**West Tennessee FFA**

Forestry

Handbook

2017-2023

Purpose

The West Tennessee FFA Forestry Career Development Event is designed to stimulate student interest and to promote the forestry industry as a career choice. It also provides recognition for those who have demonstrated skills and competencies as a result of forestry instruction in the agriculture education classroom.

Objectives

This event will provide the participant the ability to:

* 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, equipment in forestry management.
* Recognize and understand approved silvicultural practices in the United States.
* Take a forest inventory.
* Utilize marketing management strategies.
* Recognize safety practices in forest management.

Event Rules

* The team will consist of four individuals. All four scores will count toward the team score.
* The team score is comprised of the combined scores of each individual and the team activity in which all team members will participate.
* Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of weather. Participants should have rain gear, warm clothes and closed toed shoes. A hard hat and safety glasses are no longer required to bring to the CDE unless indicated by Forestry CDE coordinators in advance.
* Official FFA Dress is NOT recommended for this CDE.
* Students are required to bring their own pencils, Biltmore stick, compass, and a transparent/clear clipboard with no notes attached.
* All other equipment will be furnished for the event. Participants must use the tools and equipment provided.
* Participants must follow instructions from event staff for handling materials during the event. Any infraction of this rule will be sufficient to eliminate the team from the event.
* Observers will not be permitted in the event area while the event is in progress.
* No team, team member or team coach shall visit the event facilities to observe plant materials and facilities within one week of the competition. Any team, team member or coach reported and proven to do so will cause the elimination of the team from the West Tennessee FFA Forestry CDE.
* Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his/her assigned group leader throughout the event or until told to change leaders by the event superintendent.
* All participants will be given an identification number by which they will be designated throughout the event.
* All written materials will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the event site.
* Any participant in possession of an electronic device in the event area is subject to disqualification.

EVENT FORMAT

Individual Activities

Tree Identification (50 points)

* Twenty live specimens, pressed samples, fresh leaf samples and/or standing trees, from the tree identification specimen list will be displayed for participants to identify by common names. A number will designate each specimen.
* Each participant will be allowed 20 minutes to complete this phase.

Tree Measurement - Timber Cruising for Board Volume (50 points)

* Each participant will measure ten pre-numbered trees on a plot for board foot volume. The participant must record the DBH (Diameter Breast Height) to the nearest two-inch class and the merchantable height of each tree height rounded down to the nearest ½ log.
* Volume tables will be provided at the event.
* The following minimum diameters and log length will be:

|  |  |
| --- | --- |
| Minimum Saw Timber | |
| DBH | 10 inches |
| Top Diameter | 10 inches DIB |
| Height | 16 feet |

* Merchantable height stops are estimated to the upper point on a tree where it becomes 10 inches in diameter or where a major fork in a tree stem occurs or where a limb has a diameter equal to ½ of the diameter of the tree at that point.
* Each participant will be allowed 20 minutes to complete this phase.
* Thirty points will be given for the correct DBH and thirty points for the correct height. Forty points will be given for the correct volume per acre. Five points will be deducted for each five percent deviation (plus or minus) from the correct measured volume.

Individual Practicums (50 points each) for total of 150 points per individual

Participants will compete individually in two practicums from the following list:

* Equipment Identification
* Map Interpretation
* Compass

Each participant will have 20 minutes to complete each practicum.

Equipment Identification Practicum

Twenty-five pieces of equipment from the equipment identification list will be displayed for participants to identify by technical names. Each piece of equipment will be designated by number.

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

* Actual samples
* Pictures or slides
* Written description

Map Interpretation Practicum

Participants will answer questions using a furnished United States Geological Survey topographic map. The participant should know legal description, recognize topographic map symbols, and understand the meaning of map symbols, size and location of 40 acres or more in a parcel.

Examples:

* What is the legal description of the boxed area?
* What is the item located at this point?
* What is the acreage of the area enclosed?
* In what section is the city of Marshall located?
* What is the elevation at this point?

Legal descriptions will be written or described according to the public land survey system.

* Example: SE ¼ of NW ¼ of Section 3, T3N, R1E

Compass Practicum

The participant will use a hand compass and pacing to the nearest full foot to simulate the determination of the property lines on a tract of timber. The participant will start at any point and record the compass reading and distance to the next point. Azimuth readings shall be recorded. Participants will record data for 10 points.

Partial credit will be given with a deduction of one point for each two degrees or two feet the participant is off the correct answer.

Scoring

|  |  |  |
| --- | --- | --- |
| Activities | Individual Points | Team Points |
| Tree Identification | 50 | 200 |
| Tree Measurements-Timber Cruising | 50 | 200 |
| Mapping | 50 | 200 |
| Compass Activity | 50 | 200 |
| Equipment Identification | 50 | 200 |
|  | **250** | **1,000** |

Tiebreakers

Team

Tiebreakers for teams will be determined by adding together the individual ranking of team members. The team with the lowest score will earn the tiebreak.

Individuals

1. Timber cruising
2. Tree identification
3. Total rotational practicum score.

References

This list of references is not intended to be all inclusive.

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

Past CDE materials and other resources are available by logging in to FFA.org

Tree Identification

* Dendrology at Virginia Tech, http://dendro.cnre.vt.edu/dendrology/main.htm
* “FFA Georgia State and National Tree Lists”, available from www.amazon.com
* W. H. Harlow, E. S. Harrar, and F. M. White. Textbook of Dendrology, current edition. New York, NY: McGraw-Hill Book Company.
* Silvics of North America, Handbook #654, volume one and two, U.S. Forest Service, P. O. Box 2417, 12th and Independence Avenue SW, Waashington, DC 20013.

Tree Measurement

* http://www.fs.usda.gov/Internet/FSE DOCUMENTS/steelprdb5202838.pdf

Forest Management

* Introduction to Forestry Science, Burton, Delmar Publications
* Science of Forestry Management, Kris Irwin, University of Georgia, AAVIM

Equipment Identification

* Current Catalog of Forestry Suppliers, Inc., 205 West Rankin Street, Jackson, MS 39204-039
* www.husqvarna.com/us/accesories/axes-pruning-saws/
* www.husqvarna.com/us/forest/accessories/chainsaw-accesories/#forests\_tools
* www.deere.com/en\_US/industry/forestry/forestry.page?
* www.treestuff.com

Map Interpretation

* The U.S. Department of Interior Geological Survey Topographic Map Information and Symbols Key, Map Distribution, U. S. Geological Survey, Box 25286, Federal Center, Denver CO

Compass

* http://forest.mtu.edu/classes/fw2051/docs/compass\_pace.pdf

Forest Products

* www.fpl.fs.fed.us/products/publications/several\_pubs.php?grouping\_id=100&header\_id=p

Tree Identification

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Contestant Number\_\_\_\_\_\_\_\_\_\_\_\_\_

Chapter\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Time: 20 Minutes Score: Five (5) points for each correctly identified.

A – Redbud 1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ AA – Pecan

B – White Pine 2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ BB – Royal Paulownia

C – Red Oak 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ CC – Osage Orange

D – White Oak 4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DD – Mulberry

E – Maple 5.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ EE – Paw Paw

F – Sumac 6.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ FF – Black Locust

G – Ash 7.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GG – Black Cherry

H – Cedar 8.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ HH – Sassafras

I – Birch 9.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ II – Iron Wood

J – Dogwood 10.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ JJ – Holly

K – Black Gum 11.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ KK – Hackberry

L – Loblolly Pine 12.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ LL – Willow

M – Elm 13.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

N – Bald Cypress 14.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

O – Honey Locust 15.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

P – Sweet Gum 16.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q – Sycamore 17.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

R – Yellow Poplar 18.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

S – Black Walnut 19.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

T – Cottonwood 20.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

U – Hickory

V – Beech

W – Persimmon

X – Box Elder

Y – Shortleaf Pine

Z – Devils-Walking Stick

Equipment Identification List

1. Altimeter
2. Angle guage
3. Ascender
4. Automatic Level
5. Back-pack Fire Pump
6. Bark Gauge
7. Bulldozer
8. Canthook
9. Carabiner
10. Chainsaw
11. Chainsaw Chaps
12. Clinometer
13. Combination tool
14. Data Recorder
15. Densiometer
16. Diameter Tape
17. Dot Grid
18. Drip Torch
19. Ear Protection
20. Endloader
21. Feller Buncher
22. Felling Wedge
23. Fiberglass Measuring Tape
24. Fire Rake
25. Fire shelter
26. Fire Weather Kit
27. Fire-Swatter
28. First aid kit
29. Flow/current Meter
30. GPS Receiver
31. Hand Compass
32. Hand Lens/Field Microscope
33. Hip Chain
34. Hypo-Hatchet
35. Increment Borer
36. Jacob Staff
37. Log Rule
38. Logger’s Tape
39. Maul
40. Peavy
41. pH Meter
42. Planimeter
43. Plant Press
44. Plastic Flagging
45. Pole saw
46. Pruning Saw
47. Pulaski Axe
48. Relaskop
49. Safety Glasses
50. Safety Hard Hat
51. Scale Stick
52. Secchi Disc
53. Soil Sampler
54. Soil Test Kit
55. Staff Compass
56. Stereoscope
57. Tally Book
58. Tally Meter
59. Timber Tongs
60. Tree Caliper
61. Tree Harvester
62. Tree Marking Gun
63. Tree Planting Hoe or Bar
64. Tree Skidder
65. Water Sampler
66. Water Test Kit
67. Wedge Prism

Equipment Identification Answer Sheet

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Contestant Number: \_\_\_\_\_\_\_\_\_\_\_\_

Chapter: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Time: 20 Minutes Score: Five (5) Points for each correct answer

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
15. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
16. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
17. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
19. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
20. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tree Measurement** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | Chapter:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
|  |  |  |  |  |  |  |  |  |
| Contestant Number: \_\_\_\_\_\_\_\_\_\_\_ | | | |  | Score: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
|  |  |  |  |  |  |  |  |  |
| Time: | 20 Minutes | |  |  |  |  |  |  |
| Score: | Four (4) points for each correct DBH | | | |  |  |  |  |
|  | Four (4) points for each correct Number of Logs | | | | |  |  |  |
|  | Ten (10) points for the correct total volume. | | | |  |  |  |  |
|  | Two (2) points deducted for each plus/minus 5% from correct volume. | | | | | | |  |
|  |  |  |  |  |  |  |  |  |
| Minimum Diameters and Log Lengths: | | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Diameter at Breast Height (DBH) | | | | 12.0" |  |  |  |  |
| Diameter at small end (top) | | |  | 10.0" |  |  |  |  |
| Length of 1/2 logs | |  |  | 8' |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  | Contents in Board Feet |  |  |  |  |
|  |  |  |  | Logs |  |  |  |  |
| DBH | 1/2 | 1 | 1 1/2 | 2 | 2 1/2 | 3 | 3 1/2 | 4 |
| 12 | 30 | 60 | 80 | 100 | 120 |  |  |  |
| 14 | 40 | 80 | 110 | 140 | 160 | 180 |  |  |
| 16 | 60 | 100 | 150 | 180 | 210 | 250 | 280 | 310 |
| 18 | 70 | 140 | 190 | 240 | 280 | 320 | 360 | 400 |
| 20 | 90 | 170 | 240 | 300 | 350 | 400 | 450 | 500 |
| 22 | 110 | 210 | 290 | 360 | 430 | 490 | 560 | 610 |
| 24 | 130 | 250 | 350 | 430 | 510 | 590 | 660 | 740 |
| 26 | 160 | 300 | 410 | 510 | 600 | 700 | 790 | 880 |
| 28 | 190 | 350 | 480 | 600 | 700 | 810 | 920 | 1020 |
| 30 | 220 | 410 | 550 | 690 | 810 | 930 | 1060 | 1180 |
| 32 | 260 | 470 | 640 | 790 | 940 | 1080 | 1220 | 1360 |
| 34 | 290 | 530 | 730 | 900 | 1060 | 1220 | 1380 | 1540 |
| 36 | 330 | 600 | 820 | 1010 | 1200 | 1380 | 1560 | 1740 |
| 38 | 370 | 670 | 910 | 1130 | 1340 | 1540 | 1740 | 1940 |
| 40 | 420 | 740 | 1010 | 1250 | 1480 | 1700 | 1920 | 2160 |
| 42 | 460 | 820 | 1100 | 1360 | 1610 | 1870 | 2120 | 2360 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Tree | D.B.H. |  | No. of 16 Ft Logs | |  |  |  |  |
| Number | 2" Class |  | (Nearest 1/2 Log) | | Board Feet/Tree | |  |  |
|  |  |  |  |  |  |  |  |  |
| 1. | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | |  |  |
|  |  |  |  |  |  |  |  |  |
| 2. | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | |  |  |
|  |  |  |  |  |  |  |  |  |
| 3. | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | |  |  |
|  |  |  |  |  |  |  |  |  |
| 4. | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | |  |  |
|  |  |  |  |  |  |  |  |  |
| 5. | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_ | |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  | Total Volume: | | \_\_\_\_\_\_\_\_\_\_\_ | |  |  |
|  |  |  |  |  |  |  |  |  |

**Compass Practicum**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | Chapter:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
|  |  |  |  |  |  |  |  |  |
| Contestant Number: \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | Score: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Time: | 20 Minutes |  |  |  |  |
| Score: | Five (5) points for correct azimuth | | |  |  |
|  | Five (5) points for correct distance. | | |  |  |
|  | One (1) point deducted for each two (2) degrees off correct azimuth. | | | | |
|  | One (1) point deducted for each two (2) feet off correct distance. | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Points |  | Azimuth Reading | | Distance (feet) | |  |
| (stations) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 1 to 2 |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |  |
|  |  |  |  |  |  |  |
| 2 to 3 |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |  |
|  |  |  |  |  |  |  |
| 3 to 4 |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |  |
|  |  |  |  |  |  |  |
| 4 to 5 |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |  |
|  |  |  |  |  |  |  |
| 5 to 1 |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |  |
|  |  |  |  |  |  |  |