

# Virginia FFA Guide



Virginia FFA does not discriminate against employees, students, or applicants on the basis of race, color, sex, sexual orientation, disability, age, veteran status, national origin, religion, or political affiliation.

## **Philosophy for Virginia FFA Career Development Events**

Students are important customers of agricultural education and the FFA who recognize quality and value in products and activities. When provided an opportunity to fashion their educational experiences, they generally make wise decisions based on needs, perceptions, image and the opinions of others influence students. They value change based on their perceived personal needs as well as the needs of others. They sometimes value change for the sake of variety. Adults are concerned about the experiences of students and want to help organize experiences that will meet the future needs of students while accomplishing the purposes of agricultural education and the FFA organization. The Virginia FFA Association should assume the leadership role in developing and continuously improving relevant FFA career development events and awards. Although the Virginia FFA Association should be aware of the needs of local chapters and should react to those needs, it should help initiate opportunities that reflect relevant and emerging technology.

Virginia FFA career development events and awards should be developed with significant input from FFA members, teachers, partners, respective industry sponsors, and others involved in agricultural education. Virginia career development events and awards should reflect instruction that currently takes place in the entire agricultural education program, including classroom instruction, laboratory instruction, individualized instruction, and/or supervised agricultural experience. However, it is appropriate for the state organization to develop career development events and awards that stimulate instruction in emerging areas that reflect both current and future community, national, and global work force needs. The authority for insuring the relevance of an FFA activity is ultimately vested in the Virginia FFA Advisory Council. The primary goal of career development events is to develop individual responsibilities, foster teamwork and promote communication and individual achievement.

The activities in each career development event:

- Include problem solving, critical thinking and teamwork skills, where appropriate.
- Encourage appreciation for diversity by reducing barriers to participation among members.
- Develop general leadership and recognize individual and team achievement.
- Promote concentrated focus on future needs of members and society.

The state association should promote individual, chapter, and team career development events and awards. Chapter and team career development events and awards should be based on cooperation and teamwork while recognizing the value of competition and individual achievement. The role of career development events and awards is to motivate students and encourage leadership, personal growth, citizenship, and career development.

Students should be recognized for achievement in career development events and awards. Quality standards should be used as a basis for achievement. The state association should ensure that the recognition is appropriate and meaningful. Recognition for achievement should be reflective of the total effort required by the chapter/team/individual and should take place at all levels of participation.

The Virginia FFA Association shall encourage accessibility and provide opportunities for achievement and recognition for students with diverse backgrounds. High expectations should be consistently communicated to those who are involved in career development events and awards.

## **Agriculture, Food and Natural Resources (AFNR) Career Cluster Content**

Agriculture is a highly technical and ever-changing industry upon which everyone is dependent. In order to maintain agriculture as the nation's number one industry, it is crucial to understand the importance of agrisciences, marketing strategies, safe food production and continuous research. Strong, relevant Agriscience programs are on way to maintain the nation's agricultural edge.

# General Rules and Official Policies

*Violations of any of the following rules may be grounds for the event superintendent to disqualify the participants.*

State FFA Staff and CDE Superintendents will use the published rules and procedures to organize and implement the State FFA Career Development Events. Event activities may not be conducted due to lack of necessary materials, expertise or extreme impact to event budgets.

## TEAM ACTIVITIES

The primary goal of team career development events and awards is to develop individual responsibilities, foster teamwork, and promote communications while recognizing the value of ethical competition and the value of individual achievement. A team career development event/award requires two or more members from one chapter working cooperatively. Team career development events and awards are intended to be an outgrowth of instruction.

Team career development events and awards should:

- include problem solving and critical thinking.
- promote an appreciation for diversity by reducing barriers to participation.
- promote new directions and focus on future needs of members and society.
- include cooperative activities.
- encourage broad participation among members and recognize excellence within levels of experience.
- recognize individual and team achievement, develop general leadership, and recognize levels of ability.
- provide local recognition for superior performance at the state and national level.

## ELIGIBILITY OF PARTICIPANTS

- 1) Each participant must be a current bona fide dues paying FFA member in good standing with the local chapter, state FFA association, and the National FFA Organization at the time of the career development event (or by May 1 for the Virginia FFA, whichever date comes first.) In the event a participant's name is not on the chapter's official roster for the years in which the dues were payable to the National FFA Organization, a past due membership processing fee of \$35, in addition to the dues must be paid.
- 2) The participant, in a State Senior Career Development Event, must be:
  - a. A high school FFA member, (a graduating senior is considered eligible to compete in state career development events the convention directly after graduation.)  
(High school refers to grades 9-12.)
  - b. A middle school team consisting of all 8<sup>th</sup> grade FFA members.
  - c. While in school, be enrolled in at least one agricultural education course during the school year and/or follow a planned course of study; either course must include a supervised agricultural experience program, the objective of which is preparation for an agricultural career. For this purpose a student needs to be enrolled in at least one agricultural education course during the year they qualified for the event. If the student was previously enrolled in an agriculture class and was an FFA member, they may compete in a contest if they have scheduling issues (ex. Advanced Placement classes) that do not allow them be enrolled in an agriculture class but they must still have an SAE.
- 3) The participant in a State Junior Career Development Event must be:
  - a. at the time of the event must be a 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup> or 9<sup>th</sup> grade full dues paying member.
  - b. While in school, be enrolled in at least one agricultural education course during the school year and/or follow a planned course of study; either course must include a supervised agricultural experience program, the objective of which is preparation for an agricultural career. For this purpose a student needs to be enrolled in at least one agricultural education course during the year they qualified for the event.
- 4) The participant in a State Middle School Career Development Event must be:
  - a. At the time of the state competition has qualified as either a 6<sup>th</sup>, 7<sup>th</sup> or 8<sup>th</sup> grade middle school member.
  - b. While in school, be enrolled in at least one agricultural education course during the school year and/or follow a planned course of study; either course must include a supervised agricultural experience program, the objective of which is preparation for an agricultural career. For this purpose a student needs to be enrolled in at least one agricultural education course during the year they qualified for the event.

- 5) To compete in the creed speaking event, the member has qualified as either a 7<sup>th</sup>, 8<sup>th</sup> or 9<sup>th</sup> grader by state convention.
- 6) CDE participants who start an event and do not complete the event without notifying event officials at the time of departure will be disqualified. This can affect the overall team rank and position. In some events this will also disqualify the entire team
- 7) The state supervisor/executive secretary of agricultural education must certify that participants are eligible. If an ineligible student is entered in any career development event, the entire team of which that student is a member may be declared ineligible.
- 8) The first contest that a school wins in the current year will be the contest that the individuals on that team will represent Virginia at the National FFA Convention. To explain, if an FFA chapter puts more than one current winner of an FFA contest on an additional team, then the second place team will be declared the State Winner and will compete at the National FFA Convention. If one person is a duplicate and the National rules allow for a three-person team, then the first place team will represent Virginia. If a student that wins a contest is declared ineligible, or cannot attend the Convention, then the other members of the team will be allowed to compete for individual awards only. (A medical waiver may be granted if a member of a winning team is unable to attend due to a medical condition.)
- 9) Individuals who have been state winners or have represented the state in any official national FFA career development event are not eligible to enter the same FFA event again. However, FFA junior division state winners are eligible for state senior division. Individuals on a state winning team cannot compete in that division again.
- 10) A chapter may enter any number of career development events; however, a chapter may have no more than one team in each division in each event. **If the contest allows a Junior and Senior Team then only the Senior Team is eligible to advance to the National Level. If the event is a joint FFA & 4-H contest, then a school must declare an official team but will be allowed to enter the number of teams permitted by 4-H.**

#### **CHECK-IN**

Participants will check-in at the state FFA convention as indicated in the annual State Guidelines. Dates, hours and place of check-in will be sent annually to the agricultural education teacher. All participants will be given an identification number by which they will be designated throughout the event.

#### **ADDITIONAL OPERATIONAL PROCEDURES AND POLICIES**

- 1) Emergency Conditions: Under emergency conditions, a state team participating in a Virginia FFA Career Development Event may be made up of less than the required members. Fewer than the required number could compete if an emergency condition such as illness, death in the family or an act of God would occur. Those individuals competing would still be eligible to qualify for individual awards.
- 2) Event committees will strive to divide teams into groups so that no two participants from a team will be in the same group. In any case, no two members will be placed side-by-side.
- 3) **Disqualification:**
  - a. Any communication, verbal or non-verbal between participants during a career development event will be sufficient cause to eliminate the team member involved from the career development event. The only exception to this would be communication between team members during the team activity portion of a given career development event.
  - b. Teams arriving after the career development event has begun may be disqualified or penalized. No member substitutions may be made after the career development event begins.
  - c. Any assistance given to a team member from any source other than the career development event officials or assistants will be sufficient cause to eliminate the team from the career development event.
  - d. Event superintendents may stop any participant if they deem their manner to be hazardous either to themselves or others. Such stoppage shall deem the individuals disqualified for that section of the career development event.
  - e. CDE participants who start an event and do not complete the event without notifying event officials at the time of departure will be disqualified. This can affect the overall team rank and position. In some events this will also disqualify the entire team.

- f. Participants will not be allowed to utilize personal electronic communication devices, other than those approved by the event officials, during the entire course of the event. Participants who access personal electronic communication devices without prior approval of the event officials will be disqualified.
  - g. No participant shall gain access to real materials that will be utilized by the event committee during the competition. Any team, participant, advisor or coach reported and proven to do so will be disqualified from the national event.
- 4) Advisors
    - a. Advisors are not allowed to be in contact with their students at any point or time during the competition.
    - b. Advisors may only be allowed at the contest site if they are assigned to a supervise a group or part of the contest
  - 5) Participants are expected to observe the National FFA Code of Ethics and the Proper Use of the FFA Jacket during the career development events. (Please see the latest edition of the Official FFA Manual.)
  - 6) Official FFA dress is highly recommended for all participants where appropriate and is required for the awards presentation and recognition.
  - 7) Participants or advisors will not be allowed in the career development event area as designated in the specific career development event rules. Infractions of this statement may result in team disqualification.
  - 8) Accessibility for all students—all special needs requests should be submitted two weeks prior to the event for scheduling of assistance during event.
  - 9) Written Document Penalties- a penalty of 10% of the total points allotted will be assessed for the written documents received after the postmarked deadline. If the document is still not received seven days after the postmark deadline, the team/individual may be subject to disqualification.
    - 1. National staff will mark late entries as such.
    - 2. Event officials will be notified of late entries at the time written documents are provided for judging.
    - 3. Event superintendent will ensure that penalty is applied.
  - 10) Results of all Virginia State FFA Career Development Events will be announced during sessions at State Convention.

### **TEAM AND INDIVIDUAL AWARDS**

The ranking of teams and individuals in each of the career development events will be on the basis of logical groups within the total range of scores. Awards will be distributed to the winning teams and individuals at award programs following the completion of the career development events.

### **VIRGINIA FFA ADVISORY COUNCIL**

Purpose: To advise the State Staff on issues impacting both FFA Career Development Events and Awards to ensure:

- 1) All activities are consistent with industry needs.
- 2) All activities are available to all members.
- 3) All activities are conducted openly, fairly and in a quality manner.
- 4) Cooperation among various activities occurs, to the degree possible, to promote the interconnectedness of agriculture (i.e. forestry and agricultural mechanics or farm business management and dairy or livestock) and agricultural education (classroom, SAE, FFA).
- 5) New and innovative activities are being put forward for consideration.
- 6) As many students as possible have the opportunity to participate.
- 7) A constant process of local advisor in-service on proper use of these activities as tools for learning is being championed.
- 8) All activities are operated consistently with Advisory Council policy.

- 9) Activities are conducted within available budgets approved by the FFA Advisory Council and, if appropriate, Virginia FFA Foundation Board.

The State FFA Advisory Council shall consist of two instructors of agricultural education from each FFA area in the state, two at-large agricultural education members, past State FFA President, and current President of the Virginia Association of Agricultural Educators; appointed annually by the state advisor. The duties of this council shall be to represent the FFA chapters and advisors in the areas on matters pertaining to the conduct of the entire program; to arbitrate conflicts at the area, federation and chapter level; to review State FFA Degree applications, Star FFA Degree Applications, Proficiency Award Applications, and National Chapter Award applications and make recommendations to the state advisor; to recommend changes, revisions and/or new rules and regulations to the State FFA Board of Directors and the state advisor; and to serve in any capacity in which it may be called upon by the state advisor.

The chair of the advisory committee on awards and career development events will be elected each year.

## **State Board of Directors**

### **Section A.**

#### Governing Body

1. The governing body of the organization shall be the State Board of Directors, which shall consist of: the state FFA advisor, who shall serve as chairperson; one agricultural education instructor from each of the state FFA areas; one representative from the State FFA Advisory Council, one representative of the State FFA Foundation; and one representative of the State FFA Alumni Association. The state FFA executive secretary shall serve as ex-officio member of the State FFA Board of Directors.
2. The terms of office of members, other than the ex-officio member, shall be prescribed in the bylaws.
3. The State FFA Board of Directors shall meet at least once each year at such time and place as may be prescribed by the board and shall present an annual report.
4. The duties of the State FFA Board of Directors shall include: interpret rules governing the activities of the state association, including the State FFA Convention; to have full power to prescribe new regulations that the board finds necessary in connection with the operation of the organization, including the State Convention; to interpret rules and regulations applicable to the convention; and to review recommendations from the State FFA Advisory Council and State FFA Executive Committee and take any action deemed appropriate.

### **Section B.**

#### Governing Committee

The chairperson and two members of the State FFA Board of Directors shall be designated by the board to serve as the Governing Committee and shall have the power to deal with items of business of the state organization. All official actions of the Governing Committee shall be reported to the State FFA Board of Directors.

## **Meeting Schedule**

- 1) Annual fall meeting to report on the completion of activities at convention and provide input into the winter meeting agenda.
- 2) The annual spring meeting will allow for most of the committee's work to be conducted as a whole group and in sub-groups focused on specific issues or specific types of activities (e.g. team career development events, individual awards, chapter awards).

Local advisors should submit concerns suggestions to the state FFA Specialist/chair of the advisory board and their area representative at least two weeks in advance of the meeting.

## **Rules Committee on State Career Development Events**

The advisory committee will meet only when needed and will make all final decisions on interpretation of the rules and regulations of the State FFA Career Development Events or awards programs.

Official judges' decisions are final. The announced results are the official results.

**Conflict of Interest**

If there is a violation of a student whose advisor is a member of the advisory board, the advisor may not vote on the violation. A teacher from that area maybe used to fill in for the advisor whose student has possible committed the violation.

## Official Dress Recommendations, Number of Participants, and Number of Scores

Event	Official Dress Appropriate	Number of Participants	Number of Scores Allowed (per team) for Team Total
Agricultural Communications	Yes	3	3
Agriscience Demonstration	Yes	1-2	Team Total
Agricultural Issues Forum	Yes	3-7	Team Score Event
Agricultural Mechanics Sr.	FFA Shirt	4	Top 3 Scores
Agricultural Mechanics Jr.	FFA Shirt	4	4
Agricultural Sales	Yes	4	4
Avian Bowl	YES	4	Team Event
Crops Judging	*Yes/FFA Shirt	4	3
Computer Applications	Yes	1	1
Creed Speaking	Yes	1	Individual Event
Dairy Cattle Evaluation	*Yes	4	4
Dairy Cattle Handlers' Activity	White/Jacket	1	Individual Event
Environmental and Natural Resources	Yes	4	4
Extemporaneous Public Speaking	Yes	1	Individual Event
Farm Business Management	Yes	4	Top 3 Scores
Floriculture	*Yes/FFA Shirt	4	4
Food Science and Technology	Yes	4	4
Forestry Field Day	FFA Shirt	7	7
Forestry Senior	FFA Shirt	4	4
Forestry Junior	FFA Shirt	4	4
Horse Evaluation	*Yes	4	Top 3 Scores
Horse Hippology	*Yes	4	Top 3 Scores
Horticulture Demonstration	FFA Shirt	1-2	1-2
Job Interview	Yes	1	Individual Event
Jr. Dairyman's	FFA Shirt	4	Top 3 Scores
Jr. Forester's	FFA Shirt	4	Top 3 Scores
Jr. Stockman's	FFA Shirt	4	Top 3 Scores
Livestock Evaluation	*Yes	4	4
Marketing Plan	Yes	3	Team Score Event
Meats Evaluation & Technology	FFA Shirt	4	Top 3 Scores
Middle School Agriscience Technology	FFA Shirt	4	3
Middle School FFA Quiz Bowl	Yes	4	4
Middle School Food & Fiber	FFA Shirt	4	3
Middle School Plant Science	FFA Shirt	4	3
Middle School Small Animal Care	FFA Shirt	4	3
Milk Quality and Products	FFA Shirt	4	4
Nursery/Landscape	FFA Shirt	4	Top 3 Scores
Parliamentary Procedure Senior	Yes	6	Team Score Event
Parliamentary Procedure Junior	Yes	6	Team Score Event
Poultry Evaluation	FFA Shirt	4	Top 3 Scores
Prepared Public Speaking Senior	Yes	1	Individual Event
Prepared Public Speaking Junior	Yes	1	1
Small Engines	FFA Shirt	1	1
Soils Judging	FFA Shirt	4	Top 3 Scores
Tractor Operator's	FFA Shirt	1	1
Tractor Troubleshooting	FFA Shirt	2	2
Veterinary Science	FFA Shirt	4	4

Please remember that all participants are required to wear complete official dress, as outlined in the National FFA Official Manual, to all award functions.

**\*Official Dress is required for the reasons part of this CDE**

**-An FFA Shirt is any shirt purchased from the National, State or Local FFA or any plain shirt that has an FFA emblem or FFA sticker on it. A high school or middle school t-shirt is also acceptable.**



# **Turf Management Career Development Event**

## **Purpose of Event**

The Turf Management Career Development Event provides competition that fosters on-the-spot thinking, working as a team to accomplish one goal, and problem-solving skills necessary for turf grass managers. The skills learned in this event can be used to be successful as a Golf Course Superintendent, Sports Turf Manager, Lawn Care Provider, and much more.

## **Objectives**

- To demonstrate the ability to identify turf grasses, weeds and diseases common in Virginia.
- To demonstrate knowledge of the principles and skills involved in propagation, growth requirements, growing techniques, marketing and maintenance of turf.
- To demonstrate the ability to identify, select, use, and maintain appropriate supplies and equipment for turf management.
- To demonstrate skills in oral and written business communications.
- To understand marketing principles and demonstrate proper sales and service skills.
- To demonstrate the ability to prepare accurate and legible records and reports, and to interpret business documents.

## **Event Rules**

- A team will consist of four (4) team members with only the three highest individual score being totaled for the team score. Teams with fewer than three members are not eligible for team awards, but students may receive individual awards.
- Participants are NOT allowed to use (or have visible) electronic devices during the event, unless for medical reasons. This includes cell phones, iPods, iPads, mp3 players, smart watches, etc. Participants will be allowed to use calculators, if specified; however, cell phone calculators and graphing calculators are not permitted.
- This event will be scored using an answer sheet, and test booklet as needed. It is important that students follow instructions and fill out the sheets correctly in order to receive credit.
- This event will be held rain or shine.

## Event Format

### Equipment

Materials provided by students: Two pencils or pens, clipboard, and calculator

### Flow of Event

- General Knowledge Examination—30 minutes
- Identification of turf diseases, pests, equipment, and disorders—25 minutes
- Equipment preparation, maintenance, problem-solving, and safety—25 minutes
- Customer Relations, Problem Solving, Job Estimating
  - Site Evaluation—20 minutes
  - Problem Solving—20 minutes

### Individual Activities

Phase I - General Knowledge Examination—100 points Twenty-five (25) question exam (questions worth various points and will be clearly designated) to evaluate the participant's knowledge of, but not limited to, basic turf grass management principles, irrigation, soil types, fertilizers, cultural practices, and pesticides. This phase of the event will be worth 100 points. Time of this phase will be 30 minutes.

Phase II - Identification of turf species, pests, equipment, and disorders—100 points Twenty-five (25) specimens (4 points each) to be presented as an intact live specimen, photograph, or preserved specimen. Each specimen will be designated by a station number. When the participant identifies the item, its number is recorded on the answer sheet. When a problem must be presented with an infected plant, a "disorder" label will be with the item to designate identification of the problem rather than the plant name. This phase will be worth 100 points. Time of this phase will be 1 minute/specimen for a total of 25 minutes.

Phase III - Equipment preparation, maintenance, and problem solving—100 points Participants will solve five (5) problems (10 points each) dealing with equipment calibration, equipment check for faulty parts, selection of proper equipment for a specific job, identification of a turf problem caused by equipment or operator malfunction, selection of proper management practices to withstand stress conditions, and proper pesticide label evaluation. A problem situation will be presented with answer choices of possible maintenance needs, corrective actions and/or operating specifications. This phase of the event will be worth 50 points. Time of this phase will be five minutes/problem for a total of 25 minutes.

#### Phase IV - Customer Relations, Problem Solving, and Job Estimating—100 points

This phase will be composed of two parts:

Part One - Site Evaluation: Participants will be required to measure and evaluate a turf area for a specific property (worth 50 points). Site-specific information will be provided on the day of the event. There will be twenty-five (25) questions (2 points each) about the site. Time of this phase will be 20 minutes.

Part Two - Problem Solving: (worth 50 points) Time for part two will be 20 minutes.

Tiebreakers - If ties occur, the following sections will determine award recipients:

Team and Individual

1. Written Exam
2. Identification

Event Snapshot - Below is a brief overview of the Turf Management CDE

- This event will have four (4) phases: a.
  - Phase I - General Knowledge Exam- 100 points (30 minutes) b.
  - Phase II - Identification of turf species, pests, equipment, and disorders—100 points (25 minutes) c.
  - Phase III - Equipment preparation, maintenance, and problem solving—100 points (25 minutes)
  - Phase IV - Customer Relations, Problem Solving, and Job Estimating—100 points (40 minutes)

Scoring:

- Total Possible Individual Points - 400 points
- Total Team Score- 1200

#### VIII. References

- Doak, Ervin, and Goatley. Virginia Turfgrass Certification Manual (latest edition).
- Goatley, Askew, Ervin, McCall, Studholme, Schultz, and Horvath (2008). Sports Turf Management in the Transition Zone.
- Christians and Agnew (2008). The Mathematics of Turfgrass Maintenance (Fourth Edition).
- Emmons and Rossi (2015). Turfgrass Science and Management (Fifth Edition).
- Puhalla, Krans, and Goatley (2010). Sports Fields: Design, Construction, and Maintenance.
- Walker (2009). The Field Guide: The Layout and Dimensions of Sports Fields.
- Smiley, Dernoeden, and Clarke (2005) Compendium of Turfgrass Diseases (Third Edition)

## Identification (100 points) Insects, Diseases, Turf Species, Physical Disorders, Weeds, and Equipment List

### Physical Disorders

101. Chemical Burn
102. Drought Stress
103. Mower Scalping

### Insects

104. Billbug (*Sphenophorus parvulus*)
105. Chinch Bug (*Blissus leucopterus*)
106. Cutworm (*Agrotis ipsilon*)
107. Grubs (*Popillia japonica*)
108. Sod Webworm (*Toumeyella liriiodendra*)      Weeds
109. Annual Bluegrass (*Poa Annua*)
110. Black Medic (*Medicago lupulina*)
111. Broadleaf plantain (*Plantago major*)
112. Buckhorn plantain (*Plantago lanceolate*)
113. Canada thistle (*Cirsium arvense*)
114. Carpetweed (*Mollugo verticillate*)
115. Cinquefoil (*Potentilla simplex*)
116. Common chickweed (*Stellaria media*)
117. Common groundsel (*Oxalis montana*)
118. Crabgrass (*Digitaria sanguinalis*)
119. Dandelion (*Taraxacum officinale*)
120. Foxtail (*Setaria viridis*)
121. Goosegrass (*Eleusine indica*)
122. Ground Ivy (*Glechoma hederacea*)
123. Henbit (*Lamium amplexicaule*)
124. Knotweed (*Polygonum aviculare*)
125. Mouse Ear Chickweed (*Cerastium vulgatum*)
126. Nimblewill (*Muhlenbergia schreberi*)
127. Pennsylvania smartweed (*Polygonum pensylvanicum*)
128. Rough Bluegrass (*Poa trivialis*)
129. Purslane (*Portulaca oleracea*)
130. Quackgrass (*Elymus repens*)
131. Red sorrel (*Rumex acetosella*)
132. Spurge (*Euphorbia maculata*)
133. Velvetgrass (*Holcus lanatus*)
134. White Clover (*Trifolium repens*)
135. Wild Garlic (*Allium ursinum*)
136. Yellow Nutsedge (*Cyperus esculentus*)
137. Yellow Woodsorrel (*Oxalis stricta*)

Turf Species:

138. Creeping Bentgrass (*Agrostis stolonifera*)
139. Bermuda grass (*Cynodon dactylon*)
140. Annual Ryegrass (*Lolium multiflorum*)
141. Buffalo grass (*Bouteloua dactyloides*)
142. Fine Fescue (*Festuca rubra*)
143. Kentucky Bluegrass (*Poa pratensis*)
144. Perennial Ryegrass (*Lolium perenne*)
145. Tall Fescue (*Festuca arundinacea*)
146. Zoysiagrass (*Zoysia japonica*)

Diseases:

147. Brown Patch (*Rhizoctonia solani*)
148. Dollar Spot (*Sclerotinia homoeocarpa*)
149. Fairy Ring (*Basidiomycetes*)
150. Leaf Spot (*Magnaporthe oryzae*)
151. Powdery Mildew (*Erysiphe graminis*)
152. Pythium Blight (*Pythium aphanidermatum*)
153. Red Thread (*Laetisaria fuciformis*)
154. Rust (*Puccinia graminis*)
155. Stripe Smut (*Ustilago striformis*)

Equipment:

156. Aerator
157. Cup Cutter
158. Broadcast Spreader
159. Drop Spreader
160. Over-seeder
161. Reel Mower
162. Respirator
163. Rotary Mower
164. Rototiller
165. Sod Cutter
166. Spray Nozzle
167. Sprayer
168. String Trimmer
169. Thatcher
170. Fungicide
171. Herbicide
172. Fertilizer