



# Agronomy

## Purpose

*The purpose of the New Jersey FFA Agronomy Career Development Event is to create interest and promote understanding in agronomy by providing opportunities for recognition through the demonstration of skills and proficiencies. It also gives students an opportunity to explore career opportunities available in agronomy and encourage students to pursue careers in agronomy.*

## Objectives

Through participation in the state event, participants will be able to:

- Demonstrate knowledge and skills used in agronomic sciences.
- Explore career opportunities, skills and proficiencies in the agronomy industry.
- Determine the ability to identify agronomic:
  - Crops
  - Weeds
  - Seeds
  - Insects
  - Diseases
  - Plant nutrient deficiencies
  - Plant disorders
- Evaluate an in-field scenario to determine probable causes and possible management decisions.
- Demonstrate understanding of sustainable agriculture and environmental stewardship through the use of integrated pest management and best management practices.

## Event Rules

The complete rules, policies and procedures relevant to all New Jersey FFA Career and Leadership Development Events may be found in the CDE & LDE Event Participation Policy: [https://nj.gov/agriculture/ag\\_ed/ffa/activity/CDE\\_LDE\\_Policy.pdf](https://nj.gov/agriculture/ag_ed/ffa/activity/CDE_LDE_Policy.pdf)

- Teams will consist of four members, and all four scores will count toward the team score.
- The team score is comprised of the combined scores of each individual and the team activity in which all team members will participate.
- Travel Official Dress is required during the event. Travel Official Dress includes boots or work shoes, black jeans or work pants, etc. as opposed to dress attire. Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of weather. Participants should have rain gear, warm clothes and closed toed shoes.
- Any communication between participants during the event will be sufficient cause to eliminate the team from the event.
- Any participant caught cheating during the event will be expelled from the event.
- Participants are NOT allowed to use (or have visible) electronic devices during the

event, unless for medical reasons or a portion of the event requires usage. This includes cell phones, tablets, etc. Participants will be allowed to use calculators, if specified for that event; however, cell phone calculators and graphing calculators are not permitted! Failure to adhere to these rules will result in disqualification.

- No written materials such as tests, problems and worksheets should be removed from the site.
- All individuals participating will judge in a cooperative manner following the rules set forth by the event coordinator.
- No school/chapter will use Rutgers University or Delaware Valley University facilities or locations for the training of teams. Contact with University faculty and staff is permissible. **Penalty will be disqualification.**
- This event will be scored using “Scan-tron” sheets. It is important for students to listen to directions and fill out the sheets correctly in order to receive credit. Sample scan-tron sheets are available for practice on the State Activity Guide. This event uses the Agronomy (#708-5) scan-tron sheet.
- There will be no separate alternate teams.
- A student may not compete in more than one event during the New Jersey FFA Spring Career Development Events.
- The State level competition fee of \$11 per contestant will be paid by the competing school. If a chapter is at least blue affiliated, registration to state FFA career development events is waived.

## Event Format

Materials students must provide include the following:

- Clean, free-of-notes clipboard.
- Two sharpened No. 2 pencils.
- Non-programmable calculator.
  - The calculators used during the event are to be battery operated, non-programmable, and silent with large keys and large displays. The calculators should only have these functions: addition, subtraction, multiplication, division, equals, percent, square root, +/- key and one memory register. No other calculators are allowed during the event.

## Individual Practicums

### General Knowledge Examination (240 points)

Sixty objective multiple-choice questions will be given to each participant. These 60 questions will be divided equally between the four categories adopted from the performance objectives of the International Certified Crop Advisor (ICCA) exam. These categories are Pest Management, Nutrient Management, Crop Management and Soil and Water Quality have been and may be accessed at

<https://www.certifiedcropadvisor.org/files/certifiedcropadvisor/international-performance-objectives.pdf>

## Identification (200 points)

Students will identify 50 weed and/or crop plants and/or seeds. Plants may be presented in any stage of growth following emergence. The list of possible specimens is in the reference section of the handbook.

## Soils (200 points)

Each participant will be responsible for the following activities related to soils:

- Utilize web soil survey data <https://websoilsurvey.nrcs.usda.gov/app/> and answer questions related to
  - Soil drainage (e.g., poor, moderate, well) and the impact of these classifications.
  - Topographic position (e.g., summit, slope, depression).
  - Identification of USDA land capability classes and answer problem-solving questions related to various classes.
  - Using soil survey to locate specific sites, use of suggested soil spots and questions related to the soil survey map.
  - Interpretation of graphs and tables of data based on soil parameters.
- Answer general questions about soil properties and their application, as outlined in the “Soil and Water Management Competency Area” section of the International Certified Crop Advisor (ICCA) exam performance objectives.  
<https://www.certifiedcropadvisor.org/files/certifiedcropadvisor/international-performance-objectives.pdf>

## Pest management (200 points)

### *Disorders (100 points)*

- Ten samples will be identified according to category, causal agent and damage location. Refer to the [Agronomic Disorders Practicum Scorecard](#) for the category, agent and damage location lists.
- Crops: The only crops included in this part of the practicum will be those included in the New Jersey Agronomy CDE Handbook Crops List used for identification.

### *Insect Identification (100 points)*

- Ten samples will be identified according to insect name, economic impact and mouth part. Refer to the [Insect Identification Practicum Scorecard](#) for additional details.

## Team Activity (250 Points)

The team will be given a diagnostic scenario (one field, one crop from the region/crop list) that contains 4 potential causes. Potential causes will fall into four categories: Nutrient Management, Soil and Water Management, Pest Management, and Crop Management. Total Team Activity time 30 minutes.

The team event scenario will be chosen from a cropping region of the country, assigned by year on the region map. The region/crops list follows the map.

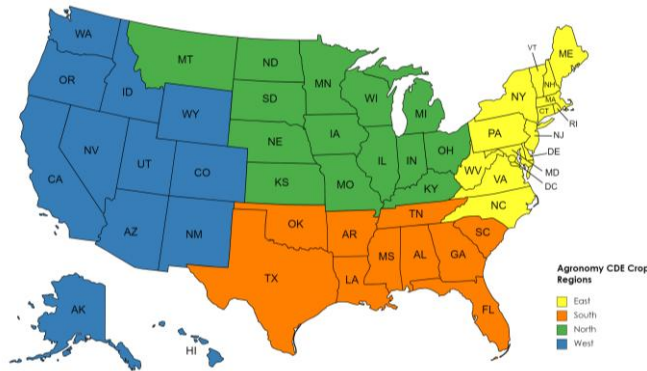
Resources provided for the team activity may include but are not limited to seed tag information, tillage practices, pesticide labels, extension bulletins, fertility reports, tissue analysis, water management, seeding rates, variety information, trial data and application of information such as pesticide application, fertilizer application and irrigation application.

Diagnostic scenario and the four potential causes may include but are not limited to pictures, video, audio, tables, graphs or other documents that outline potential field issues related to the cropping system.

### Written Component (250 points)

- The written component of the Team Activity will include a question-and-answer packet with five sections and a total of 50 questions (5 points each). Four of the sections will focus on a potential cause in each category listed above. Each of these four category/potential cause sections will include 10 questions each. Questions for each of the four causal packets may include math, science/identification or resource questions. The fifth section will summarize the issue with 10 questions on the severity of the 4 potential causes and preparing the oral summary.
- This five-section answer packet will be worth a total of 250 points. The team will have 30 minutes to complete the written component.

## National FFA Agronomy CDE Regional Areas



### Regions

#### East (2024)

Connecticut  
Delaware  
District of Columbia  
Maine  
Maryland  
Massachusetts  
New Hampshire  
New Jersey  
New York  
North Carolina  
Pennsylvania  
Rhode Island  
Vermont  
Virginia  
West Virginia

#### North (2025)

Illinois  
Indiana  
Iowa  
Kansas  
Kentucky  
Michigan  
Minnesota  
Missouri  
Montana  
Nebraska  
North Dakota  
Ohio  
South Dakota  
Wisconsin

#### South (2026)

Alabama  
Arkansas  
Florida  
Georgia  
Louisiana  
Mississippi  
Oklahoma  
Puerto Rico  
South Carolina  
Tennessee  
Texas  
Virgin Islands

#### West (2027)

Alaska  
Arizona  
California  
Colorado  
Hawaii  
Idaho  
Nevada  
New Mexico  
Oregon  
Utah  
Washington  
Wyoming

### Crops List

#### East 2024

Corn Silage  
Hay (cool season grass)  
Oats  
Peanuts  
Rye  
Soybeans  
Tobacco  
Wheat (soft red winter)

#### North 2025

Canola  
Corn grain  
Corn grain  
Flaxseed  
Hay (Pasture)  
Oats  
Sorghum  
Soybeans  
~~Sugarbeets~~  
Sunflower  
Wheat (Durham/ hard red spring)

#### South 2026

Corn Grain  
Cotton  
Hay (warm season grass)  
Peanuts  
Rice  
Sorghum  
Soybeans  
Sugarcane  
Wheat (hard red winter)

#### West 2027

Barley  
Corn Silage  
Cotton  
Hay (alfalfa)  
Lentils  
Lettuce  
Peas  
Potatoes  
Tomato  
Wheat (white)

## Event Scoring

Activities	Individual Points	Team Points
Written exam	240	960
Identification	200	800
Soils	200	800
Pest management	200	800
Team Activity		250
<b>TOTAL POINTS POSSIBLE</b>	840	3,610

### Tiebreakers

If ties occur for awards, the following components will be used to determine the placings:

#### Team

1. Team Activity
2. Total written exam

#### Individual

1. Written exam
2. Plant and seed identification
3. Soils

## Awards

Awards will be presented to individuals and the first team based on their rankings at the CDE awards ceremony at the New Jersey State FFA Convention. Awards are sponsored by the National FFA Foundation and the New Jersey FFA Association.

#### Team

- Plaque Sponsored by the National FFA Foundation – 1st place

#### Individual

- Overall Medals
  - Medals – Top three individuals
- H.O. Sampson Certificates (hands-on sections ONLY)
  - Certificate – Top five individuals

The 1<sup>st</sup> place team will represent New Jersey at the Big E in September and the National FFA Convention in October.

# References

*This list of references is not intended to be all-inclusive.* Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used. Please note that universities frequently update or change their web servers which can invalidate the listed website.

Past CDE materials and other resources are available on [FFA.org](https://www.ffa.org).

## Plant Identification

- Flashcards for both seeds and plants are available through Wards Natural Science Establishment: <https://wardsci.com/store/>
- Weeds of the Northeast, Comstock Books, by Richard H. Uva (Author), Joseph C. Neal (Author), Joseph M. Ditomaso (Author).
- Weeds of the Great Plains, Nebraska Department of Agriculture by James L Stubbendieck (Author).
- Weeds of the West, University of Wyoming Extension, by Tom D. Whitson (Editor).
- Common Weed Seedlings of the North Central States, Michigan State University Extension.
- Sunset Western Garden Book.
- An Illustrated Guide to Arizona Weeds, University of Arizona, <https://www.uapress.arizona.edu/onlinebks/WEEDS/TITLWEED.HTML>
- Weeds of California and Other Western States University of California.
- Interactive Encyclopedia of Weeds of North America, North Central Weed Science Society.
- <http://plants.usda.gov/java/>
  - Agriculture/Pests-and-Diseases/Weeds/Virginia-Tech-Weed-Identification-Guide. <https://weedid.cals.vt.edu/>
  - [http://www.ipm.ucanr.edu/PMG/weeds\\_multi.html](http://www.ipm.ucanr.edu/PMG/weeds_multi.html)
  - <http://wssa.net/weed/weed-identification/>

## Seed Identification

- Illustrated Taxonomy Manual of Weed Seeds, North Central Weed Science Society.
- Weed Seeds of the Great Plains, University Press of Kansas. <http://www.oardc.ohio-state.edu/seedid/> At the site, enter the common name or scientific name to find the seed.
- <http://plants.usda.gov/java/> Disease/Disorder
- <http://plantdiseasehandbook.tamu.edu>  
u Insects
- <http://www2.ca.uky.edu/agcomm/pubs/ENT/ENT68/ENT68.pdf>

## Soils

- <http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/>
- <https://websoilsurvey.nrcs.usda.gov/app/>

## Written Exam

There is no one resource for the exam. The Agronomy CDE has adopted these four categories

from the performance objectives of the International Certified Crop Advisor (ICCA) exam. You may access these at the American Society of Agronomy, Inc., <https://www.certifiedcropadvisor.org/files/certifiedcropadvisor/international-performance-objectives.pdf>.

Certified Crop Advisor (CCA) Training Resources is a resource guide for validated study materials for the CCA international exam and the National FFA Agronomy CDE. <https://ffa.box.com/s/llrt6zgvuunmulqa6m6zkbaft9576pb4>

- Ohio Agronomy Guide - [https://stepupsoy.osu.edu/sites/hcs-soy/files/472%20Ohio%20Agronomy%20Guide%2015%20Ed%20red\\_0.pdf](https://stepupsoy.osu.edu/sites/hcs-soy/files/472%20Ohio%20Agronomy%20Guide%2015%20Ed%20red_0.pdf)
- Illinois Agronomy Guide - <https://extension.illinois.edu/global/agronomy-handbook>
- NDSU Crop Production - <https://www.ndsu.edu/agriculture/ag-hub/ag-topics/crop-production>
- Georgia Crop Production Guide - <https://grains.caes.uga.edu/content/dam/caes-subsite/grains/docs/corn/2024-Corn-Production-Guide.pdf>

## Request for Reasonable Accommodations

The New Jersey FFA Association is committed to providing equal access to our events and activities for all people. Use this form to request a reasonable accommodation or assistance at least 3 weeks before any state-level events: <https://form.jotform.com/NJFFA/accommodations-request>. A new form will need to be submitted for each event in which a reasonable accommodation is being requested. This information will be kept confidential and will be used only to process the request. Our staff will review the request upon receipt and contact the requestor with additional information. The association cannot guarantee accommodations or assistance if a form is received less than 3 weeks before an event. Accommodations being requested that require the assistance of another person (nurse, interpreter, scribe, reader, etc.) is the responsibility of the school/requestor. It is also the school/requestor's responsibility to provide any approved equipment to aide in the accommodation process, if applicable.

## Artificial Intelligence (AI) Policy and Guidelines

The standard operative procedures allow FFA members to use AI tools to assist them in their learning. Appropriate uses of AI may include generating ideas for any FFA-related assignment, project, contest and award application; checking facts of a phenomenon; or checking for and correcting grammatical errors in a paper written by a member. Specific guidelines for appropriate use, including examples, is provided in the policy. To ensure clarity, a statement outlining ethical AI utilization will be added to program handbooks. Non-compliance with this policy represents plagiarism and will automatically disqualify a member.

Please visit the State Activity Guide, [Artificial Intelligence \(AI\) Policy 1.007](#) to view the full guidelines and best practices.

## Professional Integrity

FFA members participating in New Jersey FFA programs and events understand and agree that all work must result from their own effort and ability, created, and completed alone (except for partner or chapter applications). When outside sources (direct quotes or phrases, specific dates, figures, or other materials) are used for a project, document, or application, the required reference citation must be completed according to the rules specified by the applicable handbook.

While participating in National FFA programs, FFA members are prohibited from:

- Plagiarizing
- Violating copyright
- Cheating
- Falsifying information
- Using another person's results or thoughts as their own, even with this person's permission. This includes work done by a family member or a mentor.
- Using information or data obtained from the internet without proper citation.

Any attempt to gain an unfair advantage will not be tolerated. Non-compliance represents plagiarism and will automatically disqualify a member.



# Weeds List

Conforming with the Weed Science Society of America's standardized name list.

ID #	Weed Name	Form	Latin Name
101	amaranth, Palmer	plant only	<i>Amaranthus palmeri</i>
102	barnyardgrass	plant or seed	<i>Echinochloa crus-galli</i>
103	bindweed, field	plant or seed	<i>Convolvulus arvensis</i>
104	brome, downy	plant only	<i>Bromus tectorum</i>
105	buckwheat, wild	plant or seed	<i>Fallopia convolvulus</i>
106	carrot, wild	plant or seed	<i>Daucus carota</i>
107	cheat	plant or seed	<i>Bromus secalinus</i>
108	chickweed, common	plant or seed	<i>Stellaria media</i>
109	cocklebur, common	plant or seed as bur	<i>Xanthium strumarium</i>
110	crabgrass, large	plant or seed	<i>Digitaria sanguinalis</i>
111	crownvetch, trailing	plant or seed	<i>Securigera varia</i>
112	dandelion	plant or seed	<i>Taraxacum officinale</i>
113	dock, curly	plant or seed	<i>Rumex crispus</i>
114	dodder	plant or seed	<i>Cuscuta</i> spp.
115	foxtail, giant	plant or seed	<i>Setaria faberi</i>
116	foxtail, green	plant or seed	<i>Setaria viridis</i>
117	foxtail, yellow	plant or seed	<i>Setaria pumila</i>
118	goatgrass, jointed	plant or seed	<i>Aegilops cylindrica</i>
119	groundcherry	plant or seed	<i>Physalis</i> spp.
120	groundsel, cressleaf	plant or seed	<i>Packera glabella</i>
121	hairy galinsoga *New in 2025	plant only	<i>Galinsoga quadriradiata</i> Cav.
122	hemlock, poison *New in 2025	plant only	<i>Conium maculatum</i> L.
123	horsenettle	plant or seed	<i>Solanum carolinense</i>
124	horseweed (marestail)	plant only	<i>Conyza canadensis</i>
125	jimsonweed	plant or seed	<i>Datura stramonium</i>
126	johnsongrass	plant or seed	<i>Sorghum halpense</i>
127	knapweed, Russian	plant only	<i>Rhaponticum repens</i>
128	knotweed, prostrate	plant or seed	<i>Polygonum aviculare</i>
129	kochia	plant or seed	<i>Bassia scoparia</i>
130	kudzu	plant only	<i>Pueraria montana var lobata</i>
131	lambquarters, common	plant or seed	<i>Chenopodium album</i>
132	lettuce, prickly	plant or seed	<i>Lactuca serriola</i>
133	mallow, common	plant or seed	<i>Malva neglecta</i>
134	milkweed, common	plant or seed	<i>Asclepias syriaca</i>
135	morningglory	plant or seed	<i>Ipomoea</i> spp.
136	mustard, wild	plant or seed	<i>Sinapis arvensis</i>
137	nightshade, black	plant or seed	<i>Solanum nigrum</i>
138	nightshade, silverleaf	plant or seed	<i>Solanum elaeagnifolium</i> Cav.
139	nutsedge	plant or seed as nutlet	<i>Cyperus</i> spp.

# Weeds List

Conforming with the Weed Science Society of America's standardized name list.

ID #	Weed Name	Form	Latin Name
140	oat, wild	plant or seed	<i>Avena fatua</i>
141	onion/garlic, wild	plant or seed	<i>Allium</i> spp.
142	pennycress, field	plant or seed	<i>Thlaspi arvense</i>
143	pigweed, redroot	plant or seed	<i>Amaranthus retroflexus</i>
144	plantain, broadleaf	plant or seed	<i>Plantago major</i>
145	plantain, buckhorn	plant or seed	<i>Plantago lanceolata</i>
146	puncturevine	plant or seed	<i>Tribulus terrestris</i>
147	purslane, common	plant or seed	<i>Portulaca oleracea</i>
148	quackgrass	plant or seed	<i>Elymus repens</i>
149	ragweed, common	plant or seed	<i>Ambrosia artemisiifolia</i>
150	ragweed, giant	plant or seed	<i>Ambrosia trifida</i>
151	sandbur, field	plant or seed	<i>Cenchrus spinifex</i> Cav.
152	shepherd's-purse	plant or seed	<i>Capsella bursa-pastoris</i>
153	sicklepod	plant or seed	<i>Senna obtusifolia</i>
154	smartweed	plant or seed	<i>Persicaria</i> spp.
155	sowthistle	plant or seed	<i>Sonchus</i> spp.
156	spurge, leafy	plant or seed	<i>Euphorbia esula</i>
157	spurge, prostrate	plant only	<i>Euphorbia prostrata</i>
158	sunflower, common	plant or seed	<i>Helianthus annuus</i>
159	tansymustard	plant or seed	<i>Descurainia pinnata</i>
160	thistle, bull	plant or seed	<i>Cirsium vulgare</i>
161	thistle, Canada	plant or seed	<i>Cirsium arvense</i>
162	thistle, Russian	plant or seed	<i>Salsola tragus</i>
163	velvetleaf	plant or seed	<i>Abutilon theophrasti</i>
164	waterhemp	plant only	<i>Amaranthus tuberculatus</i>

# Crops List

Conforming with the United States Department of Agriculture plant database.

ID #	Crop Name	Form	Scientific Name
201	alfalfa	plant or seed	<i>Medicago sativa</i>
202	barley	plant or seed	<i>Hordeum vulgare</i>
203	bermudagrass	plant or seed	<i>Cynodon dactylon</i>
204	black bean	seed only	<i>Phaseolus vulgaris</i>
2025	broccoli	plant only	<i>Brassica oleracea</i> var. <i>italica</i>
206	buckwheat	plant or seed	<i>Fagopyrum sagittatum</i>
207	cabbage	plant only	<i>Brassica oleracea</i>
208	canola	plant or seed	<i>Brassica napus</i>
209	cantaloupe	plant or seed	<i>Cucumis melo</i> var. <i>cantalupensis</i>
210	carrot	root provided	<i>Daucus carota</i> L. var. <i>sativus</i>
211	cauliflower	plant only	<i>Brassica oleracea</i> var. <i>botrytis</i>
212	cereal rye	plant or seed	<i>Secale cereale</i>
213	chickpea	seed only	<i>Cicer arietinum</i>
214	chili pepper	plant or seed	<i>Capsicum annuum</i>
215	corn	plant only	<i>Zea mays</i>
216	cotton	plant or seed	<i>Gossypium hirsutum</i>
217	cranberry	plant only	<i>Vaccinium macrocarpon</i>
218	cucumber	plant or seed	<i>Cucumis sativus</i>
219	dent corn	seed only	<i>Zea mays</i> var. <i>indentata</i>
220	dry bean	plant only	<i>Phaseolus vulgaris</i>
221	durum wheat	seed only	<i>Triticum durum</i>
222	flax	plant or seed	<i>Linum usitatissimum</i>
223	hops	plant only	<i>Humulus lupulus</i>
224	Kentucky bluegrass	plant or seed	<i>Poa pratensis</i>
225	lentil	plant or seed	<i>Lens culinaris</i>
226	lettuce	plant or seed	<i>Lactuca sativa</i>
227	lima bean	seed only	<i>Phaseolus lunatus</i>
228	oat	plant or seed	<i>Avena sativa</i>
229	onion	plant or seed	<i>Allium cepa</i>
230	orchardgrass	plant or seed	<i>Dactylis glomerata</i>
231	pea	plant or seed	<i>Pisum Sativum</i>
232	peanut	plant or seed	<i>Arachis hypogaea</i>
233	pinto bean	seed only	<i>Phaseolus vulgaris</i>
234	popcorn	seed only	<i>Zea mays</i> var. <i>everta</i>
235	potato	plant only	<i>Solanum tuberosum</i>
236	red bean	seed only	<i>Phaseolus vulgaris</i>
237	red clover	plant or seed	<i>Trifolium pratense</i>
238	red wheat	seed only	<i>Triticum aestivum</i>
239	rice	plant or seed	<i>Oryza sativa</i>
240	safflower	plant or seed	<i>Carthamus tinctorius</i>

# Crops List

Conforming with the United States Department of Agriculture plant database.

ID #	Crop Name	Form	Scientific Name
241	sorghum	plant or seed	<i>Sorghum bicolor</i>
242	soybean	plant or seed	<i>Glycine max</i>
243	spinach	plant or seed	<i>Spinacia oleracea</i>
244	squash	plant or seed	<i>Curcubita pepo</i>
245	strawberry	plant only	<i>Fragaria L.</i>
246	Sudangrass	seed only	<i>Sorghum bicolor</i>
247	sugar beet	plant or seed	<i>Beta vulgaris</i>
248	sugarcane	plant only	<i>Saccharum L.</i>
249	sunflower	plant or seed	<i>Helianthus annuus</i>
250	sweet corn	seed only	<i>Zea mays var. saccharata</i>
251	sweet potato	plant only	<i>Ipomoea batatas</i>
252	sweetclover	plant or seed	<i>Melilotus albus</i>
253	tall fescue	plant or seed	<i>Festuca arundinacea</i>
254	timothy	plant or seed	<i>Phleum pratense</i>
255	tobacco	plant or seed	<i>Nicotiana tabacum</i>
256	tomato	plant or seed	<i>Lycopersicon esculentum</i>
257	watermelon	plant or seed	<i>Citrullus lanatus</i>
258	wheat	plant only	<i>Triticum aestivum</i>
259	white bean	seed only	<i>Phaseolus vulgaris</i>
260	white clover	plant or seed	<i>Trifolium repens</i>
261	white wheat	seed only	<i>Triticum aestivum</i>

# National Insect List Official Guide

ID #	Common Name	Latin Names, Order: Family for Possible Specimens	Mouth parts	Economic Impact
11.	Alfalfa weevil, adult or larva	<i>Hyperica postica</i> , Coleoptera:Curculionidae	C	V
12.	Aphid	various species, Homoptera:Aphididae	PS	R
13.	Armyworm adult	<i>Pseudaletia unipuncta</i> , Lepidoptera:Noctuidae (true armyworm)	S	IS
		<i>Spodoptera frugiperda</i> , Lepidoptera:Noctuidae (fall armyworm)		
		<i>Spodoptera exigua</i> , Lepidoptera:Noctuidae (beet armyworm)		
14.	Armyworm larva	<i>Pseudaletia unipuncta</i> , Lepidoptera:Noctuidae (true armyworm)	C	V
		<i>Spodoptera frugiperda</i> , Lepidoptera:Noctuidae (fall armyworm)		
		<i>Spodoptera exigua</i> , Lepidoptera:Noctuidae (beet armyworm)		
15.	Bean leaf beetle	<i>Cerotoma trifurcata</i> , Coleoptera:Chrysomelidae	C	FV
16.	Blister beetle	<i>Epicauta pennsylvanica</i> , Coleoptera:Meloidae (black blister beetle)	C	V
		<i>Epicauta pestifera</i> , Coleoptera:Meloidae (margined blister beetle)		
		<i>Epicauta vittata</i> , Coleoptera:Meloidae (striped blister beetle)		
17.	Boll weevil	<i>Anthonomis grandis grandis</i> , Coleoptera:Curculionidae	C	F
18.	Chinch bug	<i>Blissus leucoptera</i> , Hemiptera:Lygaeidae	PS	R
19.	Colorado potato beetle, adult, or larva	<i>Leptinotarsa decemlineata</i> , Coleoptera:Chrysomelidae	C	V
20.	Corn Earworm adult	<i>Helicoverpa zea</i> , Lepidoptera:Noctuidae	S	IS
21.	Corn Earworm larva	<i>Helicoverpa zea</i> , Lepidoptera:Noctuidae	C	FV
22.	Corn rootworm adult	<i>Diabrotica barberi</i> , Coleoptera:Chrysomelidae (northern)	C	FV
		<i>Diabrotica undecimpunctata howardii</i> , Coleoptera:Chrysomelidae (southern)		
		<i>Diabrotica virgifera</i> , Coleoptera:Chrysomelidae (western)		
23.	Corn rootworm larva	<i>Diabrotica sp.</i> , Coleoptera:Chrysomelidae	C	V
24.	Cutworm adult	<i>Agrotis epsilon</i> , Lepidoptera:Noctuidae (black cutworm)	S	IS
		<i>Peridroma saucia</i> , Lepidoptera:Noctuidae (variegated cutworm)		
		<i>Striacosta albicosta</i> , Lepidoptera:Noctuidae (western bean cutworm)		
25.	Cutworm larva	<i>Agrotis epsilon</i> , Lepidoptera:Noctuidae (black cutworm)	C	V
		<i>Peridroma saucia</i> , Lepidoptera:Noctuidae (variegated cutworm)		
		<i>Striacosta albicosta</i> , Lepidoptera:Noctuidae (western bean cutworm)		
26.	European corn borer adult	<i>Ostrinia nubilalis</i> , Lepidoptera:Pyralidae	S	IS
27.	European corn borer larva	<i>Ostrinia nubilalis</i> , Lepidoptera:Pyralidae	C	FV

ID #	Common Name	Latin Names, Order: Family for Possible Specimens	Mouth parts	Economic Impact
28.	Field cricket	<i>Gryllus sp.</i> , Orthoptera:Gryllidae	C	F
29.	Flea beetle	<i>Chaetocnema pulicaria</i> , Coleoptera:Chrysomelidae (corn flea beetle)	C	V
		<i>Systema blanda</i> , Coleoptera:Chrysomelidae (palestriped flea beetle)		
		<i>Phyllotreta striolata</i> , Coleoptera:Chrysomelidae (striped flea beetle)		
30.	Grain weevil	<i>Sitophilus granarius</i> , Coleoptera:Curculionidae (granary weevil)	C	F
		<i>Sitophilus oryzae</i> , Coleoptera:Curculionidae (rice weevil)		
31.	Grasshopper	various species, Orthoptera:Acrididae	C	V
32.	Green lacewing	<i>Chrysopa sp.</i> , Neuroptera:Chrysopidae	C	B
33.	Honeybee	<i>Apis mellifera</i> , Hymenoptera:Apidae	CL	B
34.	Imported cabbageworm	<i>Pieris rapae</i> , Lepidoptera:Pieridae	C	FV
35.	Japanese beetle	<i>Popilla japonica</i> , Coleoptera:Scarabaeidae	C	FV
36.	Lady beetle adult or larva	various species, Coleoptera:Coccinellidae	C	B
37.	Leafhopper	<i>Empoasca fabae</i> , Homoptera:Cicadellidae (potato leafhopper)	PS	R
38.	Mexican bean beetle, adult or larva	<i>Epilachna varivestis</i> , Coleoptera:Coccinellidae	C	FV
39.	Saltmarsh caterpillar	<i>Estigmene acrea</i> , Lepidoptera:Arctiidae	C	V
40.	Spider mite	various species, Trombidiformes:Tetranychidae	RS	V
41.	Spittlebug	various species, Hemiptera:Cercopidae	PS	R
42.	Squash bug	<i>Anasa tristis</i> , Hemiptera:Coreidae	PS	R
43.	Stink bug	various species, Hemiptera:Pentatomidae	PS	R
44.	Striped cucumber beetle	<i>Acalymma vittatum</i> , Coleoptera:Chrysomelidae	C	FV
45.	Tarnished plant bug	<i>Lygus lineolaris</i> , Hemiptera:Miridae	PS	R
46.	Thrips	various species, Thysanoptera:Thripidae	RS	V
47.	Tomato or tobacco hornworm	<i>Manduca sp.</i> , Lepidoptera:Sphingidae	C	FV
48.	whitefly	various species, Homoptera:Aleryodidae	RS	V
49.	wireworm	various species, Coleoptera:Elateridae	C	V

**Mouth parts key:**

C (chewing)  
CL (chewing-lapping)  
PS (piercing sucking)  
RS (Rasping Sucking)  
S (siphoning)

**Economic impact key:**

*Must indicate all options in response*

B(Beneficial)  
F (fruit/flower destruction)  
V (vegetative part destruction)  
FV (Fruit/Flower AND Vegetative part destruction)  
IS (indicator species)  
R (removal of plant fluids)

# Agronomic Disorders Practicum Scorecard

Name		Member Number		
Chapter	State	Team Number		
	Member Answer	Possible Points	Member Score	Causal Category
1.	Casual Category:	3		Biological (B) Cultural (C) Environmental (E)  <b>Agents</b> Bacteria (B) Chemical (Ch) Compaction (Co) Drought (D) Frost damage (Fr) Fungus (Fn) Hail (Ha) Heat (Ht) Insect (I) Lightning (L) Mechanical (Me) Moisture (Mo) Nematodes (Ne) Nutritional (Nu) Pollution (P) Sun scald (S) Virus (V) Wind damage(W)  <b>Parts of Plant Damaged</b> Reproductive parts (R) Vegetative parts (Ve) Value Added Agricultural Commodity (Va) More than one (M)
	Agent:	4		
	Part of Plant Displayed:	3		
2.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
3.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
4.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
5.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
6.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
7.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
8.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
9.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
10.	Casual Category:	3		
	Agent:	4		
	Part of Plant Displayed:	3		
<b>TOTAL POINTS EARNED OUT OF 100 POSSIBLE</b>				

# Agronomic Disorders Definitions

## Answer Definitions – Causal Category

Causal Category	Definition	Examples
Biological	Caused by a living organism	Insects, fungus, virus, bacteria, animals, parasitic plants, etc.
Cultural	Caused by a change or shift in routine agricultural traditions, behaviors, or mannerisms	Crop rotation, equipment, farming practices, etc.
Environmental	Caused by a force of nature	Wind, water, temperature, atmospheric conditions, etc.

## Answer Definitions – Agents:

Agents	Definition – *seed, vegetative parts, reproductive parts, or end-product
Bacteria (B)	Caused by a bacterial agent. Bacteria are microscopic living organisms that have only one cell
Chemical (Ch)	Damage caused when a plant comes in contact with a natural or manufactured pesticide product
Compaction (Co)	Caused when soil is compacted by some means
Drought (D)	Caused when there is a lack of irrigation or rainfall
Frost damage (Fr)	Caused when temperatures rapidly drop or fall below freezing
Fungus (Fn)	Caused when a crop is affected by a member of any of a kingdom (Fungi) of saprophytic and parasitic spore-producing eukaryotic typically filamentous organisms formerly classified as plants that lack chlorophyll and include molds, rusts, mildews, smuts, mushrooms, and yeasts
Hail (Ha)	Caused by hail damage
Heat (Ht)	Caused by excessive heat
Insect (I)	Caused by damage from an insect. Insects injure plants by chewing leaves, stems, and roots, sucking juices, egg laying or transmitting diseases.
Lightning (L)	Caused by damage from lightning
Mechanical (Me)	Caused by mechanical damage. Mechanical damage occurs when plant parts are crushed, cut, punctured, rubbed, or struck, or otherwise damaged due to accidental or deliberate physical actions due to machine malfunction or improper machine operation
Moisture (Mo)	Caused by overwatering or flooded conditions
Nematodes (Ne)	When a plant is damaged by soil nematodes
Nutritional (Nu)	Symptoms caused by deficiency or toxicity of plant nutrient or the application of a natural or manufactured fertilizer or nutrient .
Pollution (P)	Caused by a form of pollution. Major forms of pollution include air pollution, light pollution, litter, noise pollution, plastic pollution, soil contamination, radioactive contamination, thermal pollution, visual pollution, and water pollution
Sun scald (S)	Damage to plant tissue, especially bark or fruit, caused by exposure to excessive sunlight



Virus (V)	Caused by a viral infection. Viruses multiply only in living cells. They are too small to be seen with a light microscope and are therefore considered to be submicroscopic. Viruses are composed of a nucleic acid (most plant viruses contain ribonucleic acid [RNA]) and are enclosed in a protein coat.
Wind damage(W)	Caused by damage from excessive wind

**Answer Definitions and Examples – Plant Part Damaged:**

Parts of Plants Displayed	Definition	Examples
Vegetative (Ve)	When the disease or disorder appears on the vegetative part of the plant. Parts of a plant which do not participate in sexual reproduction process are called vegetative parts.	Roots, stems, and leaves, tubers, slips, and bulbs used for planting,
Reproductive (R)	When the disease or disorder appears on the reproductive part of the plant. Parts of a plant which participate in the sexual reproduction process are called reproductive parts.	Flowers, fruits, and seeds and in the field
<sup>*Updated term*</sup> Value Added Agricultural Commodity (VA)	When the disease or disorder appears on the marketable part of a plant	What will be harvested or sold - Ear of corn, cotton lint, potato tuber, onion, tomato, peanut
More than One (M)	When the disease or disorder appears on more than one (1) part of a plant	Must display the disease or disorder on at least two (2) of the examples above

**Further Definitions –**

- Damage to the reproductive part of the plant can directly impact the market value of the final product thus leading to damage of the marketed Value Added Agricultural Commodity. If both the reproductive part of the plant and the post-harvest Value Added Agricultural Commodity are displayed as damaged, then the answer is “more than one”.
- If the damage is to the reproductive part of the plant, but the post-harvest end-product / ag commodity is not displayed or displayed as sound, the answer is “reproductive”.
- If only the post-harvest end-product / ag commodity is shown as damaged, the answer is “Value Added Agricultural Commodity”.
- A Value-Added Agricultural Commodity may be displayed separately from the plant in post-harvest form.
- If more than one picture or specimen is used to constitute a given sample. Answer disorder as a complete sample.

# Insect Identification Rubric

Name		Member Number		
Chapter		State		Team Number
		Member Answer	Possible Points	Member Score
1.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
2.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
3.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
4.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
5.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
6.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
7.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
8.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
9.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
10.	Identification:		4	
	Economic Impact:		3	
	Mouth Part:		3	
<b>TOTAL POINTS EARNED OUT OF 100 POSSIBLE</b>				

**Possible Answers Identification**

11. Alfalfa weevil, adult or larva
12. Aphid
13. Armyworm adult
14. Armyworm larva
15. Bean leaf beetle
16. Blister beetle
17. Boll weevil
18. Chinch bug
19. Colorado potato beetle, adult or larva
20. Corn Earworm adult
21. Corn Earworm larva
22. Corn rootworm adult
23. Corn rootworm larva
24. Cutworm adult
25. Cutworm larva
26. European corn borer adult
27. European corn borer larva
28. Field cricket
29. Flea beetle
30. Grain weevil
31. Grasshopper
32. Green lacewing
33. Honeybee
34. Imported cabbageworm
35. Japanese beetle
36. Lady beetle adult or larva
37. Leafhopper
38. Mexican bean beetle, adult or larva
39. Saltmarsh caterpillar
40. Spider mite
41. Spittlebug
42. Squash bug
43. Stink bug
44. Striped cucumber beetle
45. Tarnished plant bug
46. Thrips
47. Tomato or tobacco hornworm
48. Whitefly
49. Wireworm

**Economic Impact**  
*Must include all options in response*  
 B (Beneficial)  
 F (fruit/flower destruction)  
 IS (indicator species)  
 R (removal of plant fluids)  
 V (vegetative part destruction)

**Mouth parts**  
 C (chewing)  
 CL (chewing-lapping)  
 PS (piercing sucking)  
 RS (Rasping Sucking)  
 S (siphoning)

**Agronomy  
Form #708-5**

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 #	Last Name	First Name	General Knowledge Exam		
			1	21	41
			2	22	42
			3	23	43
			4	24	44
			5	25	45
			6	26	46
			7	27	47
			8	28	48
			9	29	49
			10	30	50
			11	31	51
			12	32	52
			13	33	53
			14	34	54
			15	35	55
			16	36	56
			17	37	57
			18	38	58
			19	39	59
			20	40	60

Code			
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
X			
Y			
Z			

Insect Identification							
System	Identification	Biological/Insect	Moist. Facts				
Example	<table border="1"> <tr> <th>Team/Dial</th> <th>Dial</th> </tr> <tr> <td>3</td> <td>7</td> </tr> </table>	Team/Dial	Dial	3	7	<ul style="list-style-type: none"> <li>Biological</li> <li>Plant/Insect interaction</li> <li>Negative just extractable</li> <li>Full/low A/D frequency</li> <li>Indicator species</li> <li>Indicator of plant health</li> </ul>	<ul style="list-style-type: none"> <li>Chewing</li> <li>Chewing-tapping</li> <li>Purring-sucking</li> <li>Beeping-sucking</li> <li>Exploiting</li> </ul>
Team/Dial	Dial						
3	7						
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Assessments	Judging Classes	
1	1	2
2	1234	
3	1243	
4	1324	
5	1342	
6	1423	
7	1432	
8	2134	
9	2143	
10	2314	
	2341	
	2413	
	2431	
	3124	
	3142	
	3214	
	3241	
	3412	
	3421	
	4123	
	4132	
	4213	
	4231	
	4312	
	4321	

Score 1	Score 2	Score 3	Score 4
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10

Agronomic Disorders			
System	Cause Category	Agents	Facts of Plant Disturbance
	Biological	Bacteria	Reproductive
	Cultural	Chemical	Vegetative
	Environmental	Compaction	Vascular Blockage
		Drought	More than one
		Frost damage	
		Fungus	
		Hail	
		Heat	
		Insect	
		Lignifying	
		Mechanical	
		Melting	
		Herbicides	
		Nutritional	
		Pollution	
		Sun scald	
		Wax	
		Wind damage	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Woods Crop - Plant and Seed Identification																									
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	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
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	
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	

Soils & Nutrient Management																										
1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
3	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
4	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
5	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
6	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
7	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
8	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
10	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
11	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
12	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
15	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
16	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
17	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
18	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
19	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
20	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
21	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
22	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
23	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
24	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
25	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
26	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
27	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
28	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
29	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
30	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
31	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
32	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
33	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
34	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
35	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
36	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
37	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
38	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
39	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
40	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
41	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
42	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
43	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
44	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
45	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
46	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
47	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
48	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
49	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
50	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Equipment/Machinery Identification																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	