

2027 – 2028 Ag Mechanics CDE – Description Sheet

Revised 9/18/2026

Team Activity: (Structures - Woodworking)

Area Information - Students will need to be familiar with reading and interpreting a working architectural or construction drawing, measuring, calculating bills of materials, and planning construction of a wood fabrication project.

State Information – Wood Fabrication: Students will work as a team to construct a wood project. Students will draw a template using the provided drawing tools and construct a project using the provided plans. Students will need to calculate a purchasing bill of materials and a cutting list of materials needed to fabricate the project.

Team Activity Tools Required

Teams advancing to the State CDE will need to bring:

- Measuring Tapes
- Square – (Framing Square, Speed Square, Combination Square etc.)
- Minimum 18” clamp (bar, pipe, quick grip, etc.)
- Pencil
- Calculator
- Cordless Drill
- Drill Bits (wood) – 1/8” twist drill bit
- T-25 Torx bit (star drive) for cordless drill or Torx driver
- Hammer
- Safety Glasses for each team member
- Hearing protection for each team member
- Miter saw

References:

Agricultural Technical Systems and Mechanics, Koel, L. et al, 2019, American Technical Publishers, ISBN 978-0-8269-3680-6

Skill Activities:

A. Electrical Systems

Necessary tools will be provided. You may bring colored pencils/pens to draw diagrams.

Area and State Information – 2, 3, or 4 boxes will be mounted to 2” x 4” boards. The contestant will make hooks and secure the wires to the correct locations,

but will not cut the wire. Connections to boxes and connections of devices inside the box must follow NEC recommendations and accepted wiring practices (AAVIM).

B. Compact Equipment

Briggs and Stratton Single Cylinder OHV Air-Cooled Engine Model - 150000 series engine
Necessary tools will be provided. Students will be required to

- Measure selected parts using dial calipers, micrometers, telescoping gauges, spark-plug tester, feeler gauges, and/or other small engine measurement tools.
- Answer related problem-solving questions.
- Assemble, install, and/or adjust specific engine components/parts using an inch-pound or foot-pounds torque wrench.

Area and State Information

Briggs and Stratton Single Cylinder OHV Air-Cooled Engine, Briggs and Stratton Single Cylinder OHV Air-Cooled Engine Illustrated Parts List and Repair Manual (276781 – 8/09). Be familiar with the following sections:

- Section 1 – Safety, Maintenance, and Adjustments
- Section 2 – Troubleshooting
- Section 12 – Engine Specifications

Model 120000 & 150000 Intek Horizontal OHV Teardown and Rebuild
PowerPoint on the GAAGED.org website. Be familiar with the following slides:

- Slide 50: Install Flywheel, Key, Starter Cup and Nut
- Slide 51: Adjust Valve Lash
- Slide 52: Install Valve Cover
- Slide 53: Install Ignition Armature
- Slide 54: Install Cylinder Heat Shield
- Slide 55: Install Spark Plug

C. Environmental/Natural Resources (ENR)

Area and State Information: Agricultural Irrigation. Contestants will calculate irrigation requirements for blueberries. Students will determine field area in square feet and acres and select appropriate irrigation equipment to meet the scenario's outlined demands. Students should be familiar with reading irrigation nozzle information, calculating precipitation rates, and determining gpm and gph. Students should be familiar with whole-field and zone-specific irrigation needs.

Area Information

- Whole-field irrigation
- Rainbird irrigation catalog
- Rainbird precipitation rate formula

State Information

- Zone-specific irrigation
- Rainbird Irrigation Manual
- Sprinkler Head Information

D. Structures:

Area Information

Structures Skill will be a single-weld weldment. GMAW Single-Pass Lap Joint (2F Position) on 4"x 5" x 1/8" thick plate. Weld will be visually and/or strength tested.

State Information

Structure Skill will be a single-weld weldment. GMAW Single Pass T Joint (2F Position) on 4"x 5" x 1/8" thick plate. Weld will be visually and/or strength tested. Students must be familiar with reading and interpreting welding blueprints, symbols & dimensions.

[Welding Positions](#)

Welding Equipment List for Contestants:

1. Teams will need to provide the following items:
 - Welding Helmet – Shade 10 minimum (Area)
 - Welding goggles, glasses, or face shield - Shade 5 minimum (State)
 - Body cover- leather, Shop Jackets, non-flammable Coveralls
 - Welding Gloves
 - Pliers/Tongs
 - Safety glasses –approved with shields
 - Wire brush
 - Soapstone
 - Chipping Hammer
 - Tape Measure
 - Square (quick/combo, etc.)
2. Please do not share tools and equipment between team members (bring one of each for each student).
3. All other materials and tools will be provided.

Approved Safety Glasses are required for Team Activity and Skill Activities. (Meets or exceeds ANSI Z87.1-2003 safety standards)

E. Machinery: (ONLY AT THE STATE CDE)

Area Information

NONE AT AREA

State Information

Equipment TBD