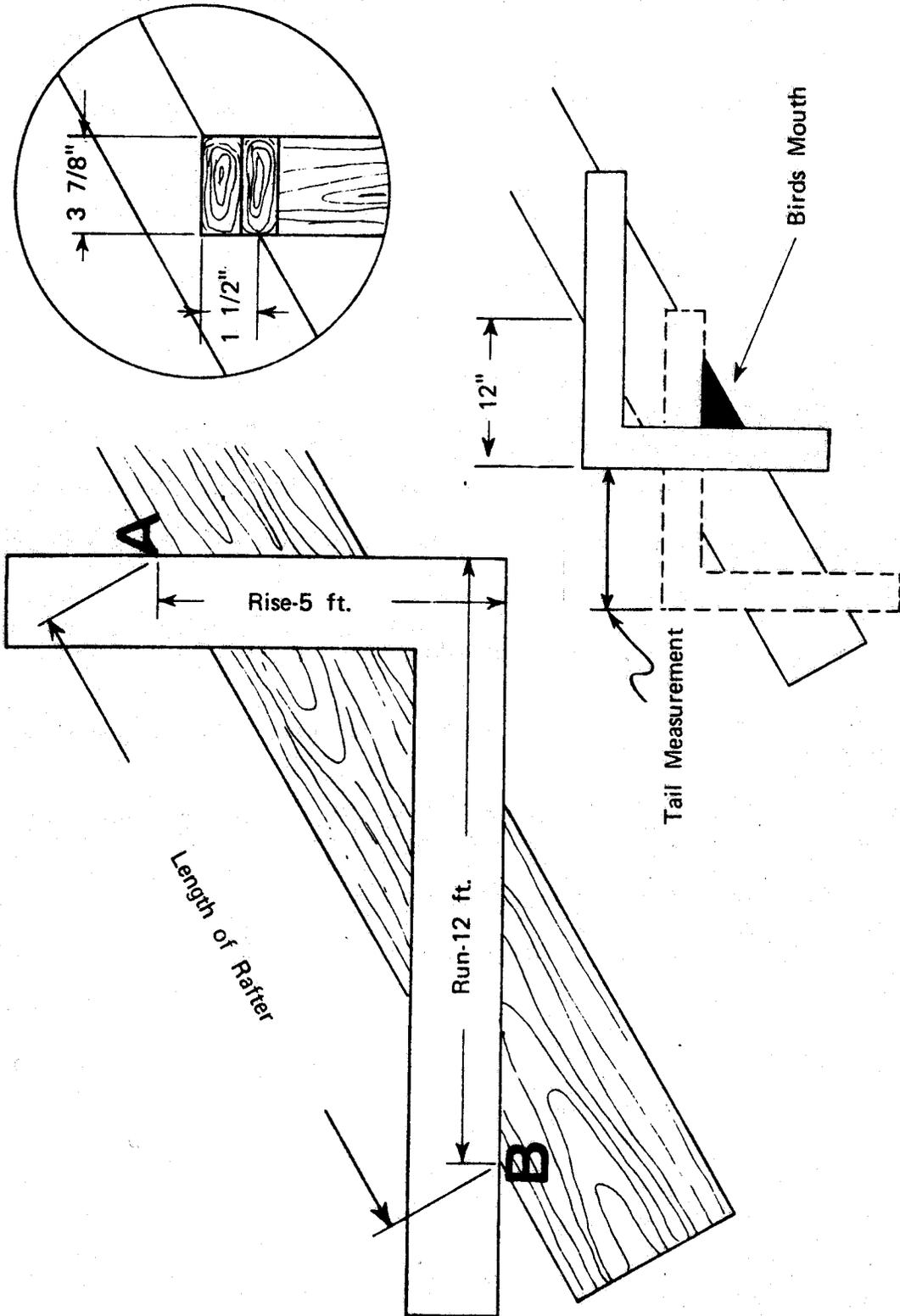
LABORATORY EXERCISE #1--LAY OUT AND CUT COMMON RAFTERS

Name _____ Score _____

- I. Tools and materials needed
 - A. Square
 - B. Pencil
 - C. Crosscut handsaw
 - D. Saw horses
 - E. 2 x 4--Length to be determined by instructor

- II. Procedures
 - A. Figure the span--Width of building, outside of plate to outside of plate
 - B. Figure run--Run is 1/2 of the span or the horizontal distance covered by one rafter
 - C. Figure pitch--Rise in inches per foot of run
 - D. Locate on the tongue of the square the number which represents the rise (See point "A", Figure 1.)
 - E. Locate on the body of the square the number which represents the run (See point "B", Figure 1.)
 - F. Measure shortest distance between these points and this measurement will be the length of the rafter in feet (Figure 1)
 - G. Mark location of cut to be made
 - H. Make cut and turn in to the instructor for grade

III. Diagram of procedure



EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

UNIT TEST

Name _____ Score _____

1. List the five major areas in agricultural mechanics.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

2. List ten rules for keeping a clean and orderly shop.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____
- i. _____
- j. _____

3. Describe the Idaho state rules regarding eye and face protection in the shop.

- a. _____
- _____
- _____

b. _____

c. _____

d. _____

4. List the three components necessary for a fire to occur.

a. _____
 b. _____
 c. _____

5. Match the classes of fire to the correct statements defining each class. Write the correct number in the blank.

_____ a. Fires that occur with flammable liquids	1. Class A
_____ b. Fires that occur in ordinary combustibile materials	2. Class B
_____ c. Fires that occur in or near electrical equipment	3. Class C
_____ d. Fires that occur with combustibile metals	4. Class D

6. Match types of fire extinguishers to their uses. A blank may have more than one correct answer. Write the correct number(s) in the blank. (Answers may be used more than once.)

_____ a. Used on Class A fires	1. Pressurized water
_____ b. Used on Class B, C, and D fires	2. Carbon dioxide (CO ₂)
_____ c. Used on Class A and B fires	3. Dry chemical
_____ d. Used on Class B and C fires	4. Soad acid
	5. Foam

7. Select steps to take to free someone receiving an electrical shock.

_____ a. Take hold of the hands or arms and pull the person away

- _____ b. Decide whether it would be easier to move the person or the conductor.
- _____ c. Post a guard, if possible, to keep people away especially if accident involves a high voltage line
- _____ d. If accident involves a high voltage line, only pull the person away if you have on rubber boots
- _____ e. Call the power supplier if the accident involves a high voltage line

8. Describe first aid for a shock victim.

- a. _____
- b. _____

9. Describe the steps to be taken involving an accident and first aid for the victim.

a. Accidents

- 1) _____
- _____
- 2) _____
- _____
- 3) _____

b. First aid

- 1) _____
- 2) _____
- 3) _____

10. Match terms associated with bills of materials to the correct definitions by placing the appropriate numbers in the blanks provided.

- | | |
|---|-----------------|
| _____ a. Piece of lumber one inch thick, 12 inches long, and 12 inches wide | 1. Square foot |
| _____ b. Foot length of a material regardless of thickness and width | 2. Cubic foot |
| _____ c. Equal to a 12 inch by 12 inch surface regardless of thickness | 3. Running foot |
| _____ d. Unit of measure equal to 100 square feet of material | 4. Square |
| | 5. Board foot |

- | | |
|--|---|
| <p>_____e. Lumber that has been sawed to dimension but not planed; usually thicker and wider</p> <p>_____f. Lumber that has been surfaced by running through a planer</p> <p>_____g. Measurement 12 inches long by 12 inches wide by 12 inches thick</p> <p>_____h. Itemized list of the number and kind of pieces needed and the dimensions of each for the construction of a project</p> <p>_____i. Machine that smooths the surface of rough lumber</p> <p>_____j. Unit of measure for thickness of metal</p> | <p>6. Surfaced lumber</p> <p>7. Planer</p> <p>8. Bill of materials</p> <p>9. Rough stock</p> <p>10. Gauge</p> |
|--|---|

11. List the actual width of lumber for each of the following rough measurements.

<u>Rough</u>	<u>Actual</u>
a. 10 inches	_____
b. 6 inches	_____
c. 12 inches	_____
d. 4 inches	_____
e. 8 inches	_____

12. Calculate board feet in the problems below.

- a. 7 pieces 10" X 12" X 20'
- b. 3 pieces 1" X 2" X 6'

13. Define *fastener*.

14. Identify the following types of nails.



a. _____



b. _____



c. _____



d. _____



e. _____



f. _____



g. _____



h. _____



i. _____



j. _____



k. _____

15. Match the types of nails on the right to the correct uses on the left by placing the appropriate numbers in the blanks provided.

- | | |
|---|------------------|
| _____ a. Used for interior finishing, for ceiling, and for cabinet work | 1. Common |
| _____ b. Used in nailing shingles | 2. Box |
| _____ c. Used in nailing plaster board | 3. Shingle |
| _____ d. Used in form construction | 4. Roofing |
| _____ e. Used in nailing galvanized iron | 5. Wire staple |
| _____ f. Used for nailing sheeting, shiplap, and fencing | 6. Flooring |
| _____ g. Used for nailing siding | 7. Plaster board |
| _____ h. Used in flooring work | 8. Hinge |
| _____ i. Used in nailing rolled roofing and composition shingles | 9. Duplex |
| _____ j. Used in fastening hinges | 10. Lead head |
| _____ k. Used in fence construction | 11. Finishing |
| _____ l. Used to fasten wood to concrete | 12. Concrete |

16. Identify the following types of screw heads.



a. _____



b. _____



c. _____



d. _____



e. _____



f. _____

17. Identify the following common types of screws.



a. _____



b. _____

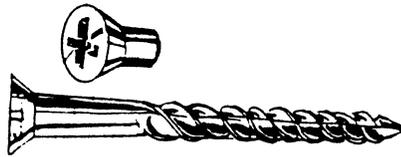


c. _____



d. _____

e. _____



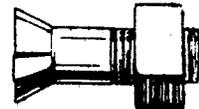
18. Match the types of screws on the right to the correct uses on the left. Place the appropriate numbers in the blanks provided.

- | | |
|---|---------------|
| _____ a. Used for strength in wood work (usually countersunk) | 1. Lag |
| _____ b. Usually used in auto industry | 2. Flat head |
| _____ c. Used for flush mounting wood | 3. Oval head |
| _____ d. Used in fastening wood to brick or concrete | 4. Round head |
| _____ e. Used in cabinet work and for attaching hinges | 5. Phillips |

19. Identify the following types of bolts.



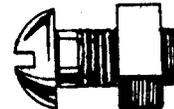
a. _____



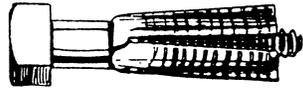
b. _____



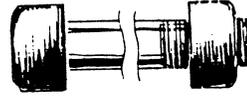
c. _____



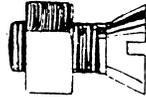
d. _____



e. _____



f. _____



g. _____



h. _____



i. _____



j. _____



k. _____

20. Match the types of bolts on the right to the correct uses on the left. Place the appropriate numbers in the blanks provided.

- | | |
|---|---------------------|
| _____ a. Used in assembling machinery | 1. Machine |
| _____ b. Used in fastening wood and other soft materials | 2. Carriage |
| _____ c. Used in sheet metal work; general purpose bolt | 3. Round head stove |
| _____ d. Used in fastening objects to hollow walls | 4. Flat head stove |
| _____ e. Used in fastening material to concrete walls or floors | 5. Plow |
| _____ f. Used for fastening tillage implements | 6. Toggle |
| _____ g. Used in sheet metal work; general purpose bolt; is countersunk | 7. Expansion |

21. Identify the following types of washers.



a. _____



b. _____



c. _____



d. _____

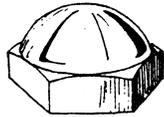


e. _____

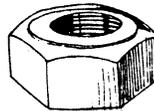


f. _____

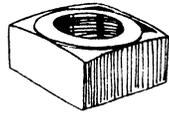
22. Identify the following types of nuts.



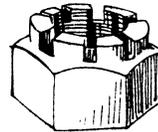
a. _____



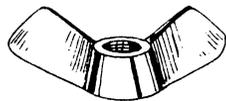
b. _____



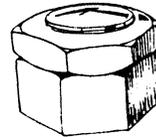
c. _____



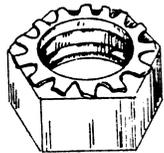
d. _____



e. _____

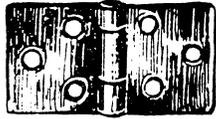


f. _____

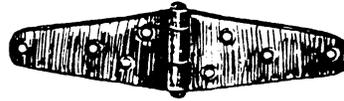


g. _____

23. Identify the following types of hinges.



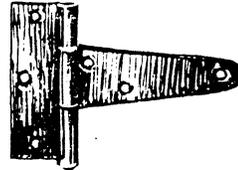
a. _____



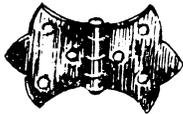
b. _____



c. _____



d. _____



e. _____

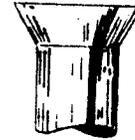


f. _____

24. Match the types of hinges on the right to the uses on the left. A blank may have more than one correct answer.

- | | |
|---|-------------------------|
| _____ a. Used when butt end is fastened into a studding | 1. Strap |
| _____ b. Used in hinging gates | 2. T |
| _____ c. Used in fastening doors; provides a place for a lock | 3. Butt |
| _____ d. Used in heavy construction | 4. Screw hook and strap |
| _____ e. Used in cabinet work | 5. Cabinet |
| | 6. Hasp |

25. Identify the types of rivet heads below by writing the correct names in the blanks provided.



- a. _____ b. _____ c. _____

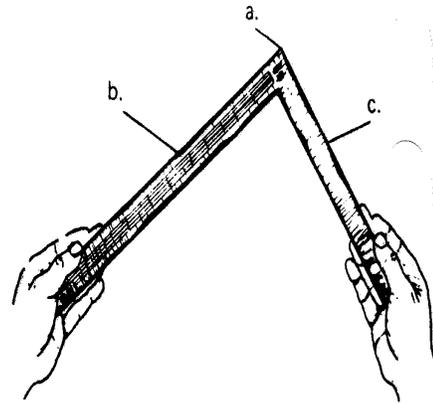
26. Name four types of rivets.

- a. _____
- b. _____
- c. _____
- d. _____

27. Define the following terms.

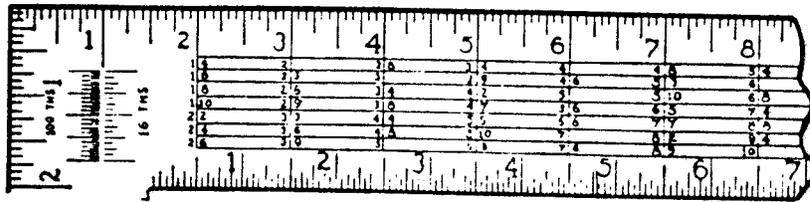
- a. Pitch _____
- _____
- b. Run _____
- _____
- _____
- c. Rafter _____
- d. Common rafter _____
- _____
- e. Bottom cut _____

28. Identify the parts of the steel framing square.



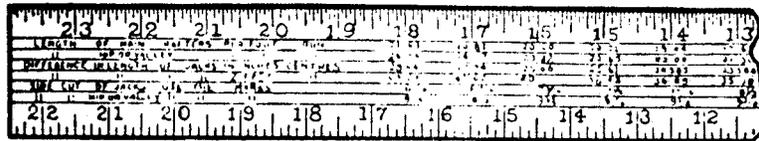
a. _____ b. _____ c. _____

29. Identify the following tables found on the steel framing square and name one use of each.



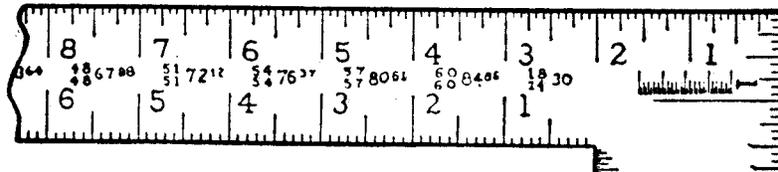
a. _____

b. _____



c. _____

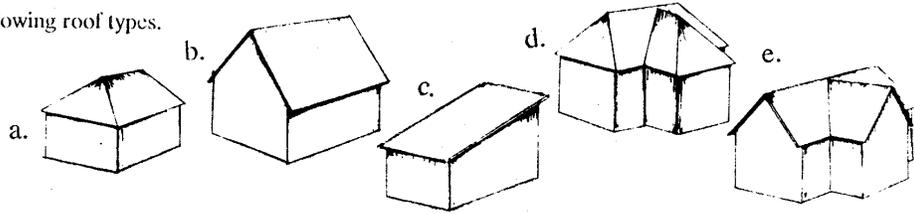
d. _____



e. _____

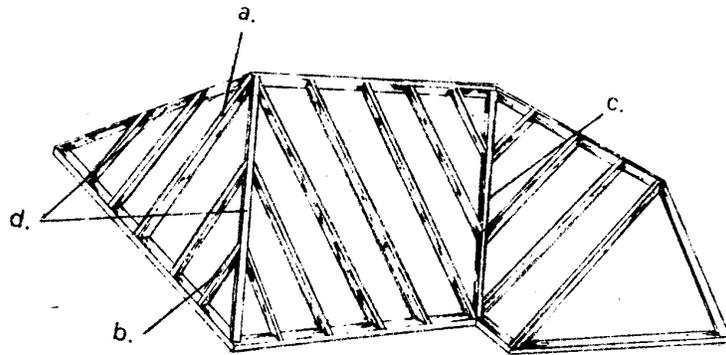
f. _____

30. Identify the following roof types.



- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

31. From the drawing below label the various kinds of rafters.



- a. _____
- b. _____
- c. _____
- d. _____

32. Name three methods of determining the common length of rafters.

- a. _____
- b. _____
- c. _____

EXPLORING AGRICULTURAL MECHANICS

AG 120 - H

ANSWERS TO TEST

1. Agricultural mechanics skills; Agricultural power and machinery; Agricultural electrical power and processing; Agricultural structures; Soil and water management
2. Think safety at all times; Use the right tools and equipment for the job; Return all tools and equipment to their proper places; Wear clean, protective clothing while in the shop; Wear safety glasses; Be aware of others when doing a task that might hurt someone; Keep work areas clean; Do not use equipment unless instructed in its use; Report all accidents to instructor; Conduct oneself in a mature manner at all time
3. Protective eye and face equipment shall be required where there is a reasonable probability of injury that can be prevented by such equipment; No unprotected person shall knowingly be subjected to a hazardous environmental condition; Suitable eye protectors shall be provided where machines or operations present the hazard of flying objects, glare, harmful liquids or radiation; Eye and face protection shall meet the American National Standards for Occupational and Educational Eye and Face Protection, Z87.1-1968
4. Fuel; Oxygen; Heat
5.

a. 2	c. 3
b. 1	d. 4
6.

a. 1, 4, 5	c. 5
b. 3	d. 2,3
7. b, c, e
8. Call doctor or ambulance; Treat with mouth-to-mouth resuscitation if breathing has stopped
9. Accidents: Report all accidents to the teacher immediately; Do not attempt to move victim unless absolutely necessary to protect a life; Leave accident scene alone; Do not move anything
 First aid: Stop the bleeding; Clear the airway; Treat for shock
10.

a. 5	e. 9	h. 8
b. 3	f. 6	i. 7
c. 1	g. 2	j. 10
d. 4		
11.

a. 9 1/2 inches	d. 3 1/2 inches
b. 5 1/2 inches	e. 7 1/2 inches
c. 11 1/2 inches	
12. a. $\frac{7 \times 10'' \times 12'' \times 20'}{12} = 1,400$ board feet

- b. $\frac{3 \times 1'' \times 2'' \times 6'}{12} = 3 \text{ board feet}$
13. Any device (such as a nail, screw, rivet or bolt) used to construct or give stability to an object
14. a. Box
c. Plaster board
e. Shingle
g. Common
i. Duplex
k. Flooring
- b. Hinge
d. Roofing
f. Wire staple
h. Finishing
j. Lead head
15. a. 11
b. 3
c. 7
d. 9
- e. 10
f. 1
g. 2
h. 6
- i. 4
j. 8
k. 5
l. 12
16. a. Flat
c. Oval
e. Hex
- b. Round
d. Pan
f. Square
17. a. Lag
c. Flat head
e. Phillips
- b. Round head
d. Oval head
18. a. 2
b. 5
c. 4
- d. 1
e. 3
19. a. Carriage
c. Toggle
e. Expansion
g. Flat head stove
i. Turnbuckle
k. U-bolt
- b. Plow
d. Round head stove
f. Machine
h. Eye bolt
j. Hook bolt
20. a. 1
b. 2
c. 3
d. 6
- e. 7
f. 5
g. 4
21. a. Common lock
c. External lock
e. Internal lock
- b. Plain (flat)
d. Internal-External lock
f. Countersunk lock
22. a. Acron or cap
c. Square
e. Wing
g. Self-locking
- b. Hexagon
d. Castle
f. Jam or lock
23. a. Butt
c. Hasp
e. Cabinet
- b. Strap
d. T
f. Screw hook and strap

24. a. 2 d. 1
b. 4 e. 3, 5
c. 6
25. a. Flat b. Round c. Countersunk
26. Answer should include four of the following:
Solid; Hollow; Explosive; Two-part (male and female); Blind or pop
27. a. Pitch--The slope or slant of a roof expressed as rise in inches per foot of run
b. Run--The shortest horizontal distance measured from a plumb line through the center of the ridge to the outer edge of the plate
c. Rafter--A supporting roof member
d. Common rafter--A rafter extending at right angles from the plate to the ridge
e. Bottom cut--The cut end which rests against the plate
28. a. Heel
b. Body
c. Tongue
29. a. Essex table
b. Used in figuring board feet
c. Rafter or framing table
d. Used in determining length and cuts of all rafters
e. Brace table
f. Used in figuring length of common braces
30. a. Hip roof
b. Gable roof
c. Lean-to roof
d. Hip and valley roof
e. Gable and valley roof
31. a. Common rafter
b. Jack rafter
c. Valley rafter
d. Hip rafter
32. Answer should include three of the following:
Mathematical method; Scaling method; Stepping method; Rafter table method