



Agronomy Handbook

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. A list of prohibited and restrictive weeds will be added to the CDE resource email and sent out prior to CDE's.
7. Event checkers will be used to verify official placing and scoring. Event checkers will remain at the event until their team is competing.
8. 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. Twenty (20) minutes will be allowed for identification of plant samples.
2. Twenty (20) minutes will be allowed for identification of seed samples.
3. Twenty (20) minutes will be allowed for Fertilizer Calculations.
4. Twenty (20) minutes will be allowed for Seed Analysis (5 trays at 4 minutes each then rotate)
5. Twenty (20) minutes will be allowed for Plant Disease, Disorder and Insect Identification and placing Classes.
6. 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. 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 crops on the plant identification list. 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. Scab or Wilt on grain seed heads will not be used since they look the same. 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 Hay samples will be evaluated. Each class will consist of four samples of Hay. Participants will rank each class according to the Hormel scorecard. The placing classes will be worth 50 points each.

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.

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.	001. Barnyardgrass	058. Rush Skeletonweed
	002. Black Henbane	059. Russian Knapweed
	003. Black Medic (Yellow Trefoil)	060. Russian Thistle
	004. Black Mustard	061. St. Johnswort (Goat Weed)
	005. Blue Mustard	062. Scotch Broom
	006. Broadleaf Plantain	063. Scotch Thistle
	007. Buckhorn Plantain	064. Shepherdspurse
	008. Buffalobur	065. Showy Milkweed
	009. Bull Thistle	066. Silver Lupine (Lupine)
	010. Burdock	067. Sowthistle
	011. Canada Thistle	068. Spotted Knapweed
	012. Chicory	069. Tansy Ragwort
	013. Cocklebur	070. Teasel
	014. Common Groundsel	071. Waterhemlock
	015. Crabgrass	072. Wild Buckwheat
	016. Curly Dock	073. Wild Oats
	017. Cutleaf Nightshade	074. Yarrow
	018. Dalmation Toadflax	075. Yellow Starthistle
	019. Death Camas	076. Yellow Toadflax
	020. Diffuse Knapweed	
	021. Dodder	
	022. Downy Bromegrass	
	023. Dyers Woad	
	024. Field Bindweed (Morning Glory)	
	025. Field Pennygrass (Fan Weed)	
	026. Foxtail Barley	
	027. Green Foxtail	
	028. Hairy Nightshade	
	029. Halogeton	
	030. Hare Barley (Wild Barley)	
	031. Hoary Cress (White Top)	
	032. Houndstongue	
	033. Johnsongrass	
	034. Jointed Goatgrass	
	035. Kochia	
	036. Lambsquarter	
	037. Larkspur	
	038. Leafy Spurge	
	039. Longleaf Groundcherry	
	040. Mallow	
041. Mayweed (Dog Fennel)		
042. Meadow Hawkweed		
043. Meadow Salsify (Yellow Goatsbeard)		
044. Medusahead		
045. Musk Thistle		
046. Nutsedge (Yellow Nutsedge)		
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)		
		CROP PLANTS
		077. Alfalfa
		078. Alsike Clover
		079. Beans
		080. Birdsfoot Trefoil
		081. Club Wheat
		082. Common Wheat
		083. Crested Wheatgrass
		084. Kentucky Bluegrass
		085. Lentils
		086. Oats
		087. Orchardgrass
		088. Peas
		089. Potatoes
		090. Red Clover
		091. Rye
		092. Six Row Barley
		093. Smooth Bromegrass
		094. Strawberry Clover
		095. Sugarbeet
		096. Sweet Clover
		097. Tall Fescue
		098. Tall Oatgrass
		099. Timothy
		100. Two Row Barley
		101. White Clover
		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.
SCORE		

WEED AND CROP SEED IDENTIFICATION SCORECARD

Bubble the seed number into ID B #1-40 on the scansheet. 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.

PARTICIPANT NUMBER _____

Directions:

Identify seed specimens by matching the correct seed number at right to the sample spaces below.

01. _____	21. _____
02. _____	22. _____
03. _____	23. _____
04. _____	24. _____
05. _____	25. _____
06. _____	26. _____
07. _____	27. _____
08. _____	28. _____
09. _____	29. _____
10. _____	30. _____
11. _____	31. _____
12. _____	32. _____
13. _____	33. _____
14. _____	34. _____
15. _____	35. _____
16. _____	36. _____
17. _____	37. _____
18. _____	38. _____
19. _____	39. _____
20. _____	40. _____

WEED SEEDS

- 200. Barnyard Grass
- 201. Black Medic (Yellow Trefoil)
- 202. Black Mustard
- 203. Broadleaf Plantain
- 204. Buckhorn Plantain
- 205. Bull Thistle
- 206. Burdock
- 207. Canada Thistle
- 208. Curly Dock
- 209. Dodder
- 210. Downy Bromegrass
- 211. Field Bindweed (Morning Glory)
- 212. Field Pennycress (Fan Weed)
- 213. Foxtail Barley
- 214. Green Foxtail
- 215. Halogeton
- 216. Hoary Cress (White Top)
- 217. Houndstongue
- 218. Lambsquarter
- 219. Leafy Spurge
- 220. Mallow
- 221. Medusahead
- 222. Perennial Sowthistle
- 223. Povertyweed
- 224. Prickly Lettuce
- 225. Puncture Vine
- 226. Purslane
- 227. Quackgrass
- 228. Redroot (Erect)
- 229. Russian Knapweed
- 230. Russian Thistle
- 231. Shepherdspurse
- 232. St. Johnswort (Goatweed)
- 233. Waterhemlock
- 234. Wild Buckwheat
- 235. Wild Oats
- 236. Yellow Starthistle

CROP SEEDS

- 237. Alfalfa
- 238. Alsike Clover
- 239. Barley
- 240. Beans
- 241. Birdsfoot Trefoil
- 242. Crested Wheat Grass
- 243. Hard Red Wheat
- 244. Kentucky Bluegrass
- 245. Lentils
- 246. Oat
- 247. Orchardgrass
- 248. Peas
- 249. Red Clover
- 250. Rye
- 251. Smooth Bromegrass
- 252. Soft White Wheat
- 253. Strawberry Clover
- 254. Sugarbeet
- 255. Sweet Clover
- 256. Tall Fescue
- 257. Tall Oatgrass
- 258. Timothy
- 259. White Clover

SCORING**DIRECTIONS:**

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

SCORE _____

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

	1-2-3-4	_____
	1-2-4-3	_____
Participant	1-3-2-4	_____
No. _____	1-3-4-2	_____
	1-4-2-3	_____
	1-4-3-2	=====
Event:	2-1-3-4	_____
	2-1-4-3	_____
	2-3-1-4	_____
_____	2-3-4-1	_____
	2-4-1-3	_____
	2-4-3-1	=====
	3-1-2-4	_____
Class Name	3-1-4-2	_____
	3-2-1-4	_____
_____	3-2-4-1	_____
	3-4-1-2	_____
	3-4-2-1	=====
	4-1-2-3	_____
	4-1-3-2	_____
Class No. _____	4-2-1-3	_____
	4-2-3-1	_____
	4-3-1-2	_____
	4-3-2-1	=====
	Tabulator's Score	_____

STANDARD FFA PLACINGCARD

Idaho FFA	Placing	Check Placing

	1-2-3-4	_____
	1-2-4-3	_____
Participant	1-3-2-4	_____
No. _____	1-3-4-2	_____
	1-4-2-3	_____
	1-4-3-2	=====
Event:	2-1-3-4	_____
	2-1-4-3	_____
	2-3-1-4	_____
_____	2-3-4-1	_____
	2-4-1-3	_____
	2-4-3-1	=====
	3-1-2-4	_____
Class Name	3-1-4-2	_____
	3-2-1-4	_____
_____	3-2-4-1	_____
	3-4-1-2	_____
	3-4-2-1	=====
	4-1-2-3	_____
	4-1-3-2	_____
Class No. _____	4-2-1-3	_____
	4-2-3-1	_____
	4-3-1-2	_____
	4-3-2-1	=====
	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 Grasshopper/Crickets |
| 008 Earwig | 021 Leafhopper |
| 009 Aphid | 022 Corn Earworm |
| 010 Wireworm | 023 Potato Beetle |
| 011 Alfalfa Weevil | 024 Blister Beetle |
| 012 Snail/Slug | 025 Armyworm |
| 013 Looper | |

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 (10 pts each)	

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 (10 pts each)	

