



NATIONAL
FFA ORGANIZATION

Agronomy Handbook 2017-2021

Purpose

To create interest and promote understanding in agronomy by providing opportunities for recognition through the demonstration of skills and proficiencies.

Objectives

Through participation, participants will be able to:

- To demonstrate basic knowledge of agronomic sciences.
- To explore career opportunities, skills and proficiencies in the agronomy industry.
- To identify agronomic crops, weeds, seeds, insects, diseases, plant nutrient deficiencies, plant disorders, and demonstrate skill in crop grading.

Event Rules

1. Four persons will constitute an official team for the Agronomy Career Development Event. However, only three of the individual scores will be used in the team score tabulation.
2. No alternates will be allowed in the event.
3. All samples for identification are to be taken from the approved list.
4. Participants cannot touch any samples during the event. Students can use a hand-held magnifying lens.
5. No duplication will be present in the event for plant and seed identification.
6. Event checkers will be used to verify official placing and scoring. Event checkers will remain at the event until their team is competing.
7. Participants in need of special accommodations (disability or other health issues) must submit the Idaho State FFA Career Development Events Request for Special Accommodation Application found at the end of the General Rules and Regulations at least one month prior to the event.

Event Format and Scoring

1. Fifteen (15) minutes will be allowed for identification of plant samples.
2. Fifteen (15) minutes will be allowed for identification of seed samples.
3. Fifteen (15) minutes will be allowed for Fertilizer Calculations.
4. Fifteen (15) minutes will be allowed for Seed Analysis (5 trays at 3 minutes each including rotation)
5. Fifteen (15) minutes will be allowed for Plant Disease, Disorder and Insect Identification.
6. Seven (7) minutes each will be allowed for Placing Classes. This will total fifteen (15) minutes including rotation.
7. Scoring – Scoring for each area is detailed within the section description.

Practicums

PLANT IDENTIFICATION (200 POINTS)

All plants for identification will be pressed samples. Seedling stage specimens will not be allowed. The plants exhibited may be in the flower and/or fruiting stage. Noxious weeds may be in any stage of development. The plants exhibited must show the characteristics necessary for identification.

SEED IDENTIFICATION (200 POINTS)

Weed and crop seeds will be placed together for identification. Weed and crop seeds will be listed separate from each other on the same scorecard.

PROBLEM SOLVING (200 POINTS)

This area will consist of two sections worth 100 points each. Calculators may be used in this section.

Fertilizer Requirements (100 points)

Participants will be required to solve problems on fertilizer application rates for a specific situation presented. The only variables to change in the problem will be: number of acres in the field, pounds of fertilizer recommended, and cost of the fertilizers.

Seed Analysis (100 points)

Five (5) samples of simulated field run legume or cereal grain scored on individual merit according to current standards. Quantities for seed analysis will be 150 grams for cereal grains and 15 grams for small-seeded legumes each in all 5 samples. There has to be no less than three (3) prohibited and five (5) restricted noxious weed seeds in a sample to constitute a contaminant. The seed analysis classes will be scored 0-20. Each sample will be valued at 20 points.

PLANT DISORDERS, DISEASES, AND INSECT IDENTIFICATION (50 POINTS)

Participants will be required to correctly identify 10 plant disorders, diseases, and/or insects. Specimens may be presented as whole plants or plant parts displaying the disorder symptoms, as preserved plants, or as photographs. All samples will be limited to small grains and legume crops. A number will designate each specimen, and the participant is to correctly match the disorder, disease, or insect by filling out the appropriate scorecard and related scansheet. In the Practicum Portion, two different examples of the same item will be displayed.

Placing Classes (100 points- 2 Classes 50 points each)

Two classes of crop samples will be evaluated. The crop species will be taken from the list of crop plant samples. Each class will consist of four samples of the same crop (i.e.- four samples of alfalfa hay, or potatoes). Class samples may consist of the product of the plant species from the list (i.e.- actual potatoes from a potato plant). Participants will rank each class according to the Hormel scorecard. The placing classes will be worth 50 points each. Crop samples to be placed will be identified in the registration packet for State Career Development Events.

ACTIVITIES	Points
Plant Identification	200
Seed Identification	200
Problem Solving	200
Disease, Disorder, and Insect Identification	50
Judging Classes	100
Total Points	750

TIEBREAKERS

Ties will be broken by scores on seed identification. If a tie still exists, the second tie breaker will be plant identification.

Awards

Awards are presented to teams as well as individuals based upon their rankings. The top 10 teams and individuals will be recognized. Individuals from 1st through 5th place will receive medals. Teams from 1st through 5th place will receive plaques.

References

Scorecards for the seed analysis classes will be placed next to the seed samples. Idaho Department of Agriculture Noxious Weeds Seed Law will be the official reference. A reference for the Idaho Noxious Weed Seed Law is the USDA Agricultural Marketing Service website www.ams.usda.gov/lsg/seed/nox01.pdf.

WEED AND CROP PLANT IDENTIFICATION SCORECARD

Bubble the plant number into ID A #1-40 on the scansheet for the state CDE. Be sure the sample number is correct when you bubble the number into the scorecard and **use all three digits**. Use the blanks provided for local and district events.

Directions:		WEED PLANTS	WEED PLANTS (continued)
Identify plant specimens by matching the correct plant number at right to the sample spaces below.	01. _____	001. Barnyardgrass	058. Rush Skeletonweed
	21. _____	002. Black Henbane	059. Russian Knapweed
	02. _____	003. Black Medic (Yellow Trefoil)	060. Russian Thistle
	22. _____	004. Black Mustard	061. St. Johnswort (Goat Weed)
	03. _____	005. Blue Mustard	062. Scotch Broom
	23. _____	006. Broadleaf Plantain	063. Scotch Thistle
	04. _____	007. Buckhorn Plantain	064. Shepherdspurse
	24. _____	008. Buffalobur	065. Showy Milkweed
	05. _____	009. Bull Thistle	066. Silver Lupine (Lupine)
	25. _____	010. Burdock	067. Sowthistle
	06. _____	011. Canada Thistle	068. Spotted Knapweed
	26. _____	012. Chicory	069. Tansy Ragwort
	07. _____	013. Cocklebur	070. Teasel
	27. _____	014. Common Groundsel	071. Waterhemlock
	08. _____	015. Crabgrass	072. Wild Buckwheat
	28. _____	016. Curly Dock	073. Wild Oats
	09. _____	017. Cutleaf Nightshade	074. Yarrow
	29. _____	018. Dalmation Toadflax	075. Yellow Starthistle
	10. _____	019. Death Camas	076. Yellow Toadflax
	30. _____	020. Diffuse Knapweed	
	11. _____	021. Dodder	CROP PLANTS
	31. _____	022. Downy Bromegrass	077. Alfalfa
	12. _____	023. Dyers Woad	078. Alsike Clover
	32. _____	024. Field Bindweed (Morning Glory)	079. Beans
	13. _____	025. Field Pennygrass (Fan Weed)	080. Birdsfoot Trefoil
	33. _____	026. Foxtail Barley	081. Club Wheat
	14. _____	027. Green Foxtail	082. Common Wheat
	34. _____	028. Hairy Nightshade	083. Crested Wheatgrass
	15. _____	029. Halogeton	084. Kentucky Bluegrass
	35. _____	030. Hare Barley (Wild Barley)	085. Lentils
	16. _____	031. Hoary Cress (White Top)	086. Oats
	36. _____	032. Houndstongue	087. Orchardgrass
	17. _____	033. Johnsongrass	088. Peas
	37. _____	034. Jointed Goatgrass	089. Potatoes
	18. _____	035. Kochia	090. Red Clover
	38. _____	036. Lambsquarter	091. Rye
	19. _____	037. Larkspur	092. Six Row Barley
	39. _____	038. Leafy Spurge	093. Smooth Bromegrass
	20. _____	039. Longleaf Groundcherry	094. Strawberry Clover
	40. _____	040. Mallow	095. Sugarbeet
	041. Mayweed (Dog Fennel)	096. Sweet Clover	
	042. Meadow Hawkweed	097. Tall Fescue	
	043. Meadow Salsify (Yellow Goatsbeard)	098. Tall Oatgrass	
	044. Medusahead	099. Timothy	
	045. Musk Thistle	100. Two Row Barley	
	046. Nutsedge (Yellow Nutsedge)	101. White Clover	
	047. Orange Hawkweed		
	048. Perennial Pepperweed		
	049. Poison Hemlock		
	050. Povertyweed		
	051. Prickly Lettuce		
	052. Prostrate Knotweed		
	053. Puncture Vine		
	054. Purple Loosestrife		
	055. Purslane		
	056. Quackgrass		
	057. Redroot (erect) (Rough Pigweed)		
SCORE	_____		

SCORING DIRECTIONS:

Each plant identification is worth 5 points. Deduct total incorrect from 200 points possible and record score at the bottom of the card.

PARTICIPANT NUMBER _____

SEED ANALYSIS SCORECARD

SAMPLE NUMBER	PARTICIPANT SCORE	OFFICIAL SCORE (Do NOT write in this column)	GRADE DIFFERENCE
1			
2			
3			
4			
5			

TOTAL GRADE DIFFERENCE _____

SCORING: The seed analysis grade can be any number between 0 and 20. Deduct the total grade difference from 100 to calculate the participant’s score on this section of the event. ***For State CDE, scores will be entered as a raw score into Practicum 2.***

PARTICIPANT NUMBER _____

SEED ANALYSIS SCORECARD

SAMPLE NUMBER	PARTICIPANT SCORE	OFFICIAL SCORE (Do NOT write in this column)	GRADE DIFFERENCE
1			
2			
3			
4			
5			

TOTAL GRADE DIFFERENCE _____

SCORING: The seed analysis grade can be any number between 0 and 20. Deduct the total grade difference from 100 to calculate the participant’s score on this section of the event. ***For State CDE, scores will be entered as a raw score into Practicum 2.***

STANDARD FFA PLACING CARD

Idaho FFA	Placing	Check Placing
	<u>1-2-3-4</u>	_____
	<u>1-2-4-3</u>	_____
Participant	<u>1-3-2-4</u>	_____
No. _____	<u>1-3-4-2</u>	_____
	<u>1-4-2-3</u>	_____
	<u>1-4-3-2</u>	_____
Event:	<u>2-1-3-4</u>	_____
	<u>2-1-4-3</u>	_____
	<u>2-3-1-4</u>	_____
_____	<u>2-3-4-1</u>	_____
	<u>2-4-1-3</u>	_____
	<u>2-4-3-1</u>	_____
	<u>3-1-2-4</u>	_____
Class Name	<u>3-1-4-2</u>	_____
	<u>3-2-1-4</u>	_____
_____	<u>3-2-4-1</u>	_____
	<u>3-4-1-2</u>	_____
	<u>3-4-2-1</u>	_____
	<u>4-1-2-3</u>	_____
	<u>4-1-3-2</u>	_____
Class No. _____	<u>4-2-1-3</u>	_____
	<u>4-2-3-1</u>	_____
	<u>4-3-1-2</u>	_____
	<u>4-3-2-1</u>	_____
	Tabulator's Score _____	

STANDARD FFA PLACING CARD

Idaho FFA	Placing	Check Placing
	<u>1-2-3-4</u>	_____
	<u>1-2-4-3</u>	_____
Participant	<u>1-3-2-4</u>	_____
No. _____	<u>1-3-4-2</u>	_____
	<u>1-4-2-3</u>	_____
	<u>1-4-3-2</u>	_____
Event:	<u>2-1-3-4</u>	_____
	<u>2-1-4-3</u>	_____
	<u>2-3-1-4</u>	_____
_____	<u>2-3-4-1</u>	_____
	<u>2-4-1-3</u>	_____
	<u>2-4-3-1</u>	_____
	<u>3-1-2-4</u>	_____
Class Name	<u>3-1-4-2</u>	_____
	<u>3-2-1-4</u>	_____
_____	<u>3-2-4-1</u>	_____
	<u>3-4-1-2</u>	_____
	<u>3-4-2-1</u>	_____
	<u>4-1-2-3</u>	_____
	<u>4-1-3-2</u>	_____
Class No. _____	<u>4-2-1-3</u>	_____
	<u>4-2-3-1</u>	_____
	<u>4-3-1-2</u>	_____
	<u>4-3-2-1</u>	_____
	Tabulator's Score _____	

SCORECARD FOR SMALL-SEEDED LEGUMES

(Alfalfa, Clovers, etc.)

<u>Main Points to be Considered</u>	<u>Points Deducted from 20</u>
1. Clean Sample	0
2. Soundness and cleanliness of seed (Plumpness, uniform size, luster and freedom from inert material)	3
3. Crop seeds	3 per species
4. Common weeds	6 per species
5. Restricted noxious weeds	7 per species
6. Prohibited noxious weeds	20

SCORECARD FOR CEREAL GRAINS

(Oats, Barley, Wheat, etc.)

<u>Main Points to be Considered</u>	<u>Points Deducted from 20</u>
1. Clean Sample	0
2. Soundness & Freedom of Disease (Inert material, stems, trash, broken or weathered, damaged, etc.)	2
3. Mixed Crop Seeds	
Small Grains	5 per species
Other crop seeds	2 per species
4. Common Weed Seeds	
Broadleaf weed seeds	3 per species
Grass weed seeds	5 per species
5. Restricted weed seeds (secondary)	9 per species
6. Prohibited weed seeds (primary)	20

Participant Number _____

AGRONOMY: PLANT DISORDER, DISEASE AND INSECT LIST

Correctly match the plant specimen to the disorder, disease or insect listed. 5 points each. Bubble the number shown next to the appropriate sample number in Identification B #41-50 on the scantron card for the state CDE or write the appropriate Disease/Disorder/Insect next to the numbers on the list below (local and district).

- | | |
|---------------------------------|---------------------------|
| 001 Iron Deficiency (Chlorosis) | 014 Nitrogen Deficiency |
| 002 Magnesium Deficiency | 015 Potassium Deficiency |
| 003 Rust | 016 Phosphorus Deficiency |
| 004 Wilt | 017 Ergot |
| 005 Gall | 018 Scab |
| 006 Hairy Root | 019 Curly Top |
| 007 Spider Mite | 020 Necrosis |
| 008 Earwig | 021 Grasshopper/Crickets |
| 009 Aphid | 022 Leafhopper |
| 010 Wireworm | 023 Corn Earworm |
| 011 Alfalfa Weevil | 024 Potato Beetle |
| 012 Snail/Slug | 025 Blister Beetle |
| 013 Looper | 026 Armyworm |

1. _____
2. _____
3. _____
4. _____
5. _____

6. _____
7. _____
8. _____
9. _____
10. _____

Participant Number _____

Complete the following fertilizer calculation problem with the given information. Round all numbers to the nearest whole number on the last step of your calculations.

Fertilizer Problem

A farmer has two fields. Field one has 145 acres, field two has 80 acres. He has had soil samples performed for both field and the following results:

Field 1 fertilizer recommendations/per acre:

- 150 lbs of nitrogen
- 55 lbs of P₂O₅
- 45 lbs of K₂O

Fertilizer Options:

- Fertilizer #1: 13-0-45 @ \$195.00/ton
- Fertilizer #2: 11-52-0 @ \$270.00/ton
- Fertilizer #3: 46-0-0 @ \$245.00/ton

Field2 fertilizer recommendations/per acre:

- 175 lbs of nitrogen
- 112 lbs of P₂O₅
- 32 lbs of K₂O

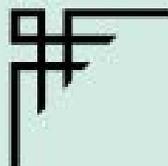
Total Score _____(100 pts)

Using the above fertilizer calculate the amount of fertilizer per acre, the cost per acre for each fertilizer and total cost for each field.

Results:

Field 1	Lbs fertilizer/ acre	Pts. (5 pts each)	Cost / acre	Pts. (5 pts each)
Fertilizer 1				
Fertilizer 2				
Fertilizer 3				
Total Pounds Applied / Acre			Total Cost / Acre	
			Total Field Cost	

Field 2	Lbs fertilizer/ acre	Pts. (5 pts each)	Cost / acre	Pts. (5 pts each)
Fertilizer 1				
Fertilizer 2				
Fertilizer 3				
Total Pounds Applied / Acre			Total Cost / Acre	
			Total Field Cost	



HORTICULTURE

CDE# 105482

Incorrect Mark: Correct Mark:



Team Name

This sheet is for demonstration and practice only. You must use a real scan sheet for actual competition.

Team Number
0
1
2
3
4
5
6
7
8
9

State	Last Name	First Name
A	A	A
B	B	B
C	C	C
D	D	D
E	E	E
F	F	F
G	G	G
H	H	H
I	I	I
J	J	J
K	K	K
L	L	L
M	M	M
N	N	N
O	O	O
P	P	P
Q	Q	Q
R	R	R
S	S	S
T	T	T
U	U	U
V	V	V
W	W	W
X	X	X
Y	Y	Y
Z	Z	Z

Place	Facing Classes									Place	
	Class										
	1	2	3	4	5	6	7	8	9		
1	1234									1234	1
2	1243									1243	2
3	1324									1324	3
4	1342									1342	4
5	1423									1423	5
6	1432									1432	6
7	2134									2134	7
8	2143									2143	8
9	2314									2314	9
10	2341									2341	10
11	2413									2413	11
12	2431									2431	12
13	3124									3124	13
14	3142									3142	14
15	3214									3214	15
16	3241									3241	16
17	3412									3412	17
18	3421									3421	18
19	4123									4123	19
20	4132									4132	20
21	4213									4213	21
22	4231									4231	22
23	4312									4312	23
24	4321									4321	24

Code
0
1
2
3
4
5
6
7
8
9

Team Activity	
Team	Ind.
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

Fractiouns (Judges)					
-1	-2	-3	-4	-5	-6
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

Exam	
1	A B C D 26
2	A B C D 27
3	A B C D 28
4	A B C D 29
5	A B C D 30
6	A B C D 31
7	A B C D 32
8	A B C D 33
9	A B C D 34
10	A B C D 35
11	A B C D 36
12	A B C D 37
13	A B C D 38
14	A B C D 39
15	A B C D 40
16	A B C D 41
17	A B C D 42
18	A B C D 43
19	A B C D 44
20	A B C D 45
21	A B C D 46
22	A B C D 47
23	A B C D 48
24	A B C D 49
25	A B C D 50

Exam 2/Team	
1	A B C D
2	A B C D
3	A B C D
4	A B C D
5	A B C D
6	A B C D
7	A B C D
8	A B C D
9	A B C D
10	A B C D
11	A B C D
12	A B C D
13	A B C D
14	A B C D
15	A B C D
16	A B C D
17	A B C D
18	A B C D
19	A B C D
20	A B C D
21	A B C D
22	A B C D
23	A B C D
24	A B C D
25	A B C D

Assessment and Solution					
1	A B C D	6	A B C D	11	A B C D
2	A B C D	7	A B C D	12	A B C D
3	A B C D	8	A B C D	13	A B C D
4	A B C D	9	A B C D	14	A B C D
5	A B C D	10	A B C D	15	A B C D
16	A B C D	21	A B C D	26	A B C D
17	A B C D	22	A B C D	27	A B C D
18	A B C D	23	A B C D	28	A B C D
19	A B C D	24	A B C D	29	A B C D
20	A B C D	25	A B C D	30	A B C D

		Identification A																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Number of Specimen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
26	27	28	29	30																							
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7		
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8		
9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9		
26	27	28	29	30																							

		Identification B																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Number of Specimen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
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26	27	28	29	30																						
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26	27	28	29	30																						

PLANT ID
1-40

SEED ID
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DISORDERS
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