

## **Department D - Forestry (Pay Category 2)**

Enter exhibits in the Exhibition Hall on Wednesday from 4:00 p.m. – 7:00 p.m.

GENERAL INFORMATION: The official reference for all forestry projects is the Tree Identification Manual (4-H 332). Other helpful forestry references include Trees of Nebraska (EC92-1774-X), Leafing Out (4-H 431) and Plant a Tree (EC 17-11-80).

Display "boards" must be made from wood or wood composite, e.g. plywood, fiberboard, or masonite, 1/4" x 1/2" thick and no larger than 24" x 24". Display boards may be coated, e.g., painted or varnished, on both sides to prevent warping.

Display "posters" must be made from a material, e.g. foam board or poster board, that will stand upright without buckling, and be no more than 24" x 24".

Display "books" must measure no more than 16" x 16".

At least 5 of the 10 samples in Class D2, D3, D4, and D5, must be from the list of 60 species described in 4-H 322. Samples must be from 10 different tree species. For example, Emerald Queen Maple and Crimson King Maple are both varieties of the same species (Norway Maple), and thus have the same genus and species name, i.e. *Acer platanoides*. All samples must be from trees, NO shrubs. If more than 10 samples are included in the display, only the first 10 samples from the current year will be judged. Remember that other general labeling standards apply. For example, scientific names are always italicized or underlined. Also, the first letter of a Genus name is always capitalized. The first letter of a species name is always lower case. When required, always indicate complete scientific names (Genus and species) and common names (e.g. Norway maple) even when "variety names" are included. For example, the scientific name of Emerald Queen Maple is *Acer platanoides* and the common name is Norway Maple. "Emerald Queen" may be included as the variety name, but variety names are not required.

## **Department D - Division 320**

### **CLASS NUMBER:**

**D1. Design Your Own Exhibit.** Prepare an educational exhibit about some aspect of trees, forests, or forestry that is of special interest to you. Possible topics include paper recycling, wildfire, forest products, forest wildlife, or forest pests. The only requirement is that the display must be no larger than 24" x 24" x 24". Photographs, drawings, samples, charts, posters, etc. can be used, but include enough information to adequately explain the topic. Your display should be substantially different from other display classes. Be as creative as you like.

**D2. Leaf Display.** The leaf display must include samples of "complete leaves" from at least 10 different tree species. The display must include at least two samples each of simple leaves, compound leaves, and conifer leaves. Leaves should be pressed, dried, and mounted.

Collection: Whenever possible, collect leaves from mature trees. Collect leaves any time after they have reached full size, usually beginning in early summer. Leaf samples should be in good condition and representative of the average leaves on the tree. Keep in mind that shaded leaves are often much larger than normal. Carefully remove leaves from the twig with the entire petiole or rachis intact. After collection, fresh leaf samples can be temporarily stored within the pages of an old magazine, but they should be properly pressed and dried for display. Be sure to record pertinent information during collection.

Mounting: Leaves may be displayed in a notebook or on a display board. Any method may be used to mount leaves, e.g. wire, glue, tape, staples, plastic bags, but be sure all their features can be clearly identified.

Labeling: The label for each sample must include: 1) common name, 2) scientific name, 3) leaf

type, 4) leaf arrangement (for broadleaf trees), 5) leaf composition (for broadleaf trees) 6) exhibitor's name, 7) collection date, 8) collection location (be specific, state and county at a minimum).

If a twig is included with a sample, indicate "twig included" on the label. For example, the twig may be included with an eastern cedar sample because the leaves are very small and difficult to remove from the twig. Supplemental information, e.g. general uses, common products, fall color, etc., may be included to enhance educational value.

**D3. Twig Display.** The twig display must include twig samples from at least 10 different tree species. The display must include at least two samples of opposite and alternate leaf arrangements from broadleaf trees.

**Collection:** Twig samples should be collected during the dormant season (November-April) when the buds are mature. Twig samples must be at least 6" long and exhibit buds. Leaves must be removed and side branches must be trimmed to less than 1 inch in length.

**Mounting:** Twigs must be mounted on a display board. Any method, e.g. wire, glue, tape, staples, plastic bags, etc., may be used to mount twigs, but be sure all features can be clearly identified. The non-terminal end must be cut at a slant so the pitch can be seen.

**Labeling:** The label for each sample must include: 1) common name, 2) scientific name, 3) leaf arrangement (for broadleaf trees), 4) exhibitor's name, 5) collection date, 6) collection location (be specific, state and county at a minimum). Supplemental information, e.g. general uses, tree characteristics, etc., may be included with the display to enhance educational value.

**D4. Seed Display.** The seed display must include seed samples from at least 10 different tree species.

**Collection:** Tree seeds should be collected at the time of year when they mature, which varies widely depending upon tree species. For example, Silver maple seeds mature in May while red oak acorns do not mature until September. Seed samples should be free of insect or disease symptoms. Remember to display seeds, not fruit. For example, the seed of honeylocust is enclosed in a pod. Remove and display the seed, not just the pod. It is acceptable to display the fruit with the seed, but clearly label each.

**Mounting:** Seeds may be displayed in a variety of ways, e.g. mounted on a display board, displayed in jars in a rack, etc., but they must be securely mounted and easily viewed. Be as creative as you like.

**Labeling:** The labels for each sample must include: 1) common name, 2) scientific name, 3) type of fruit, if known (e.g. samara, pod, nut, legume, etc.), 4) exhibitor's name, 5) collection date, 6) collection location (be specific, state and county at a minimum). Supplemental information, e.g. maturity date, average number of seed in the fruit, etc., may be included to enhance educational value.

**D5. Wood Display.** The wood display must include wood samples of wood from at least 10 different tree species.

**Preparation:** Samples may be of any shape, e.g. sections from a board, wood cylinders turned on a lathe, horizontal or vertical cross sections of a small log with bark attached, etc., but all samples should be the same shape, e.g. all wood cylinders or all sections of a board. Each sample can be no larger than 4" x 4" x 4". Cut surfaces should be sanded to show the grain. Treating samples with a clear finish (no stain) is optional.

**Mounting:** Samples may be displayed in a variety of ways, e.g. mounted on a display board, displayed in a box or rack, etc., but they must be securely mounted and easily viewed. Be as creative as you like.

**Labeling:** The label for each sample must include: 1) common name, 2) scientific name, 3) wood type (softwood or hardwood), 4) exhibitor's name, 5) collection date, 6) collection location (be specific, state and county at a minimum). Supplemental information, e.g. common products, wood density, etc. may be included to enhance educational value.

**D6. Cross-Section of a Tree.** Display a disc cut from a tree species listed in 4H 332. The sample must be collected within one year of the county fair judging day. The disc must measure 6" to 12" in diameter and 1" to 3" thick. The bark should be firmly attached which may be difficult if the tree was dead when the disc was cut. Sand at least one side of the disc so the grain can be easily seen. If the disc is treated

with a clear finish, both sides must be treated to minimize warping. As the disc dries, some cracking or checking can be expected and is allowed.

**Labeling:** The following parts must be clearly and accurately labeled on the cross section with pins, paper tags, or some other form of identification: a) pith, b) heartwood c) sapwood, d) one growth ring (beginning and end), e) cambium, f) bark.

A separate label attached to the back of the disc must include: 1) common name, 2) scientific name, 3) tree classification (softwood or hardwood), 4) age (of the cross section), 5) exhibitor's name, 6) collection date 7) collection location (be specific, state and county at a minimum).

**D7. Parts of a Tree** (This project is only for ages 8-11). Prepare a poster, no larger than 24" x 24" that clearly identifies the main external parts of any tree: a) trunk, b) crown, c) roots, d) leaves, e) flowers, f) fruit, g) buds, and h) bark. Identifying other internal parts, e.g. phloem, xylem, cambium, annual ring, pith, etc., is optional. Attach a separate label on the back of the poster that includes the exhibitor's name and age.

**D8. Living Tree.** Display a living tree seedling grown by the exhibitor from seed in the display container. The seed must be from a species listed in 4H 332. The seedling must be 60 days to 1 year old (at time of County Fair). The display container must contain at least 8" of soil (potting mix or suitable natural soil), have drainage holes, and a drain pan to catch drainage water.

**Labeling:** A waterproof label must be attached and include: 1) common name, 2) scientific name, 3) seed treatments (if any), 4) planting date, 5) emergence date, and 6) exhibitor's name. Supplemental information about the tree, e.g where the seed was collected, growth measurements, uses for that species, etc. may be included in an attached notebook, poster, etc. to enhance educational value. Supplemental information will be an important factor in judging.

## **Department D - Conservation**

### **Department D - Division 321**

#### **Eco-Wonders, Eco-Adventures, & Eco-Actions**

##### **(Pay Category 4)**

##### **(900 Numbers do not go to STATE FAIR)**

##### **CLASS NUMBER:**

##### **Eco-Wonders - Level 1**

**D901. Build Your Own Ecosystem.** Follow directions and diagram on page 11 of Level 1 Manual.

**D902. Food Web.** Make a poster illustrating a food web for the ecosystem found in your backyard. See pages 14 and 15 of Level 1 manual. Follow guidelines for posters listed on page 11 of this fairbook.

**D903. Weather Instrument or Weather Log.** Make a rain gauge or pinwheel to determine direction of the wind. Follow directions for these on pages 19 and 20 of Level 1 Manual.

##### **Eco-Adventures - Level 2**

**D904. Identify Flower Parts.** Make a poster illustrating all of the parts of a flower. See pages 17-19 of Level 2 manual. Follow guidelines for posters listed on page 11 of this fairbook.

**D905. Groundwater Model.** Using diagram on page 27 of Level 2 Manual, construct a groundwater model of your area using colored clay or play dough. Include key to describe colors. Use poster board for the base no larger than 12" x 12".

**D906. Soil Profile Poster.** Dig a hole approximately 1 foot deep. Illustrate different soil types using crayons or colored pencils. Use page 15 in Level 2 Manual for reference.

### Eco-Actions - Level 3

**D907. Global Positioning System Chart.** Using a GPS choose 5 landmarks and chart locations. For Example: your house, make sure to include street address along with GPS Description.

**D908. Biotechnology.** Inventory items found in your refrigerator. Explain how biotechnology is used to create these products and its benefits in an essay no longer than 2 pages typewritten.

### AGRONOMY

GENE HOBBIE, Dunbar, Superintendent

CHERYL HOBBIE, Dunbar, Asst. Superintendent

Enter these exhibits in the Exhibition Hall on Wednesday from 4:00 p.m. - 7:00 p.m.

Department D - Range Management

General Information:

(Pay Category 2)

A. Individuals in Reading the Range Unit 1 project may exhibit in Classes D1-D5 and D8.

B. Individuals in the Using Nebraska Range Unit 2 project may exhibit in Classes D1-D8.

C. Each exhibit must be properly identified with Unit and Class. All plant displays and display covers must be the result of the current year's work.

D. Plant identification and lists of appropriate plants in each category (grasses, forbs, shrubs, and grass-like plants) can be found in the Range Judging Handbook and Contest Guide (EC150, Revised July 2009), Common Grasses of Nebraska (EC170), and Common Forbs and Shrubs of Nebraska (EC118).

#### Department D - Division 330 - Books:

A. For books, plants must be mounted on sheets that are or 14" x 14". Plants should be glued rather than taped and the mounts should be protected with a clear cover. Proper plant mount should include root as well as stem and leaf tissue.

B. Exhibits will be judged based on completeness of plant mount, accuracy of identification, labeling, neatness and conformation to project requirements.

C. Each completed mount must have the following information (see example below) in the lower right corner of the mounting sheet: 1. Scientific name (in italic or underlined), with authority, 2. Common name, 3. County of collection, 4. Collection date, 5. Collector's name, 6. Personal collection number, indicating the order that plants were collected in your personal collection, 7. Other information, depending on class selected, i.e., value and importance, life span, growth season, origin, major types of range plants. This information should be typed or printed neatly.

EXAMPLE:

Scientific name: *Schizachyrium scoparium* (Michx.) Nash

Common name: Little bluestem

County of collection: Otoe County

Collection date: 6 July 2017

Collector's name: John Doe

Personal collection number: 37

Value and Importance: Livestock Forage: High, Wildlife Habitat: High, Wildlife Food: Medium OR Life

Span: Perennial OR Season of Growth: Warm Season OR Origin: Native

#### CLASS NUMBER:

**D1. Value and Importance for Livestock Forage and Wildlife Habitat and Food Book** -A collection of 12 different plant mounts, with 4 classified as high value, 4 as medium value, and 4 as low value for livestock forage, wildlife habitat, or wildlife food. Value and importance classifications can be found in

the Range Judging Handbook and Contest Guide (EC150, Revised 7/2009) on pages 3-6. Plants can consist of any combination of grasses, grasslike plants, forbs, or shrubs. Assemble plant mounts in order of high, medium, and low value and importance. Label each plant mount with its value and importance classifications for each of the three areas; Livestock Forage, Wildlife Habitat, Wildlife Food.

**D2. Life Span Book.** A collection of 6 perennial plant mounts and 6 annual plant mounts selected from grasses and forbs.

**D3. Growth Season Book.** A collection of 6 cool-season grass mounts and 6 warm-season grass mounts.

**D4. Origin Book.** A collection of plant mounts of 6 native range grasses and 6 introduced grasses. Introduced grasses are not from North America and often used to seed pastures.

**D5. Major Types of Range Plants Book.** A collection of plant mounts of 3 grasses, 3 forbs, 3 grass-like, and 3 shrubs.

**D6. Range Plant Collection Book.** A collection of 12 range plant mounts with something in common (i.e. poisonous to cattle, or historically used as food by Native Americans, or dye plants, or favorite antelope forage, etc.). Include a short paragraph in the front of the book which describes what the plants have in common and why you have chosen to collect them.

#### **Department D – Division 330 – Displays**

The purpose of the display is to tell an educational story to those that view the display. The display is a visual representative (pictures, charts, graphs) no larger than 28" x 28" on plywood or poster board. The display should be neatly titled. Make sure to label display with exhibitor's name, address, and county on back side. Refer to Scoresheet SF259.

**D7. Parts of a Range Plant Poster.** Mount a range plant on a poster board. Label all the plant parts. Include the plant label in the lower right corner. Put your name and 4-H county on the back of the poster.

#### **Department D - Division 330 - Boards**

Boards should be no larger than 30" wide by 36" tall or if hinged in the middle a maximum of 60" wide by 36" tall. Boards should be adequately labeled.

**D8. Range Plant Board.** Will include 25 range forage species important to a particular county.

**D9. Special Study Board.** A display of the results of a clipping study, a degree of use study, range site study, etc.

**D10. Junior Rancher Board.** This exhibit should include a ranch map with record book or an appropriate educational display on some phase of rangeland or livestock management.

#### **Department G - Field Crops**

Individuals in the Crop Production Field Crops project may exhibit grain or plants or prepare an educational display representing their project.

#### **General Information (Pay Category 2)**

A. Individuals in the Crop Production, Field Crops project may exhibit grain or plants or prepare an educational display representing their project.

B. Important: A two page (maximum) essay must accompany grain and plant exhibits. The essay must include the exhibitor's name and address, county, plant hybrid or variety, plant population, whether crop production was irrigated or dryland, and general information including farm cropping history, soil type and weather effects. The essay also must include an economic analysis of the project, listing individual expenses and income, on a per acre basis. Other topics to discuss are the selection of variety or hybrid, impacts of tillage and conservation practices, inputs (fuel, fertilizer, irrigation, labor,

pesticides, etc.), any observations made during the growing season, and what you learned from your crops project.

C. The essay counts as 50% of the total when judged. Essay must be the original work of the individual exhibitor. Attach the essay to the entry in a clear plastic cover such that it can be read without removing it from the cover. In addition to the essay, grain and plant exhibits will be judged on condition, appearance (i.e. disease and insect damage, grain fill), uniformity (size, shape, color, maturity), and quality of exhibit.

D. Grain exhibits must be one gallon per sample. Grain exhibits harvested in the fall (e.g. corn or soybeans) may be from the previous year's project.

E. Plant exhibits with the exception of ears of corn, must be the result of the current year's project. Corn - 10 ears or 3 stalks (cut at ground level with no roots or soil and bound together); Grain Sorghum - 4 stalks (cut at ground level and bound together); Soybeans - 6 stalks (cut at ground level and bound together); Small grains (oats, barley, wheat, triticale) - sheaf of heads 2 inches in diameter at top tie with stems about 24" long. Other crops (alfalfa, millet, etc.) - sheaf of stems 3" in diameter at top tied with stems cut at ground level or half size small square bale.

### **Department G - Division 750**

#### **CLASS NUMBER:**

**G1. Corn** (includes yellow, white, pop, waxy, or any other type)

**G2. Soybeans**

**G3. Oats**

**G4. Wheat**

**G5. Any other crop** (includes grain sorghum, alfalfa, millets, barley, rye, triticale, amaranth, dry beans, sugar beet, mung bean, canola, forage sorghum, safflower, etc.)

### **Department G - Division 750 - Displays**

A. The purpose of the display is to tell an educational story to those that view the display. The display is a visual representation (pictures, charts, graphs) no larger than 28" by 28" on plywood or poster board. The display should be neatly titled. Make sure to label display with exhibitor's name, address, and county on back side. Explain pictures and graphs clearly and concisely. Consider creativity and neatness.

B. Each display must have a one page essay (minimum) explaining why the exhibitor chose the area of display and what they learned from their project. Include any references used. The essay should be in a clear plastic cover with the exhibitor's name outside.

**G6. Crop Production Display.** The purpose of this class is to allow original and creative exhibits that contain educational information about crop production aspects, such as crop scouting, alternative crops, etc.

**G7. Crop Technology Display.** Display information about aspects of technology used in crop production, such as genetic engineering, crop breeding, GPS, yield mapping, computers, etc.

**G8. Crop End Use Display.** Display information about the uses for a crop, such as food, feed, fuel, or other products.

**G9. Water or Soil Display.** Display information about water or soils, such as how soils are being used for crop production, range, conservation, wildlife, or wetland use, or ways to protect or conserve water and soil resources.

**G10. Career Interview Display.** The purpose of this class is to allow youth to investigate a career in agronomy. Youth should interview 1 person that works with crops about such topics as, what parts of their job do they enjoy or dislike, why did they choose that career, what was their education, etc. Include a picture of the person interviewed.

## **Weed Science**

Any individual in the Conservation, Environment 1, 2, or 3, Range, Reading the Range 1 or Using Nebraska Range 2, or Crop Production, Field Crops projects may exhibit weed book or weed display. The book cover and at least 15 of the specimens must represent this year's work. For assistance identifying plants, participants can use the Nebraska Department of Agriculture's Weeds of Nebraska and the Great Plains (1994) or Weeds of the Great Plains (2003)

### **Department G - Division 751 – Books**

A. Display one plant on the book cover (no label required on cover specimen). Plants must be mounted on sheets that are no larger than 14" x 14". Proper plant mount should include root as well as stem and leaf tissue. Plants should be glued rather than taped and the mounts should be protected with a clear cover.

B. Exhibits will be judged based on completeness of plant mount, accuracy of identification, label, neatness, and conformity to exhibit requirements. Refer to scoresheet SF261.

C. Each completed mount must have the following information (see example below) in the lower right corner of the mounting sheet: 1. Scientific name (in italic or underlined), with authority, 2. Common name, 3. County of collection, 4. Collection date, 5. Collector's name, 6. Personal collection number, indicating the order that plants were collected in your personal collection, 7. Other information depending on the class selected, i.e., noxious, life form. This information should be typed or printed neatly.

#### **EXAMPLE:**

Scientific name: *Abutilon theophrasti* Medik

Common name: Velvetleaf

County of collection: Otoe County

Collection date: 6 July 2017

Collector's name: John Doe

Personal collection number: 3

Life cycle: Annual

#### **CLASS NUMBER:**

**G1. Weed Identification Book.** A collection of a minimum of 15 plant mounts including at least two of the following prohibited noxious weeds (Canada thistle, musk thistle, plumeless thistle, salt cedar, leafy spurge, purple loosestrife, diffuse knapweed, spotted knapweed, Japanese knotweed, bohemian knotweed, giant knotweed, sericea lespedeza or phragmites), and at least five weeds that are a problem primarily in lawns.

**G2. Life Span Book.** A collection of 7 perennials, 1 biennial, and 7 annual weeds.

### **Department G - Division 751 - Displays**

A. The purpose of the display is to tell an educational story to those that view the display. The display is a visual representation (pictures, charts, graphs) no larger than 28" by 28" on plywood or poster board. The display should be neatly titled. Make sure to label display with exhibitor's name, address, and county on back side. Explain pictures and graphs clearly and concisely.

B. Each display must have a one page essay explaining why the exhibitor chose the area of display and what they learned from their project. Include any references used. The essay should be in a clear plastic cover with the exhibitor's name outside.

G3. Weed Display. The purpose of this class is to allow original and creative exhibits that contain

educational information about weeds, such as interesting information about a weed species, the effects of weed control, herbicide resistant weeds, what makes a weed a weed, or uses for weeds.