

Forestry Career Development Event

The Forestry contest consists of:

	Contest	Possible Score
1.	Tree Identification (Common Names)	30
2.	Compass and Pacing	30
3.	Tree Measurement	30
4.	Equipment Identification	30
5.	Woodland Management	30
Total Possible Points		150

Forestry scorecards can be viewed by going to the following web site:

http://www.michiganffa.com/association/career/skills/forestry_scorecards.doc(75.5Kb MS Word Document).

All areas and materials for the contest will be prepared by members of the staff of the Forestry Department at Michigan State University. Contests will be judged by these same staff members.

AFNRE content standards for this contest are listed on the [National FFA website](#).

The Forestry contests are designed to provide TEAMS 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. General information on forestry terms can be acquired by reading Extension Bulletin NCR Extension Publication No. 478 "Forest Resource Management Terminology." Team members (3-5 members per team) will be given a map of the contest locations and have 90 minutes to complete the entire 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 member conducting the particular contest will discuss it after all contestants have completed the contest.

TREE IDENTIFICATION

The contestant will be scored on identification of 15 trees. Common names are listed below and must be used. The 15 trees will be selected from the following list of 25 species. Specimens of conifers in early years of growth may be used. Remember that hardwoods do not have leaves in April and you therefore need to know your trees using twigs, buds and/or bark.

References for tree ID are listed at the end of this section covering Forestry contests. (Potential Score--30 points)

1	White Cedar	11	Tamarack	21	Hemlock
2	Red Cedar	12	Basswood	22	Sassafras
3	White Pine	13	White Birch	23	Blue Spruce
4	Red Pine	14	Aspen	24	Ironwood
5	Jack Pine	15	Balsam Fir	25	White Spruce
6	American Elm	16	Red Oak	26	Sycamore
7	Yellow Birch	17	Sugar Maple	27	Black Walnut
8	White Ash	18	Red Maple	28	Cottonwood
9	White Oak	19	American Beech	29	Hickory Shagbark
10	Scotch Pine	20	Black Cherry		

TREE MEASUREMENT

PROBLEM

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

PROCEDURE SCORING -- Potential Score 30 Points

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. MSU will have a limited number of Biltmore sticks available for loan. To improve accuracy of diameter measurements with the cruiser stick, it is recommended that two measurements be taken at right angles to each other and the answers averaged. The diameters should be recorded on the tally sheet within two-inch diameter classes. (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. http://www.michiganffa.com/association/career/skills/forestry_bulletin.doc(626Kb MS Word Document). For example: The eight-inch diameter class for an eight-inch tree includes all trees 7.0 to 8.9 inches DBH.

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 Biltmore Stick, pace 66 feet from the base of the tree and identify the number of (16') logs, approximating to the nearest half log (8' section), rounding down. For example, a tree with almost 2 logs would be recorded as 1.5 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 (this manual is posted on line at:

<http://www.midnr.com/Publications/pdfs/ForestsLandWater/TimberSaleReports/App.08ProductStandars7-30-2004.pdf>). A minimum top diameter of 9" 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), in which case the top diameter will be larger than 9" and the log length shorter. Major defects in the stem will further reduce the total number of logs (see manual, for examples). Once complete, repeat the above procedures for each of the ten identified trees. To give enough time to measure each tree the following step will be omitted: (Finally, calculate the total number of board feet for the tree. (Determining Tree Volume Scorecard is based on Table 2 of Bulletin E-461. (http://www.michiganffa.com/association/career/skills/forestry_bulletin.doc 626Kb MS Word Document))

Scoring - Potential Score 30 points (No points will be awarded for board feet totals exceeding 10 percent of calculated value by judges

COMPASS AND PACING

PROBLEM

To locate the center point of an imaginary plot by the use of a compass and pacing. Contestants should use their own compasses but MSU will have a limited number available for loan. 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.

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°) or an azimuth compass (360°) if using one of the Forestry Department's compasses.

SCORING -- Potential Score 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 -1) foot

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

EQUIPMENT IDENTIFICATION

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. Go to the following web site for equipment information: <http://www.forestry-suppliers.com> or <http://www.benmeadows.com> or refer to either company's catalog

SPECIMEN

No.	Name
51.	Tree Injector
52.	Diameter Tape
53.	Increment Borer
54.	Bark Gauge
55.	Tree Caliper
56.	Pulaski Forester Axe
57.	Stereoscope
58.	GPS Receiver
59.	Soil Sampler
60.	Wheeler Caliper
61.	Wedge Prism
62.	Relaskop
63.	Staff Compass
64.	Hand Compass
65.	Tree Planting Hoe or Bar
66.	Log Rule
67.	Planimeter
68.	Survey Instrument (some type)
69.	Hip Chain
70.	Plastic Flagging
71.	Tree Marking Gun
72.	Logger's Tape
73.	Clinometer
74.	Hypo-Hatchet
75.	Canthook
76.	Chainsaw
77.	Safety Hard Hat
78.	Chainsaw Chaps
79.	Safety Glasses
80.	Altimeter
81.	Tally Meter

82.	Fiberglass Measuring Tape
83.	Fire Rake
84.	Drip Torch
85.	Data Recorder
86.	Fire Weather Kit
87.	Tally Book
88.	Fire-Swatter
89.	Dot Grid
90.	Backpack Fire Pump
91.	Plant Press
92.	Flow Current Meter
93.	Soil Test Kit (some type)
94.	Water Sampler
95.	Densimeter
96.	Water Test Kit
97.	PH Meter
98.	Hand lens/Field Microscope
99.	Backpack Sprayer

WOODLAND MANAGEMENT PRACTICES

PROBLEM

Proper woodland management requires that some trees be removed (“cut” trees) either because they are defective in some way or because removing them will increase the growing space, light water and nutrients available for the remaining trees or reduce the risk of disease or infestation (called a sanitation cut). Trees are also cut because the time for harvesting timber from them is just right, but in the broader context of woodlot management practices, we are considered more with the longer term, than immediate benefits of cutting a tree. The “leave” trees, sometimes called “crop” trees, are often selected and trees around them are removed to increase the growing space for the remaining trees. Low vigor and defective trees will not respond well to such thinning around them and are thus often marked for removal. In some cases, trees that are severely damaged by the elements are salvaged to recover some of their value or because they become safety hazards.

Species is also a critical consideration and foresters often managed to enhance certain species while removing others, which changes the species composition. Species may be removed because they are invasive or weedy, interfering with the native or more desired species, or because the site is a marginal one for that species, causing it to have reduced vigor and making it more susceptible to diseases and pests. Obviously, different species have different qualities and value for their wood, which affects our choices of which species to manage for. Since the value of species may be subjective and situationally dependent, species is not a significant factor in the choice to cut or leave for purposes of this contest, except if the species affects some of the other reasoning. For example, if a species is particularly susceptible to a disease (cut) or particularly important to wildlife (leave).

It is important to recognize that removing trees or changing the structure and species composition of the forest will also change the other biotic communities that trees support. Sometimes trees that we consider defective or of low quality are critically important to wildlife. Large, standing hollow trees (both live and dead), for example, provide homes for cavity-nesting birds and both large and small mammals.

As you can see, choosing which tree to cut or leave is not an easy task. For purposes of this contest, “Cut” vs. “Leave” trees will be grouped into one of 5 categories and contestants will assign each tree to one of them (there is no partial credit):

- A. Leave – tree is healthy, has good vigor and good form and should produce quality tree products in the future.
- B. Leave – tree is good for wildlife habitat even though it may have poor form or low vigor.

- C. Leave – tree would be a good source of seeds for forest reproduction / regeneration.
- D. Cut – tree is unhealthy, has poor vigor, of poor form and will not produce quality tree products in the future.
- E. Cut – tree is diseased, infested with insects or hazardous and should be removed to improve forest health or safety.

PROCEDURE

An approximately one-half acre plot within the woodlot will be marked. Twenty trees will be numbered. The contestant must decide which trees are to be removed and left in the woodlot and so indicate on the scorecard by assigned them to one of the five categories above. Since tree marking is highly dependent on both forest conditions and the desired management objectives, the following guidelines should be used for decision-making in the contest:

1. Leave trees that are healthy, have good vigor and good form and should produce quality tree products in the future.
2. Cut low vigor trees / poorly formed stems, based on usable log length and potential decay.
3. Cut high risk trees that are likely to die between cutting cycles (in the next 10-15 years), create hazards or decrease forest health.
4. When cutting trees, improve spacing between remaining trees and release crop trees – Cut poorer quality competitors to provide crown growing space around ‘crop’ trees to promote growth and quality development. Choose the best trees for crop trees, regardless of species.
5. Leave significant ‘seed trees’ to produce seeds for regeneration / regrowth of the forest.
6. Leave trees which improve wildlife habitat, where not conflicting with the above guidelines.

REFERENCES

Tree Identification

MSU Bulletin E2332--Identifying Trees of Michigan
Michigan Trees Worth Knowing, N.F. Smith, Hillsdale
Education Publishers, P.O. Box 245, Hillsdale, MI 49242 (\$2.25)
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.
220 Fifth Ave., New York, N.Y.

Equipment Identification

Ben Meadows Catalog
Forestry Supplier Catalog

For more Forestry information, visit the Michigan Forests Forever Teachers' Guide Web Site at
<http://www.dsisd.k12.mi.us/mff/Balance/MngtSystems.htm>.

Revised (September 2020)