

Pennsylvania FFA Turfgrass Management Career Development Event

I. Purpose of Event

The Pennsylvania FFA Turfgrass Management Career Development Event includes all aspects of the industry in producing, marketing, utilizing, and maintaining turfgrass as well as related products, equipment and services. This event will stimulate a career interest, encourage proficiency development, and recognize excellence in students of turfgrass management through the agricultural education curriculum. FFA activities are an integral part of the instructional program in Agriculture, Food, and Natural Resources Education.

II. Objectives

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

III. Event Rules

- A. A team will consist of four (4) team members with only the three highest individual scores being totaled for the team score. Teams with fewer than three members are not eligible for team awards, but students may receive individual awards.
- B. 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.
- C. 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.
- D. Materials to be provided by students: Two pencils or pens, clipboard, and calculator
- E. This event will be held rain or shine.

IV. Event Format

The contest has 4 phases, totaling 400 points individually and 1700 points as a team.

Tuesday

Takes place at Valentine Turfgrass Research Center or a PSU classroom

Phase 1: General Knowledge Examination—60 minutes

100 points individually, 400 team points

All team members complete individually

Fifty (50) question exam (questions worth various points and will be clearly designated) to evaluate the participant's knowledge. The exam will test the student's knowledge in the following areas:

- Turfgrass Identification, Selection, and Morphology
- Cultural practices including mowing, fertility, irrigation, aeration, topdressing, etc.
- Soils
- Drainage
- Turfgrass Mathematics
- Pest Management
- Golf course management
- Sports field management for turf and non-turf areas
- Equipment operation

If there is time on Tuesday, students could be exposed to guest speakers involved in the turfgrass industry (sports field manager, golf course superintendent) or tour Penn State facilities such as Valentine Turfgrass Research Center or the Penn State Golf Course.

C. Wednesday

Takes place at Medlar Field at Lubrano Park and/or Valentine Turfgrass Research Center

Phase 2: Identification—55 minutes (1 minute/specimen)

200 points individually, 800 team points

All team members compete individually

Phase 2A: Turfgrass Species and Seed – 10 specimens at 5 points each (50 points total)

Phase 2B: Broadleaf and Grassy Weeds – 25 specimens at 2 points each (50 points total)

Phase 2C: Diseases – 10 specimens at 5 points each (50 points total)

Phase 2D: Insects – 10 specimens at 5 points each (50 points total)

Samples will 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.

Phase 2A – Turfgrass Species and Seed – 50 points (10 specimens at 5 points each)

Contestants must identify ten of the following turfgrass species by Common Name and Botanical Name.

A list with corresponding number will be provided to contestants. They may be pictures or the actual plant (live or preserved) or seed sample in the contest. Note: Some may be repeated under grassy weeds.

- Creeping Bentgrass (*Argrostis palustris*)
- Velvet Bentgrass (*Agrostis canina*)
- Kentucky Bluegrass (*Poa pratensis*)
- Rough Bluegrass (*Poa trivialis*)
- Annual Bluegrass (*Poa annua*)
- Perennial Ryegrass (*Lolium perenne*)
- Annual Ryegrass aka. Italian Ryegrass (*Lolium multiflorum*)
- Tall Fescue (*Festuca arundinacea*)
- Fine Fescue (includes: *Festuca rubra ssp. rubra*, *Festuca rubra ssp. Cumnutata*)
- Bermudagrass (*Cynodon dactylon*)
- Buffalograss (*Bouteloua dactyloides*)
- Centipedegrass (*Eremochloa ophiuroides*)
- St. Augustinegrass (*Stenotaphrum secundatum*)

- Seashore Paspalum (*Paspalum vaginatum*)
- Zoysiagrass (*Zoysia japonica*)

Phase 2B – Broadleaf and Grassy Weeds– 50 points (25 specimens at 2 points each)

Contestants must identify 25 of the following weeds by both Botanical and Common Name. A list will be given with a corresponding number. They may be pictures or the actual weed sample in the contest.

- *Poa annua* Annual Bluegrass
- *Echinochloa crusgalli* Barnyardgrass
- *Agrostis* sp. Bentgrass
- *Cynodon dactylon* Bermudagrass
- *Digitaria* Sp. Crabgrass
- *Setaria* sp. Foxtail
- *Eleusine indica* Goosegrass
- *Muhlenbergia scherberi* Nimblewill
- *Dactylis glomerata* Orchardgrass
- *Agropyron repens* Quackgrass
- *Festuca arundinacea* Tall Fescue
- *Cyperus esculentus* (yellow) Nutsedge
- *Cyperus rotundus* (purple) Nutsedge
- *Allium vineale* Wild Garlic/Onion
- *Medicago lupulina* Black Medic
- *Plantago rugelii* and *P. major* Broadleaf Plantain
- *Plantago lanceolata* Buckhorn Plantain
- *Cirsium vulgare* Bull Thistle
- *Cirsium arvense* Canada Thistle
- *Mollugo verticillata* Carpetweed
- *Stellaria media* Common Chickweed
- *Cerastium vulgatum* Mouseear Chickweed
- *Taraxacum officinale* Dandelion
- *Kyllinga brevifolia* Green kyllinga
- *Glechoma hederacea* Ground Ivy
- *Oxalis montana* Common groundsel
- *Hieracium pratense* *H. aurantiacum* Yellow/Orange Hawkweed
- *Prunella vulgaris* Healall
- *Lamium amplexicaule* Henbit
- *Microstegium vimineum* Japanese stiltgrass
- *Polygonum aviculare* Knotweed
- *Malva neglecta* Mallow
- *Polygonum pensylvanicum* Pennsylvania smartweed
- *Hydrocotyle* sp. Pennywort (Dollarweed)
- *Portulaca oleracea* Purslane
- *Poa trivialis* Rough Bluegrass
- *Rumex acetosella* Sheep Sorrel
- *Capsella bursa-pastoris* Shepherds purse
- *Veronica filiformis*, *V. officinalis*, *V. serpyllifolia* Creeping Speedwell

- *Veronica arvensis* Corn Speedwell
- *Euphorbia maculata* & *E. supina* Spurge
- *Holcus lanatus* Velvetgrass
- *Trifolium repens* White Clover
- *Oxalis stricta* Yellow Woodsorrel
- *Barbarea vulgaris* Yellow Rocket

Phase 2C – Turfgrass Diseases – 50 points (10 specimens at 5 points each)

Turfgrasses are susceptible to more than 70 diseases that develop from an interaction between a susceptible plant (host), a disease-causing organism (pathogen), and an environment that favors the pathogen to infect and incite disease in the host. Students should be able to identify 10 of the most common eighteen diseases in the following list: They may be pictures or the actual disease sample in the contest.

- Anthracnose
- Brown Patch
- Dollar Spot
- Fairy Ring
- Gray Leaf Spot
- Gray Snow Mold
- Helminthosporium Leaf Spot
- Necrotic Ring Spot
- Nematodes
- Pink Snow Mold
- Powdery Mildew
- Pythium Blight
- Red Thread
- Rust
- Spring Dead Spot
- Summer Patch
- Take-all Patch

Phase 2D – Turfgrass insects – 50 points (10 specimens at 5 points each)

Contestants must identify ten of the following insects. They may be pictures or the actual insect sample in the contest.

- Annual Bluegrass Weevil
- Armyworms
- Asiatic Garden Beetle
- Black Turfgrass Ataenius Beetle
- Bluegrass Billbugs
- Chinchbugs
- Cutworms
- Fall Armyworm
- Fire Ants
- Green June Beetle
- Japanese Beetle
- May and June Beetles

- Masked Chafer
- Mites
- Mole Crickets
- Oriental Beetle
- Sod Webworms
- White Grubs

Phase 3: Practicum – 20 minutes

100 points individually, 400 team points

Team splits up and each team member completes the practicum assigned. All team members must be prepared to do all – one will be assigned at random by contest chairperson to each contestant. Team members cannot switch from practicum assigned. Doing so will result in team disqualification.

a. 100 Points: 3A – Irrigation System Repair & Construction – Participants will be given pipe, fittings, and a plan to construct a small closed irrigation system. They will be evaluated on measuring, cutting, and solvent welding to plan specifications. The creation will also be pressure and leak tested.

b. 100 Points: 3B – Trimmer/Edger Field Troubleshooting Repair – Participants will be given a commercial string trimmer with a bump head feeder that is not feeding line correctly, screwdriver, cutters, and a supply of line. They will be evaluated on if they solved the line feeding problem, if the trimmer head is assembled correctly, and if they follow the correct procedure to start and operate the equipment.

c. 100 Points: 3C – Calculating Slope using a Transit – Participants will be given a transit level and calibrated rods. They will be evaluated on setting up the transit, changing elevation, and calculating percent slope.

d. 100 Points: 3D – Setting Reel Mower Height – Participants will be given a reel mower and an accu-gage. They will be evaluated on their ability to measure and adjust cutting height and reel to bedknife clearance.

Phase 4: Team Event – 60 minutes

100 team points

Students compete as a team to calibrate a rotary spreader or boom sprayer.

Rotary Spreader Calibration

Materials: product for application, rotary spreader, tarp or calibration pan, collection pans, tape measure, scale, bucket, flags, calculator

Participants will be evaluated on the following:

- Calculating the area to which the product is being applied.
- Measuring the spreader's effective swath.
- Measuring the calibration run length.
- Determining the amount of product needed to deliver the desired amount of nutrient.
- Determining the appropriate spreader setting to deliver the desired amount of material.

Event Wrap-Up

Wednesday will conclude with tours and/or guest speakers that will further expose them to professions in turfgrass science. We are planning for a tour of Beaver Stadium and PSU Athletic Facilities which will include a logo painting demonstration.

V. Tiebreakers

If ties occur, the following sections will be used in order to determine award recipients:

Team and Individual

1. Written Exam
2. Identification

VI. Event Snapshot

Below is a brief overview of the Turfgrass Management CDE

A. This event will have four (4) phases. Phase 1 will occur on Tuesday. Phases 2-4 and the Event Wrap-up will occur on Wednesday:

- a. Phase I- General Knowledge Exam- 100 points (60 minutes)
- b. Phase II- Identification of turfgrass species and seed, broadleaf and grass weeds, diseases and insects—200 points (55 minutes)
- c. Phase III- Practicum—100 points (20 minutes)
- d. Phase IV- Team Event - 100 points (60 minutes)

Scoring:

Total Possible Individual Points- 400 points

Total Team Score- 1700 points

VII. References

- Turgeon (2011). Turfgrass Management (Ninth Edition)
- 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)
- Uva, Neal, and DiTomaso (1997). Weeds of the Northeast.
- Brandenburg and Villani (1995). Handbook of Turfgrass Insect Pests.