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AG 120

INTRODUCTION

TO THE

AGRICULTURAL INDUSTRY

FOR

IDAHO

SECONDARY AGRICULTURE INSTRUCTORS

Developed and written by:
Cathy Tesnohlidek Mosman

Provided through a grant from the
Idaho State Division of Vocational Education
1991

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

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Construct | Demonstrate
---|---
Draw | Transcribe | Show your work | Replace
Make | Reduce | Show procedure | Turn on/off
Build | Increase | Perform an experiment | (Dis) assemble
Design | Figure | Perform the steps | (Dis) connect
Formulate | Conduct | Operate | 
Reproduce | Compare | Remove | 

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 program 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.

2. Films, filmstrips, slideshows, etc.

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.


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.

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

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

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 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

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

Name________________________________________ Score________________________

FFA EMBLEM

DIRECTIONS: Name symbol and complete the description.

1. ____________________ 2. ____________________ 3. ____________________

COMMON INTEREST AND ____________________

FFA IS A OF AGRICULTURE

4. ____________________ 5. ____________________ 6. ____________________

AND OF THE SOIL NATIONAL OF THE FFA

OF AGRICULTURE AND IN AGRICULTURE IN THE FUTURE
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ASSIGNMENT SHEET #3--FFA CROSSWORD PUZZLE

Name______________________________________ Score____________________

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**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**

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"
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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.
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? ________________________________


B. Did all of the FFA officers know their parts from memory? YES  NO 

C. Was there chapter paraphernalia at each officer's station? YES  NO 

D. Was the room set up as specified by the *Official FFA Manual*? YES  NO 

E. Was the order of business made available to all members? YES  NO 

F. Did the majority of the members participate in the meeting? YES  NO 

G. Did the membership use parliamentary procedure in conducting the meeting? YES  NO 

H. Did you enjoy attending? YES  NO 

Why or why not? _________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

I. Did you know your part and did you stand and recite the part with meaning and enthusiasm? YES  NO 

J. Do you think you will be better prepared for the next meeting? YES  NO 

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.
____________________________________   ____________________________________
____________________________________   ____________________________________
____________________________________   ____________________________________
____________________________________   ____________________________________
____________________________________   ____________________________________
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.

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________
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)
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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

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

Assignment Sheet #3

Down
1. Republic
2. Member
3. Serve
4. National Blue
5. Zipper
6. Emblem
7. Blue
8. Corn gold
9. Neat

Across
10. Pledge of Allegiance
11. Live
12. Salute
13. Learn
14. Three
15. 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

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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. ______________________________________________________________________
   ______________________________________________________________________
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. __________________________________________
      __________________________________________
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
Four FFA Degrees:

a. __________________________

b. __________________________

c. __________________________

d. __________________________

Offices and Officer Station Symbols:

a. __________________________

b. __________________________

c. __________________________

d. __________________________
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.  
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
____________________. 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 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

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


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.


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 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. 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 analysis
   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

SAE

OE
(Occupational Experience)

LE
(Laboratory Experience)

OS
(Occupational Skills)
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

HARVEST?
FINANCES?
MARKET?
TILLAGE?
SEED VARIETY?
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

<table>
<thead>
<tr>
<th>JOB TITLE</th>
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<tbody>
<tr>
<td>NATURE OF WORK</td>
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<td>EDUCATION REQUIRED</td>
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<td>NUMBER OF JOBS AVAILABLE EACH YEAR</td>
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<td>ADVANCEMENT OPPORTUNITIES</td>
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<td>WORKING CONDITIONS</td>
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<tr>
<td>AVERAGE SALARY</td>
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<tr>
<td>FRINGE BENEFITS</td>
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</tbody>
</table>
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

PIGS/LITTER

% DEATH LOSS

# FEED/# GAIN

AVERAGE MARKET WEIGHT

GOAL

__________ PIGS/LITTER

________________ %

________________ LBS.

________________ 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

SAE ACTIVITIES

MANAGEMENT

RECORD BOOK

FFA ACTIVITIES

FFA DEGREE
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.

<table>
<thead>
<tr>
<th>OCCUPATIONAL OBJECTIVE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Agricultural Production</td>
<td>Planning and economically using facilities, land, water, machinery, chemicals, finance, and labor in the production of plant and animal products</td>
</tr>
<tr>
<td>Agricultural Electrification, Power and Controls</td>
<td>Safe use of electricity, electrical power, equipment, and automatic controls</td>
</tr>
<tr>
<td>Agricultural Mechanics, Construction and Maintenance Skills</td>
<td>Selecting, safely using, and maintaining hand and power tools, arc and acetylene welding equipment, and construction materials</td>
</tr>
<tr>
<td>Agricultural Power Machinery</td>
<td>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</td>
</tr>
<tr>
<td>OCCUPATIONAL OBJECTIVE</td>
<td>DESCRIPTION</td>
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</tr>
<tr>
<td>Agricultural Structures, Equipment and Facilities</td>
<td>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</td>
</tr>
<tr>
<td>Soil and Water Mechanical Practices</td>
<td>Implementing soil and water management by surveying, planning, laying out, constructing, using, and maintaining irrigation, drainage, and run-off systems</td>
</tr>
<tr>
<td>Animal Production</td>
<td>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</td>
</tr>
<tr>
<td>Crop Production</td>
<td>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</td>
</tr>
<tr>
<td>Food Products</td>
<td>Processing food products such as meat, fish, poultry, eggs, dairy products, fruits and vegetables, and cereal grains for sale and consumption</td>
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<tr>
<td>OCCUPATIONAL OBJECTIVE</td>
<td>DESCRIPTION</td>
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<tr>
<td>Nonfood Products</td>
<td>Processing nonfood products such as cotton, tobacco and wool</td>
</tr>
<tr>
<td>Agricultural Services</td>
<td>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</td>
</tr>
<tr>
<td>Agricultural Supplies Marketing</td>
<td>Purchasing, storing, grading, transporting and marketing agricultural supplies such as feeds, seeds, fertilizers, chemicals, machinery and parts, and products such as livestock and grains</td>
</tr>
<tr>
<td>Animal Grooming</td>
<td>Grooming animals by clipping, bathing, cutting and conditioning hair, and caring for hooves and nails</td>
</tr>
<tr>
<td>Animal Training</td>
<td>Teaching animals to obey commands, competing in shows, and performing all types of activities necessary for animal competition and performances</td>
</tr>
<tr>
<td>Horseshoeing</td>
<td>Selecting and fitting shoes; shaping and nailing shoes to animals' hooves</td>
</tr>
<tr>
<td>OCCUPATIONAL OBJECTIVE</td>
<td>DESCRIPTION</td>
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<td>-------------------------------------------</td>
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<tr>
<td>Arboriculture</td>
<td>Cultivating and maintaining woody plants and trees used for decoration and shade purposes</td>
</tr>
<tr>
<td>Floriculture</td>
<td>Producing flowers, foliage, and related plant materials in fields and greenhouses for ornamental purposes; arranging, packaging and marketing these materials</td>
</tr>
<tr>
<td>Greenhouse Operation and Management</td>
<td>Producing plants under glass and in other artificial environments</td>
</tr>
<tr>
<td>Landscaping</td>
<td>Locating, planting, and maintaining turf, plants, shrubs, or devices for the beautification of home grounds or other areas of human habitation and recreation</td>
</tr>
<tr>
<td>Nursery Operation and Management</td>
<td>Producing turf, plants, shrubs, and trees for the purpose of transplanting or propagating them</td>
</tr>
<tr>
<td>Turf Management</td>
<td>Establishing, managing, and maintaining grass areas for ornamental or recreational purposes</td>
</tr>
<tr>
<td>Forest Products Utilization</td>
<td>Selecting, grading, and marketing forest raw materials for conversion to consumer goods; maintenance, safe operation, and repair of related equipment</td>
</tr>
<tr>
<td>OCCUPATIONAL OBJECTIVE</td>
<td>DESCRIPTION</td>
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<tr>
<td>Logging</td>
<td>Harvesting and transporting trees as a crop; maintaining, safely operating, and repairing logging equipment and machinery</td>
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<tr>
<td>Other</td>
<td>_________________________   _________________________</td>
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</table>

Your occupational objective title
ASSIGNMENT SHEET #2--PREPARE A PLAN FOR A LONG-TERM SAE PROGRAM

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______

________________________________________________________________________
________________________________________________________________________
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20______

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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

\[
\text{(Assets - Liabilities = Net Worth)}
\]

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
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

competed in the District Food Products Contest

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

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

Tina's heifer died, worth $100.00

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

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

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
sold Tina's heifer to another FFA member for $350.00
first frost of the season
competed in District Crops Contest; fifth high individual
feed, care and milking for the month - 15 hours; corral and milking equipment rent - $10.00
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)

Total and balance the journal

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.

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

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.
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.

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

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Neatness of record book</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Completeness of record book</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Accuracy of records</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Quality of annual plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Degree to which available opportunities were used</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Progress/activity during the year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Skills developed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Knowledge gained</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>---</td>
<td>-----------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>9. Level of challenge provided</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Degree of management responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Efficiency rating of ownership projects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Achievement of personal career goals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Degree of expansion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Use of approved practices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Overall value of SAE program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 83999

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

1. Marie  Age 19  4. Mike  Age 8
2. Jake  Age 17  5.  

SOE Programs Recorded in This Book

1. Dairy Cattle
2. Corn Production
3.  
4. Agribusiness Employment - Corn topping
5. Alternative SOE

Order From . . .

INTERSTATE PRINTERS AND PUBLISHERS, INC.
Danville, Illinois
(sold in packages of 20)
Printed in USA
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5</td>
<td>Talked to Meadow Gold rep - will pick up milk twice a week/pay at end of month</td>
</tr>
<tr>
<td>2-6</td>
<td>One of Tina's heifers came down with pneumonia</td>
</tr>
<tr>
<td>2-7</td>
<td>Tina's heifer died of pneumonia</td>
</tr>
<tr>
<td>2-9</td>
<td>Weaned calves from mothers; started on milk replacer</td>
</tr>
<tr>
<td>6-15</td>
<td>Started irrigating corn - will irrigate every 15 days until 8-31</td>
</tr>
<tr>
<td>6-16</td>
<td>Attended State FFA contests</td>
</tr>
<tr>
<td>6-25</td>
<td>Talked to corn topping crew boss - will work 7-1 to 8-31</td>
</tr>
<tr>
<td>7-10</td>
<td>Tonya won blue ribbon at county fair</td>
</tr>
<tr>
<td>10-20</td>
<td>First frost of season</td>
</tr>
<tr>
<td>12-31</td>
<td>Paid off loan to Dad</td>
</tr>
</tbody>
</table>
## FFA and OTHER LEADERSHIP ACTIVITIES

<table>
<thead>
<tr>
<th>Year</th>
<th>Position—(Team member, chairperson, committee member)</th>
<th>Activity—List participation in leadership events, such as public speaking, banquets, committees, judging (specify)</th>
<th>Indicate the level of participation</th>
<th>Advisor’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Member</td>
<td>Greenhand degree</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Participant</td>
<td>Creed Speaking Contest 1st place</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Team Member</td>
<td>Food Products Contest</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Team Member</td>
<td>Parliamentary Procedure Contest</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Team Member</td>
<td>Livestock Contest (4th in state)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Participant</td>
<td>Creed Speaking Contest 2nd place</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Team Member</td>
<td>Dairy Cattle Contest</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Officer</td>
<td>Chapter Sentinel</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Participant</td>
<td>Leadership retreat</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Team Member</td>
<td>Meats Contest 1st high ind.</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Team Member</td>
<td>Crops Contest 5th high ind.</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

### School—Other than FFA

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Activity</th>
<th>Indicate the level of participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Member</td>
<td>Cross Country team</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Member</td>
<td>Basketball team</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Member</td>
<td>Spanish Club</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Member</td>
<td>Key Club</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Member</td>
<td>Rodeo Club</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>Member</td>
<td>Track team</td>
<td>✔</td>
</tr>
</tbody>
</table>

### Out-of-School Leadership

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Activity</th>
<th>Indicate the level of participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>President</td>
<td>Church Youth Group</td>
<td>✔</td>
</tr>
</tbody>
</table>
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 Spring 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 entries. 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**

**STUDENT'S ASSETS**

<table>
<thead>
<tr>
<th>Cash on hand or in bank</th>
<th>$74.49</th>
<th>$150.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings account</td>
<td>$25.00</td>
<td>$9.87</td>
</tr>
<tr>
<td>Accounts receivable (list below)</td>
<td>1,476.39</td>
<td>1,476.39</td>
</tr>
<tr>
<td>Value of machinery and equipment you own</td>
<td>19.00</td>
<td>19.00</td>
</tr>
<tr>
<td>Livestock you own..............</td>
<td>$2,150.00</td>
<td>$3,060.00</td>
</tr>
<tr>
<td>Poultry you own..............</td>
<td>$17.00</td>
<td>$900.00</td>
</tr>
<tr>
<td>Value of buildings and land you own</td>
<td>$50.00</td>
<td>$50.00</td>
</tr>
<tr>
<td><strong>Total Assets</strong> ..........</td>
<td>$2,167.00</td>
<td>$4,042.90</td>
</tr>
<tr>
<td><strong>TOTAL COMBINED ASSETS</strong></td>
<td>$3,143.08</td>
<td>$5,436.77</td>
</tr>
</tbody>
</table>

**STUDENT'S LIABILITIES**

| Accounts payable (on loans) (list below) | $350.00 | $350.00 |
| Current unpaid bills | $0.00 | $0.00 |
| Other liabilities | $0.00 | $0.00 |
| **Total Liabilities** | $350.00 | $350.00 |
| **TOTAL COMBINED LIABILITIES** | $350.00 | $350.00 |
| **Net Worth** | $1,817.00 | $4,010.00 |
| **COMBINED NET WORTH** | $3,393.08 | $5,436.77 |

**ACCOUNTS RECEIVABLE**

<table>
<thead>
<tr>
<th>Date of Transaction</th>
<th>Name of Person or Firm and Description of Item</th>
<th>Total Amount</th>
<th>For How Long (months)</th>
<th>Interest Rates</th>
<th>Balance Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1/20/19</td>
<td>Jake Dawson</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ACCOUNTS PAYABLE**

<table>
<thead>
<tr>
<th>Date of Transaction</th>
<th>Name of Person or Firm</th>
<th>Total Amount</th>
<th>Interest Rate</th>
<th>Balance Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3/31/19</td>
<td>Zach Dawson</td>
<td>350.12 ma. 8%</td>
<td>350.12</td>
<td>350.12</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# 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.

## ANTICIPATED INCOME

<table>
<thead>
<tr>
<th>Kind</th>
<th>Size</th>
<th>Dairy 2.5 spe:heifers</th>
<th>Dairy 2 heifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Value of Sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Animals:</td>
<td>No</td>
<td>Value Total</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>animal products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>by-products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 2. Value of Products Used At Home | No | Value Total | No | Value Total |
| | | | | |
| no. of animals | | | | |
| animal products: milk | 124 x 12 = 1488 | | | |
| animal waste | | | | |
| TOTAL | 1488 | | | |

| 3. Closing Inventory | No | Value Total | No | Value Total |
| | | | | |
| Type of Animal(s) | | | | |
| COWS | 2 | 2000 | | |
| CALVES | 2 | 400 | | |
| equipment | | | | |
| TOTAL | 2800 | | | |

| 4. Other Expenses | | |
| animal health | 20 | |
| breeding | 30 | |
| marketing | | |
| interest | | |
| insurance | | |
| bedding | | |
| fencing | | |
| other | | |
| TOTAL | 55 | |

| 5. Additional Livestock Investments | Type of Animal(s) | No | Value Total | No | Value Total |
| | | | | |
| | | | | |
| | | | | |
| 6. Opening Inventory | Type of Animal(s) | No | Value Total | No | Value Total |
| | | | | |
| heifer | 1 | 1100 | 1100 | 1100 |
| equipment | | | | |
| other feed | | | | |
| TOTAL | 2167 | |

| A. TOTAL ANTICIPATED INCOME | (1+2+3) | 5988 |
| ANTICIPATED EXPENSES | |

| 1. Labor (excluding self) | | |
| hired | 60 | |
| contract | | |
| special (shearing, etc.) | | |
| other | | |
| TOTAL | 60 | |

| 2. Machinery Costs | | |
| transportation | | |
| handling | | |
| equipment | 55 | |
| pens & corrals | 35 | |
| housing | | |
| electricity | | |
| other | | |
| TOTAL | 90 | |

| B. TOTAL ANTICIPATED EXPENSES | (1+2+3+4+5+6) | 3408 |

**Anticipated Labor Income**

| A. Total Anticipated Income | 5988 |
| B. Total Anticipated Expenses | 3408 |
| NET ANTICIPATED LABOR INCOME | 2080 |
## 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.

<table>
<thead>
<tr>
<th>Kind</th>
<th>Field Corn</th>
<th>__________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>10 acres</td>
<td>__________</td>
</tr>
</tbody>
</table>

### ANTICIPATED INCOME

<table>
<thead>
<tr>
<th>1. Value of Sales</th>
<th>No</th>
<th>Value Total</th>
<th>No</th>
<th>Value Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>crop</td>
<td>10</td>
<td>4000</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>by-product</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>other</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>TOTAL SALES</td>
<td>___</td>
<td>4000</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Value of Products Used at Home</th>
<th>No</th>
<th>Value Total</th>
<th>No</th>
<th>Value Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>crops</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>by-product</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>other</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>TOTAL USED AT HOME</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Closing Inventory</th>
<th>No</th>
<th>Value Total</th>
<th>No</th>
<th>Value Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>crop</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>by-product</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>equipment</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>other</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>TOTAL INVENTORY</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A. TOTAL ANTICIPATED INCOME</th>
<th>(1+2+3)</th>
<th>___</th>
<th>4000</th>
</tr>
</thead>
</table>

### ANTICIPATED EXPENSES

<table>
<thead>
<tr>
<th>1. Labor (excluding self)</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>hired</td>
<td>___</td>
</tr>
<tr>
<td>contract</td>
<td>___</td>
</tr>
<tr>
<td>special</td>
<td>___</td>
</tr>
<tr>
<td>other</td>
<td>___</td>
</tr>
<tr>
<td>TOTAL LABOR</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Machinery Costs</th>
<th>No</th>
<th>Value Total</th>
<th>No</th>
<th>Value Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>fuel &amp; oil</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>seed bed prep.</td>
<td>31.5</td>
<td>13</td>
<td>416.5</td>
<td>___</td>
</tr>
<tr>
<td>cultivating</td>
<td>3</td>
<td>13</td>
<td>39</td>
<td>___</td>
</tr>
<tr>
<td>spraying</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>harvesting</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>electricity</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>repair</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>other</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>TOTAL MACHINERY COSTS</td>
<td>383.50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Other Expenses</th>
<th>storage</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>fertilizer</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>certification</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>interest</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>insurance</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>land rent</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>seed</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>water</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>TOTAL OTHER PROJECT EXPENSES</td>
<td>2010</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Beginning Inventory</th>
<th>supplies on hand</th>
<th>___</th>
</tr>
</thead>
<tbody>
<tr>
<td>equipment</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>preparation for crop</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>year plowing, fertilizer, etc. (prior to opening date)</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>TOTAL BEGINNING INVENTORY</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### B. TOTAL ANTICIPATED EXPENSES

| (1+2+3+4) | 2413.50 |

---

**Anticipated Labor Income**

\[ \text{A. Total Anticipated Income} = 4000.00 \]

\[ \text{B. Total Anticipated Expense} = 2413.50 \]

\[ \text{NET ANTICIPATED LABOR INCOME (A - B)} = 1586.50 \]
## Budget Guide (Agribusiness Employment)

<table>
<thead>
<tr>
<th>Type of Employment</th>
<th>No. of Hours Per Week</th>
<th>Corn Topping 35</th>
</tr>
</thead>
</table>

### Anticipated Income

1. **Value of Sales - Labor**
   - Unpaid Labor
   - Other
   
2. **Value of Products Used at Home**
   (work traded for products)
   
3. **Closing Inventory - Tools**
   - Safety Equipment
   - Clothing
   - Other

### A. Total Anticipated Income = Value of Sales + Closing Inventory

\[ \text{\textdollar}1413.90 \]

### Anticipated Expenses

1. **Labor (excluding self)**
2. **Machinery Costs**
3. **Meal Costs**
4. **Other Expenses**
   - Transportation
   - Tools & Equipment
   - Safety Equipment, etc.
   - Clothing
   - Insurance
   - Room
   - Other

5. **Beginning Inventory**
   - Tools
   - Safety Equipment
   - Clothing
   - Other

### B. Total Anticipated Expenses

\[ \text{\textdollar}48.25 \]

### Anticipated Labor Income

- A. Total Anticipated Income
- B. Total Anticipated Expenses

\[ \text{A - B = Net Anticipated Labor Income} \]

\[ \text{\textdollar}1365.65 \]
SELF EMPLOYMENT OR PRODUCTION PROGRAM AGREEMENT

1. This agreement is entered into this 1st day of January, 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 ($310), 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 TEL. NO. 397-9121 
MAIN PRODUCTS AND/OR SERVICES: Topping 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.
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 cooperator 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)
### BREEDING AND LOSS RECORDS

**GENERAL BREEDING RECORD**

<table>
<thead>
<tr>
<th>Name and/or Number of Dam</th>
<th>Name and/or Number of Sire</th>
<th>Date of Service</th>
<th>Date Due</th>
<th>Date Born</th>
<th>No. Born</th>
<th>No. Born Alive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tina - #431</td>
<td>ABS #1859</td>
<td>4-21-</td>
<td>1-29-</td>
<td>2-1-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Tonya - #645</td>
<td>ABS #1859</td>
<td>4-26-</td>
<td>2-2-</td>
<td>2-1-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tonya - #645</td>
<td>ABS #1888</td>
<td>5-1-</td>
<td>2-8-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amanda - #822</td>
<td>ABS #1899</td>
<td>10-3-</td>
<td>7-13-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Susi - #840</td>
<td>ABS #1977</td>
<td>10-13-</td>
<td>7-23-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Katy - #905</td>
<td>ABS #1878</td>
<td>10-18-</td>
<td>7-28-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### GENERAL LOSS RECORD

<table>
<thead>
<tr>
<th>Date</th>
<th>No. or Amount</th>
<th>Estimated Value</th>
<th>Item</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-7</td>
<td>1</td>
<td>$100</td>
<td>Tina's heifer</td>
<td>pneumonia</td>
</tr>
</tbody>
</table>


# 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.

### I. SOE Program  **Dairy**

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Amt</th>
<th>Unit Price</th>
<th>Value</th>
<th>Amt</th>
<th>Unit Price</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holstein springer heifer</td>
<td>1</td>
<td>1050</td>
<td>$1050 -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holstein springer heifer</td>
<td>1</td>
<td>1100</td>
<td>1100 -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Holstein heifers</td>
<td></td>
<td>3</td>
<td>700</td>
<td>2100 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Springer heifer</td>
<td></td>
<td>1</td>
<td>960</td>
<td>960 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alfalfa hay</td>
<td></td>
<td>9</td>
<td>80</td>
<td>720 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn silage</td>
<td></td>
<td>9</td>
<td>20</td>
<td>180 -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calf shed</td>
<td></td>
<td>1</td>
<td>50</td>
<td>50 -</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Totals Inventory ........................................... XXXX 2167 - XXXX 4010 -

### II. SOE Program  **Corn**

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Amt</th>
<th>Unit Price</th>
<th>Value</th>
<th>Amt</th>
<th>Unit Price</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canvas dam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shovel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Totals Inventory ........................................... XXXX 0 - XXXX 19 -

**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.
### III. SOE Program

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Date</th>
<th>Opening</th>
<th>Closing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Amt.</td>
<td>Unit Price</td>
</tr>
<tr>
<td></td>
<td>$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Totals Inventory: XXXX

### IV. SOE AGribusiness Employment Program - Corn Topping

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Date 7-1-</th>
<th>Opening</th>
<th>Date 8-31-</th>
<th>Closing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amt.</td>
<td>Unit Price</td>
<td>Value</td>
<td>Amt.</td>
</tr>
<tr>
<td>Gloves</td>
<td>1</td>
<td>1.75</td>
<td>175</td>
<td>1</td>
</tr>
<tr>
<td>Boots</td>
<td>1</td>
<td>1.20</td>
<td>120</td>
<td>10.50</td>
</tr>
<tr>
<td>Hat</td>
<td>1</td>
<td>2.50</td>
<td>250</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Totals Inventory: XXXX

<table>
<thead>
<tr>
<th>Date 8-31-</th>
<th>Closing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amt.</td>
<td>Unit Price</td>
</tr>
<tr>
<td>16.25</td>
<td>13.90</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Date</th>
<th>Hrs. Self Labor</th>
<th>ITEM</th>
<th>Amount</th>
<th>Unit Price</th>
<th>Income</th>
<th>Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td></td>
<td>Q1alfalfa hay</td>
<td>1</td>
<td>80</td>
<td>80 -</td>
<td></td>
</tr>
<tr>
<td>1-1</td>
<td></td>
<td>Rolled barley</td>
<td>9</td>
<td>6</td>
<td>54 -</td>
<td></td>
</tr>
<tr>
<td>1-1</td>
<td></td>
<td>Corn silage</td>
<td>1</td>
<td>20</td>
<td>20 -</td>
<td></td>
</tr>
<tr>
<td>1-25</td>
<td>3</td>
<td>Labor - prepare calving pens</td>
<td>3</td>
<td>4</td>
<td>12 -</td>
<td></td>
</tr>
<tr>
<td>1-31</td>
<td>5</td>
<td>Feed and care</td>
<td></td>
<td></td>
<td>5 -</td>
<td></td>
</tr>
<tr>
<td>1-31</td>
<td></td>
<td>Corral rent</td>
<td></td>
<td></td>
<td>5 -</td>
<td></td>
</tr>
<tr>
<td>2-1</td>
<td>3.5</td>
<td>Labor - newborn calves</td>
<td>3</td>
<td>4</td>
<td>12 -</td>
<td></td>
</tr>
<tr>
<td>2-2</td>
<td></td>
<td>Lumber for calf shed</td>
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Totals for Page .................................. 144 - 388 19
JOURNAL

Every income or expense item should be listed in column B or C and then retlist again in one column or distributed among the remaining columns on the right hand page (EXAMPLE: B = Ia+Ib+IIb+IVb; C = Ic+IIc+IIIc+IVc). Enter self labor in Column A then enter again distributing in appropriate SL or Hour columns on right hand page. (EXAMPLE: A = Ia+IIa+IIIa+IVA.)

Routine chores should be recorded either 1 or 2 times per month as your teacher instructs. Other entries should be recorded often and as soon as possible after transactions and events take place.

At harvest time credit crop and debit to livestock if crop is to be fed.

To have neat and accurate records, write clear small figures in straight columns and avoid the repeated use of hour and dollar signs.

**Agribusiness Income**—is all cash earned before deductions.

**Agribusiness Expenses**—are payroll deductions and expenses involved with employment.

### INDIVIDUAL SOE PROGRAM CONTROL

**(SOE Program Number and Kind)**

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<td>$2,913</td>
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</table>
## 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 wages 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 column (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-h). 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).

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-6</td>
<td>Attended beef herd disease seminar at vet clinic</td>
<td>3</td>
</tr>
<tr>
<td>9-19</td>
<td>Helped neighbor pull calf</td>
<td>2</td>
</tr>
<tr>
<td>9-23</td>
<td>Assisted vet with C-section on heifer</td>
<td>4</td>
</tr>
<tr>
<td>10-2</td>
<td>Helped neighbor castrate pigs</td>
<td>3</td>
</tr>
<tr>
<td>10-16</td>
<td>Attended Hereford Association field day</td>
<td>6</td>
</tr>
<tr>
<td>11-20</td>
<td>Helped neighbor vaccinate cows</td>
<td>5 1/2</td>
</tr>
<tr>
<td>11-22</td>
<td>Assisted vet castrate horse</td>
<td>1 1/2</td>
</tr>
<tr>
<td>11-20</td>
<td>Watched hog butchering demonstration</td>
<td>2</td>
</tr>
<tr>
<td>11-24</td>
<td>Attended meat-cutting seminar</td>
<td>4 1/2</td>
</tr>
<tr>
<td>12-8</td>
<td>Assisted vet treat wire cut on horse</td>
<td>4</td>
</tr>
<tr>
<td>12-4</td>
<td>Helped neighbor brand/dehorn calves</td>
<td>10</td>
</tr>
<tr>
<td>12-20</td>
<td>Assisted vet with cow C-section</td>
<td>4 1/2</td>
</tr>
<tr>
<td>12-24</td>
<td>Assisted vet with cow prolapsed uterus</td>
<td>3</td>
</tr>
<tr>
<td>13-15</td>
<td>Assisted vet with cow herd vaccinations</td>
<td>7</td>
</tr>
<tr>
<td>14-4</td>
<td>Assisted vet with bull semen tests</td>
<td>6</td>
</tr>
<tr>
<td>16-8</td>
<td>Assisted vet with cow pregnancy testing</td>
<td>8</td>
</tr>
<tr>
<td>17-15</td>
<td>Helped neighbor pull breach calf</td>
<td>3</td>
</tr>
<tr>
<td>18-3</td>
<td>Assisted vet with heifer C-section</td>
<td>3 1/2</td>
</tr>
<tr>
<td>19-18</td>
<td>Helped neighbor vaccinate cows</td>
<td>7 1/2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Total Hours</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>30</td>
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</tbody>
</table>

Totals to Date... 90
| Class Instructional Hours (optional) | c | d | e | f | g | h | i | j | k | l | m |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
|                                   | a | b | c | d | e | f | g | h | i | j | k | l |
| 1                                 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 2                                 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 3                                 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 4                                 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 5                                 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 6                                 | 5½| 5½| 5½| 5½| 5½| 5½| 5½| 5½| 5½| 5½| 5½| 5½|
| 7                                 | 1½| 1½| 1½| 1½| 1½| 1½| 1½| 1½| 1½| 1½| 1½| 1½|
| 8                                 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 9                                 | 6½| 6½| 6½| 6½| 6½| 6½| 6½| 6½| 6½| 6½| 6½| 6½|
| 10                                | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 11                                | 10| 10| 10| 10| 10| 10| 10| 10| 10| 10| 10| 10|
| 12                                | 4½| 4½| 4½| 4½| 4½| 4½| 4½| 4½| 4½| 4½| 4½| 4½|
| 13                                | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 14                                | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 15                                | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 16                                | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 17                                | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 18                                | 3½| 3½| 3½| 3½| 3½| 3½| 3½| 3½| 3½| 3½| 3½| 3½|
| 19                                | 7½| 7½| 7½| 7½| 7½| 7½| 7½| 7½| 7½| 7½| 7½| 7½|
| 20                                | 20| 20| 20| 20| 20| 20| 20| 20| 20| 20| 20| 20|
| 21                                | 21| 21| 21| 21| 21| 21| 21| 21| 21| 21| 21| 21|
| 22                                | 22| 22| 22| 22| 22| 22| 22| 22| 22| 22| 22| 22|
| 23                                | 23| 23| 23| 23| 23| 23| 23| 23| 23| 23| 23| 23|
| 24                                | 24| 24| 24| 24| 24| 24| 24| 24| 24| 24| 24| 24|
| 26                                | 26| 26| 26| 26| 26| 26| 26| 26| 26| 26| 26| 26|
| 27                                | 27| 27| 27| 27| 27| 27| 27| 27| 27| 27| 27| 27|
| 28                                | 28| 28| 28| 28| 28| 28| 28| 28| 28| 28| 28| 28|
| 29                                | 29| 29| 29| 29| 29| 29| 29| 29| 29| 29| 29| 29|
| 30                                | 90| 90| 90| 90| 90| 90| 90| 90| 90| 90| 90| 90|

**Total Hours Outside Classroom:** 90
ANNUAL SUMMARY OF S.O.E. PROGRAMS

Name: **Mark Dawson**  
Age: 14

Course: Ag. 02, 3, 4 or 5 (Semester)  
Year 19

<table>
<thead>
<tr>
<th>Name of Program</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>4010.00</td>
<td>19.00</td>
<td>16.90</td>
</tr>
<tr>
<td>Corn</td>
<td>6319.00</td>
<td>3050.00</td>
<td>1475.00</td>
</tr>
<tr>
<td>Corn Topping</td>
<td>$19,229.00</td>
<td>$569.00</td>
<td>$14,889.00</td>
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</tbody>
</table>

TOTAL EXPENSE

| Opening Inventory | 3167.00 | 0 | 16.25 |
| Journal Expenses  | $144.11 | $2539.95 | 33.00 |
| Total Expense     | 7311.00 | $2539.95 | 48.25 |
| PROFIT OR LOSS (line 3 = 6 - 7) | $2018.00 | $555.05 | $1440.65 |

EFFICIENCY FACTORS PERTAINING TO PROGRAM

8. Production  
(ie, lb. of milk, bushels of wheat, lb. of beef)  
2 calves  
30.950 **| 200.7 | 295 hr. |

9. Total hours of Self Labor  
164 | 61 | 295 hr. |

10. Cost per Unit of Production (line 5 - 8)  
$0.17 | $12.57 | $0.11 |

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.  
2.  
3.  
4.  
5.  

**SUMMARY OF AGRICULTURAL SKILLS PERFORMED (List)**

1.  
2.  
3.  
4.  
5.  
6.  
7.  
8.  
9.  
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

   _____k. Any fixed quantity, amount, distance, or measure used as a standard for counting or measuring items or assets
   11. Unit price

   _____l. 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)
   12. Ending inventory

   _____m. Monetary value assigned to individual units; used to figure overall value
   13. Net worth

   _____n. Financial claims against a business
   14. Liabilities

   _____o. Monetary value assigned to individual units; used to figure overall value
   15. Lien

   _____p. Financial claims against a business
   16. Financial statement
2. Describe the three types of SAE programs.

a. ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

b. ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
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. _____________________________________________________________________________
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  
   b. 12  
   c. 3  
   d. 8  
   e. 1  
   f. 10  
   g. 16  
   h. 11  
   i. 14  
   j. 4  
   k. 7  
   l. 13  
   m. 2  
   n. 9  
   o. 15  
   p. 5

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
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


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  
2. Honey  
3. Sheep, lambs and wool  
4. Milk production  
5. Milk cows  
6. All cattle and calves  

B. Crops

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

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  \(\rightarrow\)  MAN

SECONDARY

PLANT  \(\rightarrow\)  ANIMAL  \(\rightarrow\)  MAN
Manure As A Fertilizer

1 TON

500 LBS ORGANIC MATTER
10 - 30 LBS NITROGEN
5 - 20 LBS PHOSPHORIC ACID
10 - 30 LBS POTASSIUM

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

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.
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.

<table>
<thead>
<tr>
<th>Sources</th>
<th>Types</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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) __________________________________________________
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  

f. Mating of animals that can be traced to one common ancestor  

g. Females produced from two-breed crossbreeding are mated with male of the same breed as one of the parents of the female  

h. Mating of purebred sire with a grade female  

i. Mating of animals that can be traced to two or more common ancestors  

5. Purebred breeding  

6. Grading up  

7. Inbreeding  

8. Closebreeding  

9. Three-breed rotation
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

    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
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.
SUGGESTED ACTIVITIES

I. Suggested activities

A. Order materials to supplement unit.

1. Literature


   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.


2. Filmstrips, slideshows, etc.


   c. *Soil Color*, 47-frame filmstrip available from Vocational Agriculture Service, University of Illinois, 1401 S. Maryland Dr., Urbanna, 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.


F. *Oklahoma Curriculum Guides*, Oklahoma State University and the Oklahoma State Board for Vocational Education, Stillwater, Oklahoma.


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.

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 5%
      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

- Animals die returning plant food to soil.
- Plants die returning food to soil.
- Plants decay containing food for plants.
- Plants are eaten by animals.
Composition of Average Soil

- Air: 25%
- Water: 25%
- Organic matter: 5%
- Mineral matter: 45%

and living organisms.
Soil Origins

1. Residual
   a. Igneous
   b. Sedimentary
      } From rock
   c. Metamorphic

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

Size of soil particles

<table>
<thead>
<tr>
<th>Name</th>
<th>Size, diameter in millimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine gravel</td>
<td>2 - 1</td>
</tr>
<tr>
<td>Coarse sand</td>
<td>1.00 - 0.50</td>
</tr>
<tr>
<td>Medium sand</td>
<td>0.50 - 0.25</td>
</tr>
<tr>
<td>Fine sand</td>
<td>0.25 - 0.10</td>
</tr>
<tr>
<td>Very fine sand</td>
<td>0.10 - 0.05</td>
</tr>
<tr>
<td>Silt</td>
<td>0.05 - 0.002</td>
</tr>
<tr>
<td>Clay</td>
<td>Less than 0.002</td>
</tr>
</tbody>
</table>
Soil Texture
A name given a textural group based on relative proportions of sand, silt, and clay.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Sand</th>
<th>Silt</th>
<th>Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Looseness</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>Air space</td>
<td>Good</td>
<td>Fair to Good</td>
<td>Poor</td>
</tr>
<tr>
<td>Drainage</td>
<td>Good</td>
<td>Fair to Good</td>
<td>Poor</td>
</tr>
<tr>
<td>Tendency to form clods</td>
<td>Poor</td>
<td>Fair</td>
<td>Good</td>
</tr>
<tr>
<td>Ease of working</td>
<td>Good</td>
<td>Fair to Good</td>
<td>Poor</td>
</tr>
<tr>
<td>Moisture holding capacity</td>
<td>Poor</td>
<td>Fair to Good</td>
<td>Good</td>
</tr>
<tr>
<td>Fertility</td>
<td>Poor</td>
<td>Fair to Good</td>
<td>Fair to Good</td>
</tr>
</tbody>
</table>
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.

   ![Diagram of soil composition]

   a. __________ b. __________ c. __________ d. __________

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
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.
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


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 (CO₂) enters the leaf from the surrounding air through the stoma
(Note: After CO₂ 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 CO₂ 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 (H₂O) and carbon dioxide (CO₂) 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
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 (O₂) and glucose (C₆H₁₂O₆)
C. Respiration gives off carbon dioxide (CO₂) and water (H₂O)
(Note: The process can be illustrated by the chemical equation which is written: Sugar (C₆H₁₂O₆) + 6 parts oxygen (6 O₂) = six parts carbon dioxide (6 CO₂) + 6 parts water (6 H₂O).)

XI. Relationship between photosynthesis and respiration (Transparency 8)

<table>
<thead>
<tr>
<th>Photosynthesis</th>
<th>Respiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A building process (+)</td>
<td>1. A destruction process (-)</td>
</tr>
<tr>
<td>2. Sugars manufactured</td>
<td>2. Sugars consumed</td>
</tr>
<tr>
<td>3. CO₂ is consumed</td>
<td>3. CO₂ is given off</td>
</tr>
<tr>
<td>4. Oxygen is given off</td>
<td>4. Oxygen is consumed</td>
</tr>
<tr>
<td>5. Requires light</td>
<td>5. Goes on day and night</td>
</tr>
<tr>
<td>6. Only takes place in cells</td>
<td>6. Carried on in all cells</td>
</tr>
<tr>
<td>containing chlorophyll</td>
<td></td>
</tr>
<tr>
<td>7. Sugar (C₆H₁₂O₆) is the end product</td>
<td>7. Energy produced for plant functions is the end product</td>
</tr>
</tbody>
</table>

(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

Flowers

Leaves

Stem

Soil surface

Roots
Functions of Leaves, Stems, Roots, and Flowers

FEMALE FLOWER FUNCTIONS:
(a.) Reproduction
(b.) Store food - in seeds and fruits

STEM FUNCTIONS:
(a.) Conducts water and raw minerals from soil to leaves
(b.) Conducts manufactured food from leaves to other plant parts
(c.) Produces leaves and displays them to light
(d.) Supports leaves, flowers and fruit
(e.) Stores food reserves in some plants - Irish potato, asparagus, cabbage hearts, etc.

MALE FLOWER FUNCTION:
(a.) Pollination

LEAF FUNCTIONS:
(a.) Photosynthesis
(b.) Transpiration
(c.) Food storage in some crops, i.e. lettuce, cabbage

ROOT FUNCTIONS:
(a.) Absorb water and raw minerals
(b.) Anchor plant
(c.) Store food reserves - in some crops - carrots, beets, turnips
Stages in Germination and Emergence of Corn

- Coleoptile
- Whorl
- Permanent roots
- First internode
- Seminal roots
- Radicle
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

Sunlight

Green plants (contains chlorophyll)

Favorable temperature

Carbon dioxide + Water + Light

6CO₂ + 12H₂O + Light

Glucose + Water + Oxygen

C₆H₁₂O₆ + 6H₂O + 6O₂

Mineral nutrients

CO₂

H₂O
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.
1. Label the primary parts of a plant. Write the correct names in the blanks.

   a. __________________________
   b. __________________________
   c. __________________________
   d. __________________________

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
   ____ b. Site of photosynthesis; necessary for transpiration; site of food storage in lettuce
   ____ c. Support leaves and flowers; conducts water, nutrients, and food; site of food storage in potatoes
   ____ d. Site of reproduction; site of food storage in apples

   1. Roots
   2. Stems
   3. Leaves
   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.

_______________________________________________________________________________
_______________________________________________________________________________
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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.

_______________________________________________________________________________
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_______________________________________________________________________________
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
   2. Cross-pollination
   _____ b. Transfer of pollen from the anthers of one plant to the stigmas of another plant

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.
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.
SUGGESTED ACTIVITIES

I. Suggested activities

A. Order materials to supplement unit.

1. Literature
   b. Several CIS publications on soil conservation available through the Cooperative Extension Service, University of Idaho, College of Agriculture.

2. Filmstrips, slideshows, etc.
   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


B. Conserving Soil, United States Department of Agriculture, Soil Conservation Service.


F. *Instructional Materials for Vocational Agriculture*, Texas A & M University, Agriculture Education Department, Teaching Material Center, College Station, Texas.


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
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

massive soil structure

runoff

granular soil structure

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.

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

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 mild erosion.
5. The wearing away of the soil by forces which are natural and without interference by man is called.
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.
11. Soils with high organic content have increased absorption capacity.
12. Structure to hold or impound water.

DOWN

6. Erosion is characterized by many small channels cut into 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.
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

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ANSWERS TO ASSIGNMENT SHEETS

1. Evaluated to the satisfaction of the instructor.

2. [Image of a crossword puzzle with the following words: splash erosion, terrace, geological erosion, waterway, topsoil, sheet erosion, pond, organic matter, strip cropping, cover crop.]

3. Evaluated to the satisfaction of the instructor.
SOIL, WATER AND ENERGY CONSERVATION

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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
1. Management practices used

2. Frozen soil

3. 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


   a. __________________________________________________________
   b. __________________________________________________________
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  b. 6  c. 1  d. 3  e. 7  f. 5  g. 2

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

AG 120 - G

SUGGESTED ACTIVITIES

I. Suggested activities

A. Order materials to supplement unit.

1. Literature


2. Filmstrips, slideshows, etc.


   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.


   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


   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.

PESTICIDES AND ENVIRONMENTAL PROTECTION

AG 120 - G

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. LD$_{50}$--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. Vertebrae 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
NOMITE® 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
Signal Words

CAUTION
Slightly Toxic to Relatively Nontoxic

WARNING
Moderately Toxic

DANGER
Highly Toxic

POISON
Ways Pesticides Enter Body

Inhalation

Dermal

Oral
Protective Clothing and Equipment

- Waterproof Hat
- Respirator
- Closely Woven Fabric Coveralls
- Rubber or Neoprene Gloves
- Goggles
- Rubber or Neoprene Boots
**Container Classification**

- **Mercury, Lead, Arsenic, Cadmium, and Inorganic Pesticides**
- **Nonburnable**
- **Burnable**
Disposal of Containers

- Break, Crush, or Cut Apart
- Then Bury

Recycling

Pesticide Co.

Burn
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.
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
   f. Maximum amount of pesticide which can legally remain on or in any food or feed crop at harvest or animal at slaughter 6. EPA
   g. Movement of pesticide vapors due to chemical volatilization of the product 7. Drift
   h. Process by which a chemical is taken into plants, animals, or minerals 8. Target
   i. Pesticide that remains in the environment for a fairly long time 9. Short-term
   j. Relationship between the toxicity of the pesticide and the exposure or use of the pesticide 10. Residual
   k. Absorbed through the skin 11. LD50
   l. Immediate effects (within 24 hours) of a single exposure to a chemical 12. Oral
   m. To make impure or pollute 13. Dermal
   n. Lethal dose of a pesticide which would kill half a large number of test animals if eaten or absorbed through the skin 14. Inhalation
   o. Measures the effects of a chemical over a long period of time 15. Toxicity
   p. Immediate effects (within 24 hours) of a single exposure to a chemical 16. Acute toxicity
   q. Immediate effects (within 24 hours) of a single exposure to a chemical 17. Chronic toxicity
   r. Immediate effects (within 24 hours) of a single exposure to a chemical 18. Adsorption
   s. Immediate effects (within 24 hours) of a single exposure to a chemical 19. Absorption
   t. Immediate effects (within 24 hours) of a single exposure to a chemical 20. Carcinogenic
   u. Immediate effects (within 24 hours) of a single exposure to a chemical 21. Contaminate
20. Chemical or other substance that will prevent, repel, destroy, or control a pest or protect something from a pest

22. Vapor drift

23. OSHA

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

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, mosquitoes 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
_____ b. Pesticide use which may cause damage in the environment or endanger the applicator or other persons unless label directions are followed 2. Endangered use
3. Restricted use
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. ..............................................................................
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
18. Match signal words found on labels with the correct toxicity level. Write the correct numbers in the blanks.


   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. ________________________________________________________________
28. Describe proper pesticide storage site, building and conditions.

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

29. List five methods of protecting the environment.

a.  

b.  

c.  

d.  

e.  

ANALISYS 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
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.
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


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

<table>
<thead>
<tr>
<th>Rough</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. 4 inches</td>
<td>3 1/2 inches</td>
</tr>
<tr>
<td>B. 6 inches</td>
<td>5 1/2 inches</td>
</tr>
<tr>
<td>C. 8 inches</td>
<td>7 1/2 inches</td>
</tr>
<tr>
<td>D. 10 inches</td>
<td>9 1/2 inches</td>
</tr>
<tr>
<td>E. 12 inches</td>
<td>11 1/2 inches</td>
</tr>
</tbody>
</table>

XII. Formula for calculating board feed (Assignment Sheet #1)

No. of pieces X thickness in inches X width in inches X length in feet

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
(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. Stove
   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

XVIII. 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

- Foam
- Dry Chemical
- Carbon Dioxide
- Soda-Acid
- Pressurized Water
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
- Roofing
- Shingle
- Plaster Board
- Wire Staple
- 6d Flooring
- 6d Box
- Duplex
- Lead Head
- 6d Finishing
- 6d Common
Types of Screws

Lag
Phillips
Round Head
Oval Head
Flat Head
Types of Bolts

- Carriage
- Toggle
- Turnbuckle
- Flat Head Stove
- Expansion
- U Bolt
- Round Head Stove
- Hook Bolt
- Plow
- Machine
- Eye Bolt
Types of Washers

Lock Washer Internal-External
Lock Washer Countersunk
Lock Washer Internal
Lock Washer External
Plain Flat Washer
Common Lock Washer
Types of Nuts

Wing Nut
Castle
Jam or Lock
Square
Acorn or Cap
Hexagon
Self-Locking
Types of Hinges

- Butt
- Hasp
- T
- Cabinet
- Strap
- Screw Hook and Strap
Parts of a Roof

- Plate
- Span
- Rise
- Run
- Center Line of Ridge
- Tail
- Length of Rafter
- Length of Rafter
Parts of Steel Framing Square

Heel

Tongue 16" x 1 1/4"

Face of Square

Body 25" x 2"
### Framing Square Tables

<table>
<thead>
<tr>
<th>Length Common Rafter per Foot Run</th>
<th>Hip or Valley</th>
<th>Diff. in Length of Jacks 16 Inches Centres</th>
<th>2 Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>22</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11/2</td>
</tr>
</tbody>
</table>

#### Rafter or Framing Table

![Rafter or Framing Table](image)

#### Brace Table

![Brace Table](image)

#### Essex Table

![Essex Table](image)
Types of Roofs

Lean-To

Gable

Gable and Valley

Hip

Hip and Valley
Kinds of Rafters

Valley

Jack

Common

Hip

Common

Jack
Cutting a Rafter

Length of Rafter

Rise - 5 ft.

Run - 12 ft.

Birds Mouth

Tail Measurement

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' =
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
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
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. _________________________________________________________________________
   _________________________________________________________________________
   _________________________________________________________________________
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 combustible materials 2. Class B
   _____ c. Fires that occur in or near electrical equipment 3. Class C
   _____ d. Fires that occur with combustible 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 (CO₂)
   _____ 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) _________________________________________________________________________

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

b. Foot length of a material regardless of thickness and width

c. Equal to a 12 inch by 12 inch surface regardless of thickness

d. Unit of measure equal to 100 square feet of material

1. Square foot

2. Cubic foot

3. Running foot

4. Square

5. Board foot
6. Surfaced lumber
7. Planer
8. Bill of materials
9. Rough stock
10. Gauge

11. List the actual width of lumber for each of the following rough measurements.

<table>
<thead>
<tr>
<th>Rough</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 10 inches</td>
<td>__________________________</td>
</tr>
<tr>
<td>b. 6 inches</td>
<td>__________________________</td>
</tr>
<tr>
<td>c. 12 inches</td>
<td>__________________________</td>
</tr>
<tr>
<td>d. 4 inches</td>
<td>__________________________</td>
</tr>
<tr>
<td>e. 8 inches</td>
<td>__________________________</td>
</tr>
</tbody>
</table>

12. Calculate board feet in the problems below.

a. 7 pieces 10" X 12" X 20'

b. 3 pieces 1" X 2" X 6'

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.
17. Identify the following common types of screws.

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.
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

25. Identify the types of rivet heads below by writing the correct names in the blanks provided.

![Rivet Heads]

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. 

e. 

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  \hspace{1cm} b. Hinge
   c. Plaster board \hspace{1cm} d. Roofing
   e. Shingle \hspace{1cm} f. Wire staple
   g. Common \hspace{1cm} h. Finishing
   i. Duplex \hspace{1cm} j. Lead head
   k. Flooring

15. a. 11 \hspace{1cm} e. 10 \hspace{1cm} i. 4
   b. 3 \hspace{1cm} f. 1 \hspace{1cm} j. 8
   c. 7 \hspace{1cm} g. 2 \hspace{1cm} k. 5
   d. 9 \hspace{1cm} h. 6 \hspace{1cm} l. 12

16. a. Flat \hspace{1cm} b. Round
   c. Oval \hspace{1cm} d. Pan
   e. Hex \hspace{1cm} f. Square

17. a. Lag \hspace{1cm} b. Round head
   c. Flat head \hspace{1cm} d. Oval head
   e. Phillips

18. a. 2 \hspace{1cm} d. 1
   b. 5 \hspace{1cm} e. 3
   c. 4

19. a. Carriage \hspace{1cm} b. Plow
   c. Toggle \hspace{1cm} d. Round head stove
   e. Expansion \hspace{1cm} f. Machine
   g. Flat head stove \hspace{1cm} h. Eye bolt
   i. Turnbuckle \hspace{1cm} j. Hook bolt
   k. U-bolt

20. a. 1 \hspace{1cm} e. 7
   b. 2 \hspace{1cm} f. 5
   c. 3 \hspace{1cm} g. 4
   d. 6

21. a. Common lock \hspace{1cm} b. Plain (flat)
   c. External lock \hspace{1cm} d. Internal-External lock
   e. Internal lock \hspace{1cm} f. Countersunk lock

22. a. Acorn or cap \hspace{1cm} b. Hexagon
   c. Square \hspace{1cm} d. Castle
   e. Wing \hspace{1cm} f. Jam or lock
   g. Self-locking

23. a. Butt \hspace{1cm} b. Strap
   c. Hasp \hspace{1cm} d. T
   e. Cabinet \hspace{1cm} f. Screw hook and strap
24. 
   a. 2  
   b. 4  
   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