

# Forestry

## Nebraska Career Development Event

### Handbook and Rules for 2026 (Pilot Year)

#### 1. Event Purpose

The Nebraska 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 resulting from forestry instruction in the agricultural education classroom.

#### 2. Objectives

Students will be able 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 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.

#### 3. Eligibility

The event is open to students in grades 9-12. The top two schools from each district may qualify to attend the state CDE. Teams shall consist of no more than four students. Schools must register a full team, however, teams with fewer than four students may participate and will not be eligible to earn all points.

#### 4. Required Attire

Participants will be **required** to bring a hard hat. Part of the competition will be outside, closed-toed shoes capable of walking around on non-paved surfaces are also **required**. Participants are encouraged to bring/wear rain gear and warm clothes in case of inclement weather. Students will be expected to spend over an hour outdoors during this event. Official Dress, including black pants, is encouraged.

## 5. Required Supplies and Equipment

Each participant must provide the following: Clipboard (free of notes)

Two sharpened #2 pencils (NO pens)

Biltmore Stick (not required, will be provided)

Plastic sheet protector to protect scantron in case of poor weather

Non-programmable calculator

## 6. Event Schedule

Check the CDE event schedule for specific arrival, start, and end times, as well as the event locations.

Students shall check in no later than 10 minutes prior to the event start time. Once the event begins, the approximate schedule includes 3 rotations of 4 teams per section. See the example below. Each rotation will last 50 minutes, with 10 minutes set aside for transition and instruction. There is a lot of movement during this event. Students should pay attention closely and follow instructions for how to move from one rotation to another. Read the following event format closely so you know what to expect in each rotation.

Event	Rotation 1	Rotation 2	Rotation 3
General Exam	Districts 1-4	Districts 9-12	Districts 5-8
Identification	Districts 5-8	Districts 1-4	Districts 9-12
Team Practicum	Districts 9-12	Districts 5-8	Districts 1-4

## 7. Event Format

Students will rotate between each station every 50 minutes. Part of the competition will be outside, so everyone should dress appropriately for the weather and wear shoes capable of walking around on non-paved surfaces.

### INDIVIDUAL ACTIVITIES

*General Knowledge Exam (100 points), 50 minutes*

**Purpose:** Tests understanding of forestry principles, tree physiology, safety, ecology, and forest management terminology.

**Format:**

- **Multiple-choice questions:** 25 questions, 2 points each (50 points)
- **Short-answer questions:** 5 questions, 10 points each (50 points)

**Outline:**

**Section A – Tree Biology & Physiology (10–12 questions)**

- Basic tree anatomy: roots, stem, leaves, cambium, xylem/phloem

- Photosynthesis and nutrient transport
- Differences between hardwoods and softwoods
- Growth patterns and age determination

**Section B – Forestry Terminology & Principles (5–6 questions)**

- DBH, merchantable height, basal area, canopy, stand
- Silvicultural practices: thinning, pruning, planting
- Forest types and uses

**Section C – Safety Practices & Equipment (3–4 questions)**

- Chainsaw safety and PPE
- Field safety (trips, ticks, heat/cold, terrain)
- Pesticide and herbicide safety basics

**Section D – Forest Ecology & Sustainability (3–4 questions)**

- Healthy forest ecosystems
- Wildlife habitat considerations
- Multiple-use forest management
- Invasive vs. native species

*Tree/Equipment/Disorder Identification Practicum (100 points), 50 minutes*

**Purpose:** Tests ability to identify trees, forestry equipment, and common tree disorders.

Setup: Four groups (A, B, C, D) will be created, with one team member from each of the four chapters represented in the rotation. For example, Group A will have one representative from District 1, one representative from District 2, one representative from District 3, and one representative from District 4. Groups will stay together for the duration of the identification event. Each group will be assigned a leader. Each group will start out in a different station, tree identification 1, tree identification 2, equipment, or disorders. Groups will then rotate through the 4 different stations, spending 10 minutes at each station.

**Format:**

- **Tree Identification:** 25 specimens (2 points each) = 50 points
- **Equipment Identification:** 10 items (2 points each) = 20 points
- **Tree Disorder Identification:** 6 samples/cases (5 points each) = 30 points

**Outline:**

**Section A – Tree Identification (50 points)**

- Use live specimens, pressed leaves, photos, or standing trees
- Nebraska FFA Forestry Approved Tree List only
- Common and scientific names may be used for identification

**Section B – Equipment Identification (20 points)**

- Forestry tools and equipment
- Actual tools, photos, or written descriptions
- Identify by **technical or common name**

### Section C – Tree Disorders Identification (30 points)

- Identify common tree disorders using samples, photos, or case history
- Recognize symptoms and provide **common name**

### *Tree Measurement and Management Practicum — (100 points), 50 minutes*

#### **Purpose:**

This practicum is designed to help participants apply forestry measurement and management skills in a realistic forest scenario. Students will measure trees, calculate timber volumes, and make management recommendations based on given forest objectives. This team-based activity tests practical understanding of forest inventory and sustainable management principles.

#### **Equipment Needed:**

- Biltmore stick (provided or participants may bring their own)
- Clipboard and pencils
- Volume table (Doyle, Scribner, or International ¼-inch — provided at the event)
- Optional: Measuring tape or clinometer for supplemental height measurement

#### **Instructions:**

##### **1. Tree Measurement:**

- Measure the Diameter at Breast Height (DBH) for each tree using a Biltmore stick. Record your measurements carefully.
- Measure the total tree height from the base to the top of the tree. *(Note: For simplification, total height will be used as the merchantable height for volume calculations.)*
- Record all measurements clearly on your score sheet.

##### **2. Volume Estimation:**

- Use the provided volume table to calculate the board-foot volume for each tree. Ensure you are using the correct table — do not use volume scales from your Biltmore stick unless it matches the event-provided table.
- Perform calculations carefully to maximize accuracy; points are awarded for correct application of the tables and methodology.

##### **3. Timber Plot Evaluation:**

- Once tree measurements and volumes are recorded, review the historical timber plot case provided.
- Your team will analyze the plot and make forest management recommendations consistent with the stated goals. Recommendations may include:
  - Thinning or harvesting strategies
  - Species selection for planting
  - Stand improvement techniques
  - Sustainable practices for long-term forest health

##### **4. Justification:**

- All recommendations must include a clear rationale that aligns with the forest management goals.
- Points will be awarded for accuracy of measurement, application of volume tables, relevance of management recommendations, and clarity of reasoning.

**Scoring Breakdown (100 points total per team):**

<b>Task</b>	<b>Points</b>
Accuracy of DBH & height measurements	20
Correct application of volume table & calculations	20
Knowledge Exam	60

Using a tree scale stick, each participant will measure 4 pre-selected trees (for Diameter Breast Height and merchantable height). The participant must record the Diameter Breast Height (DBH) computed to the nearest inch, and the merchantable height of each tree, height rounded down to the nearest 8-foot log.

The following minimum diameters and log length will be:

**Minimum Saw Timber**

DBH	12 inches
Top Diameter (inside bark)	8 inches
Height	16 feet

**Time:** Teams will be allowed 12 minutes to measure height and record DBH. Each team will have their own time slot allotted to go outside to measure trees. Calculations may be made during the indoor portion of the rotation. The outdoor portion of the rotation is for measuring only.

**Scoring:** Five points will be allowed for the correct DBH, 3 points will be allowed for being 1" above or below the correct DBH, 1 point will be allowed for being 2" above or below the correct DBH, and 0 points will be allowed for being more than 2" above or below the correct DBH; 5 points for the correct height, 3 points will be allowed for being .5 log above or below correct number of logs, 1 point will be allowed for being 1 log above or below the correct number of logs, and 0 points for being more than 1 log above or below the correct number of logs. A maximum score for this section of the team activity is 40 points.

Remaining time will be indoors to complete a knowledge exam. The exam will have questions related to management and map reading. Number of questions will vary depending on the complexity of questions. The team knowledge exam will be worth 60 points.

## 8. Scoring

Scoring Activities	Individual Points	Team Points
General Knowledge Exam	100	400
Tree/Equipment/Disorder Identification Practicum	100	400
Tree Measurement & Management Practicum		100
<b>TOTAL</b>	<b>200</b>	<b>900</b>

## 9. Tiebreaker

To determine the award order for individuals involved in a tie, the following will be used in rank order:

- General Knowledge Exam
- Identification Practicum

To determine the award order for teams involved in a tie, the following will be utilized in rank order:

- Measurement score accuracy
- Management plan score
- Average of individual General Knowledge Exam scores
- Average of individual Identification Practicum scores

## 10. Resource Materials

Provided in the Shared Folder

## 11. Past Exams

Provided in the Shared Folder

## 12. Post-CDE Debriefing Opportunity

The superintendent will allow 30 minutes at the conclusion of all sections of the event for students and advisors to review the species identification portion of the event.

## 13. Appendix

Appendix 1: Identification List

Tree Identification	
101	Alder, Red ( <i>Alnus rubra</i> )
102	Ash ( <i>Fraxinus</i> sp.)
103	Aspen, Bigtooth ( <i>Populus grandidentata</i> )

104	Aspen, Quaking ( <i>Populus tremuloides</i> )
105	Baldcypress ( <i>Taxodium distichum</i> )
106	Basswood ( <i>Tilia americana</i> )
107	Beech, American ( <i>Fagus grandifolia</i> )
108	Birch, Black ( <i>Betula lenta</i> )
109	Birch, White ( <i>Betula papyrifera</i> )
110	Birch, Yellow ( <i>Betula alleghaniensis</i> )
111	Cherry, Black ( <i>Prunus serotina</i> )
112	Cottonwood, Eastern ( <i>Populus deltoides</i> )
113	Elm ( <i>Ulmus</i> sp.)
114	Fir, Balsam ( <i>Abies balsamea</i> )
115	Fir, Douglas ( <i>Pseudotsuga menziesii</i> )
116	Hackberry ( <i>Celtis occidentalis</i> )
117	Hemlock, Eastern ( <i>Tsuga canadensis</i> )
118	Hemlock, Western ( <i>Tsuga heterophylla</i> )
119	Hickory ( <i>Carya</i> sp.)
120	Larch ( <i>Larix</i> sp.)
121	Maple, Red ( <i>Acer rubrum</i> )
122	Maple, Sugar ( <i>Acer saccharum</i> )
123	Oak, Black ( <i>Quercus velutina</i> )
124	Oak, Chestnut ( <i>Quercus montana</i> )
125	Oak, Northern Red ( <i>Quercus rubra</i> )
126	Oak, Scarlet ( <i>Quercus coccinea</i> )
127	Oak, Southern Red ( <i>Quercus falcata</i> )
128	Oak, White ( <i>Quercus alba</i> )
129	Pecan ( <i>Carya illinoensis</i> )
130	Pine, Eastern White ( <i>Pinus strobus</i> )
131	Pine, Loblolly ( <i>Pinus taeda</i> )
132	Pine, Lodgepole ( <i>Pinus contorta</i> )
133	Pine, Longleaf ( <i>Pinus palustris</i> )
134	Pine, Ponderosa ( <i>Pinus ponderosa</i> )
135	Pine, Red ( <i>Pinus resinosa</i> )
136	Pine, Shortleaf ( <i>Pinus echinata</i> )
137	Poplar, Yellow ( <i>Liriodendron tulipifera</i> )
138	Red Cedar, Eastern ( <i>Juniperus virginiana</i> )
139	Red Cedar, Western ( <i>Thuja plicata</i> )
140	Sassafras ( <i>Sassafras albidum</i> )
141	Spruce, Red ( <i>Picea rubens</i> )
142	Spruce, Sitka ( <i>Picea sitchensis</i> )

143	Spruce, White ( <i>Picea glauca</i> )
144	Sweetgum ( <i>Liquidambar styraciflua</i> )
145	Sycamore ( <i>Platanus</i> sp.)
146	Walnut, Black ( <i>Juglans nigra</i> )
147	Willow, Black ( <i>Salix nigra</i> )

Pest & Damage Identification	
201	Air Pollution
202	Aphid
203	Beetles
204	Butt or Heart Rot
205	Canker
206	Chemical Damage
207	Cicada
208	Climatic Injury: snow wind, frost, drought, hail
209	Damping Off
210	Douglas Fir Tussock Moth
211	Emerald Ash Borer
212	Fire Damage
213	Gypsy Moth
214	Hemlock Wool Adelgid
215	Landscape Equipment Damage
216	Lightning Damage
217	Mechanical Damage
218	Mistletoe
219	Nematode
220	Rust
221	Sawfly
222	Scale
223	Spruce Budworm
224	Sunscald
225	Tent Caterpillar
226	Wetwood or Slime Flux
227	Wildlife/Livestock Damage

Equipment Identification	
301	Altimeter

302	Back-pack Fire Pump
303	Bark Gauge
304	Bulldozer
305	Canthook
306	Chainsaw
307	Chainsaw Chaps
308	Clinometer
309	Data Recorder
310	Densimeter
311	Diameter Tape
312	Dot Grid
313	Drip Torch
314	Endloader
315	Feller Buncher
316	Fiberglass Measuring Tape
317	Fire Rake
318	Fire Weather Kit
319	Fire-Swatter
320	Flow/Current Meter
321	GPS Receiver
322	Hand Compass
323	Hand Lens/Field Microscope
324	Hip Chain
325	Hypo-Hatchet
326	Increment Borer
327	Log Rule
328	Logger's Tape
329	pH Meter
330	Planimeter
331	Plant Press
332	Plastic Flagging
333	Pulaski Forester Axe
334	Relaskop
335	Safety Glasses
336	Safety Hard Hat
337	Soil Sampler
338	Soil Test Kit
339	Staff Compass

340	Stereoscope
341	Survey Instrument
342	Tally Book
343	Tally Meter
344	Tree Caliper
345	Tree Harvester
346	Tree Marking Gun
347	Tree Planting Hoe or Bar
348	Tree Skidder
349	Tree Stick
350	Water Sampler
351	Water Test Kit
352	Wedge Prism
353	Wheeler Caliper