



MICHIGAN FFA

To view additional  
contest details, see the  
contest clarification  
sheet on the Michigan  
FFA Website

# FORESTRY

## Career Development Event

### PURPOSE

The Forestry Career Development Event is designed to provide TEAMS with the opportunity to test skills they have developed in woodland management. This is not a training program but a competitive test of skills THAT THE TEAMS HAVE PREVIOUSLY DEVELOPED. Teams (3-5 members per team) will rotate through the 5 sections of the contest. Competition will be between teams, not individuals. A single team score will be used to determine the winning school. Where time permits, the staff members conducting the contest will discuss it after all contestants have completed the contest.

### OBJECTIVES

Understand and use forestry terms.

Promote an understanding of the economic impact of the forest environment and the forest industry to the American economy.

Recognize sustainability (multiple use) opportunities in the forests.

Recognize environmental and social factors affecting the management of forests.

Identify major species of trees of economic importance to the United States and internationally.

Identify and properly use hand tools and equipment in forestry management.

Recognize and understand approved silvicultural practices in the United States.

Identify forest disorders.

Take a forest inventory.

Utilize marketing management strategies.

Recognize safety practices in forest management.

## EDUCATIONAL STANDARDS

For educational standards, please refer to the Forestry Handbook located at <https://www.ffa.org/participate/cdes/forestry/>

## TEAM MAKE-UP/ELIGIBILITY

### Number of students

Forestry teams must comprise of 3-5 members.

### Equipment

Students are to **bring their own** pens and clipboards.

Suggested Tools to Bring to the Contest:

- Biltmore Stick
- 100' Measuring Tape
- Diameter tape (DBH Tape)
- Silver Ranger Compass

MSU will have a limited number of Biltmore Sticks and compasses available at the contest, but it is recommended teams provide their own equipment.

# PROCEDURE

## Contest Procedures

The Forestry contest consists of:

|                                    |                   |
|------------------------------------|-------------------|
| Tree Identification (Common Names) | 40 points         |
| Compass and Pacing                 | 30 points         |
| Tree Measurement                   | 30 points         |
| Equipment Identification           | 30 points         |
| Forest Health                      | 30 points         |
| <b>Total</b>                       | <b>160 points</b> |

Forestry scorecards can be viewed at the Michigan FFA Website: [Forestry Scorecard](#).

## Tree Identification

### 40 total points

The contestant will be scored on identification of 20 specimens (preserved leaves, trees, twigs, bark, photographs). Common names are listed below and must be used. The 20 specimens of trees will be selected from the following list of 29 species. Students can gently touch the specimens in the identification portion. Duplicated samples may appear.

References for tree ID are listed at the end of this section covering Forestry contests.

|    |             |    |                |
|----|-------------|----|----------------|
| 01 | White Cedar | 16 | Red Oak        |
| 02 | Red Cedar   | 17 | Sugar Maple    |
| 03 | White Pine  | 18 | Red Maple      |
| 04 | Red Pine    | 19 | American Beech |
| 05 | Jack Pine   | 20 | Black Cherry   |

|    |              |    |                  |
|----|--------------|----|------------------|
| 06 | American Elm | 21 | Hemlock          |
| 07 | Yellow Birch | 22 | Sassafras        |
| 08 | White Ash    | 23 | Blue Spruce      |
| 09 | White Oak    | 24 | Ironwood         |
| 10 | Scotch Pine  | 25 | White Spruce     |
| 11 | Tamarack     | 26 | Sycamore         |
| 12 | Basswood     | 27 | Black Walnut     |
| 13 | White Birch  | 28 | Cottonwood       |
| 14 | Aspen        | 29 | Hickory Shagbark |
| 15 | Balsam Fir   |    |                  |

## Tree Measurement

### 30 total points

#### Problem:

To determine the wood volume of marked trees. Wood volume will be determined using a Biltmore Stick and Diameter Tape.

#### Procedure:

The 10 individual trees to be measured will be marked. The contestants should bring a Biltmore Stick or Diameter Tape with a diameter scale and will be furnished a tally sheet. Contestants will then proceed to measure and record all marked trees on the plot at DBH (tree diameter at 4.5 feet above the ground), regardless of species. Diameter should be recorded in even inches (e.g. trees are 8, 10, 12, etc. inches in diameter). Refer to Bulletin E-461 at the web site below for proper measurement of Tree Diameter. [Bulletin E-461](#)

All trees measuring DBH of less than 10 should be recorded as 0.

Once diameter is determined, record on scorecard and proceed to measure the number of logs that can be harvested from the identified tree. Using a 100' tape, measure 66 feet from the base of the tree. Tree heights/number of logs measured with a Biltmore Stick should be measured from a 6-inch stump height to an estimated 10-inch top diameter for merchantable height.

You will identify the number of 16' logs. The merchantable height should be rounded down to the nearest 1/2 log. For example, a tree with almost 3 logs would be recorded as a 2.5 logs on the answer sheet. We will follow the procedures used by the Michigan Department of Natural Resources for identifying the point where the log ends and for dealing with defects and branches. Refer to [Product Standards and Cruising Manual](#) . A minimum top diameter of 10" DOB (diameter outside bark) will be used to define the end of a saw log, unless there is a "stopper" such as a major defect or a branch (see manual, for examples). Major Defects in the stem will further reduce the total number of logs (see manual, for examples).

All trees measuring less than 16' or 1 log should be recorded as 0.

## Compass and Pacing

### 30 total points

#### **Problem:**

To measure the distance and direction between two points by the use of a compass and pacing. It is important to know how to set a course with a compass and how to pace in feet. PLEASE NOTE: STUDENTS ARE NOT REQUIRED TO PACE IN CHAINS. PACING WILL JUST BE GIVEN IN FEET.

Digital compasses and measuring devices will NOT be allowed during the pacing portion of the contest.

#### **Procedure:**

Contestants will be given a scorecard and are required to determine the direction and distance between two stakes. They will have to complete this exercise three times in total.

The declination on the compass should be set to 0 for the contest. Make sure to check the declination on your compass if you use your own for the contest. Also, be prepared to use either a compass based on quadrants (0-90 degrees) or an azimuth compass (360 degrees) if using one of the Forestry Department's compasses.

## Equipment Identification

### 30 total points

Fifteen pieces of equipment from the following list will be displayed for participants to identify by technical names. Each piece of equipment will be designated by number.

Two points will be given for each piece of equipment identified correctly, for a total of 30 points. All answers must correspond to one of the terms below. No partial credit will be given. Equipment information can be found on the [Forestry Suppliers, Inc](#) website or their catalog.

Specimen:

|    |                    |    |                  |
|----|--------------------|----|------------------|
| 01 | Abney level        | 33 | Hand Compass     |
| 02 | Angle Gauge        | 34 | Hand Lens        |
| 03 | Ascender           | 35 | Harvester        |
| 04 | Axe                | 36 | Hypo-Hatchet     |
| 05 | Backpack Fire Pump | 37 | Increment Borer  |
| 06 | Bark Gauge         | 38 | Log Rule         |
| 07 | Bulldozer          | 39 | Logger's Tape    |
| 08 | Canthook           | 40 | Lopper           |
| 09 | Chainsaw           | 41 | Maul             |
| 10 | Chainsaw Chaps     | 42 | Peavy            |
| 11 | Chipper            | 43 | pH Meter         |
| 12 | Climbing Harness   | 44 | Plant Press      |
| 13 | Clinometer         | 45 | Plastic Flagging |
| 14 | Cruising Vest      | 46 | Pole Saw         |
| 15 | Densiometer        | 47 | Pruning Saw      |
| 16 | Declimber          | 48 | Pulley           |
| 17 | Diameter Tape      | 49 | Relaskop         |
| 18 | Drip Torch         | 50 | Safety Glasses   |
| 19 | Ear Protection     | 51 | Safety Hard Hat  |
| 20 | Endloader          | 52 | Scale Stick      |

|    |                           |    |                          |
|----|---------------------------|----|--------------------------|
| 21 | Feller Buncher            | 53 | Skidder                  |
| 22 | Felling Wedge             | 54 | Staff Compass            |
| 23 | Fiberglass Measuring Tape | 55 | Stump Grinder            |
| 24 | Fire Rake                 | 56 | Tally Meter              |
| 25 | Fire Shelter              | 57 | Timber Tongs             |
| 26 | Fire Weather Kit          | 58 | Tree Caliper             |
| 27 | Fire-Swatter              | 59 | Tree Climbers            |
| 28 | First Aid Kit             | 60 | Tree Injector            |
| 29 | Flow/current Meter        | 61 | Tree Marking Gun         |
| 30 | Foot Ascender             | 62 | Tree Planting Hoe or Bar |
| 31 | Gas Tank                  | 63 | Wedge Prism              |
| 32 | GPS Receiver              | 64 | Yarder                   |

## Forest Health

### 30 total points

#### **Problem:**

Forest Health issues persist in all forest ecosystems and continue to prevail in Michigan forests. The goal of this portion of the contest is to educate students about potential forest health concerns in Michigan, which can include pests, symptoms, disorders, damages, etc.

#### **Procedures:**

A maximum of 15 items from the identification list will be displayed for participants to identify. These items will be related to tree/forest disorders or symptoms (including pathogens), items can be repeated based off of symptoms or actual pests. Each item will be designated by a two-digit number that will be recorded on the scorecard.

Forest disorders or symptoms will be provided by common name.

The items will be presented in one or more of the following forms:

- Actual Samples

- Pictures
- Written description

Each team will be allowed 20 minutes to complete this phase.

|    |                                                   |    |                           |
|----|---------------------------------------------------|----|---------------------------|
| 01 | Aphid                                             | 16 | Hemlock Woolly Adelgid    |
| 02 | Asian Longhorn Beetle                             | 17 | Lightning Damage          |
| 03 | Beech Bark Disease                                | 18 | Mechanical Damage         |
| 04 | Black Knot                                        | 19 | Nemotode                  |
| 05 | Butt or Heart Rot                                 | 20 | Rust                      |
| 06 | Canker                                            | 21 | Sawfly                    |
| 07 | Chemical Damage                                   | 22 | Scale                     |
| 08 | Cicada                                            | 23 | Spongy Moth               |
| 09 | Climate Injury (Snow, Wind, Frost, Drought, Hail) | 24 | Spruce Beetle             |
| 10 | Damping Off                                       | 25 | Spruce Budworm            |
| 11 | Dutch Elm Disease                                 | 26 | Oak Wilt                  |
| 12 | Eastern Larch Beetle                              | 27 | Sunscald                  |
| 13 | Emerald Ash Borer                                 | 28 | Tent Caterpillar          |
| 14 | Fir Engraver Beetle                               | 29 | Wetwood or Slime Flux     |
| 15 | Fire Damage                                       | 30 | Wildlife/Livestock Damage |

## SCORES

### Tree Identification

#### 40 points

20 trees will be selected out of a list of 29 trees. Each tree is worth 2 points for a total of 40 points.

### Tree Measurement

#### 30 points

Contestants will lose points, per tree, on any total exceeding 10 percent of calculated value by judges.

## Compass and Pacing

### 30 points

The three exercises will be worth a total of 30 points. Each individual exercise will be worth 10 points each. (5 points for direction and 5 points for distance). Points will be determined by the following:

Distance: One point will be deducted for every (+ or -) foot

Direction: One point will be deducted for every (+ or -) 2 degrees

## Forest Health

### 30 points

15 forest health issues from the provided list will be selected. Two points will be given for each forest health issue identified correctly.

## Determining Awards

Team rankings will be determined by the total points accumulated across all five sections.

Gold and Silver awards will be determined by the Michigan FFA Association Executive Secretary.

## ADDITIONAL MATERIALS

In addition to these rules, please review the following documents:

### Tree Identification:

[MSU Bulletin E2332--Identifying Trees of Michigan](#)

Michigan Trees Worth Knowing, N.F. Smith, Hillsdale Education Publishers,

Fruit Key and Twig Key to Trees and Shrubs, William M. Harlow. Dover Publications, Inc., New York

**Compass and Pacing:**

Be Expert With Map and Compass--The "Orienteering" Handbook, B. Kjellstrom, American Orienteering Service.

**Equipment Identification:**

Ben Meadows Catalog Forestry Supplier Catalog

For more Forestry information, visit the Michigan Forests Forever Teachers' Guide Web Site at [Michigan Forests Forever](#)