

**Identification  
And  
Exam  
Assistance  
Material**

## **PLANT IDENTIFICATION**

The identification of plant specimens is essential for an environmentally and economically friendly weed control program. A pest control program will be effective only if the farmer can identify seedling weeds and crops. Weed species often vary according to a producer's cultural practices and tillage system. Crop fields that are switched to no-till tend to have more large-seed weeds over time. Small-seeded weeds are more common in tilled fields. When identifying plants, some of the following distinguishing points may be helpful.

Stems & Leaves - A grass leaf consists of five distinct structures: sheath, collar, auricles, ligule, and blade. The sheath is a tube-like structure connecting the leaf to the stem at a node. The leaf blade is narrow and ribbon-like, connected to the sheath at the collar. On some grasses, a membranous extension of the sheath, called the ligule, is present. Claw like outgrowths of the collar, called auricles are helpful in identifying other species.

While all grasses have simple leaves, most legumes have compound leaves (each leaf is composed of two or more leaflets). In addition to a leaflet, a petiole and stipules (small bracts at the base of the petiole) are parts of a legume leaf. Leaf margins may be serrated, as in sweetclover, spined as in Canada thistle, smooth as in alsike clover, or hairy as in red clover. Some plants are identified by observing the plant's stem. White clover has stolons and stems extend laterally whereas alsike clover has none and grows upright with its stem. Some plants have hollow stems while others have solid stems. Weeds found in no-till systems are more likely to have stems which are woody.

Broadleaf Flowers - The inflorescence (flowering portion of a plant) is often the most distinctive characteristic of a plant. The flower of a broadleaved plant, such as a legume, generally has sepals and petals. The number and shape are usually similar, but size and color will vary among species. All legumes have 5 flower petals. The arrangement of flowers within an inflorescence is also helpful; for example, alfalfa and sweetclover have raceme inflorescence, and red clover and alsike clover have head type inflorescence.

Grass Flowers - The grass flower (which is replaced by the kernel at maturity) is enclosed within the lemma and palea. This entire structure is called a floret. One or more florets are usually grouped together between a pair of glumes, thus forming a spikelet. The arrangement of the spikelets on the rachis (central axis of the inflorescence) varies among species. The spikelets are attached directly to the rachis of a wheat spike, but are borne on branches of a panicle of oat. In addition, an awn may arise from the lemma of certain grasses. Other important considerations include the number of florets per spikelet, the number of spikelets per rachis node, the mode of attachment of the rachis, and the size of the lemma, palea, glumes, and awn.

Roots - Grasses generally have a fibrous root system while broadleaf plants generally have a tap root or branching tap root system. Some perennial grasses like quackgrass and johnsongrass have modified underground stems called rhizomes that look like roots. Some perennials like Canada thistle and Field bindweed have creeping, lateral root systems. One can distinguish roots from stems by looking for nodes. All stems have nodes which are the origin of a leaf.

## **SEED IDENTIFICATION**

Knowledge of buying good seed and producing good seed is essential to produce top profits. Seed producers must know the quality of their seed in order to market it, to price it correctly, and to meet the requirements of the Indiana Seed Law. When identifying seed, some of the following distinguishing points may be helpful:

Size and Shape - The size of the seed is important in distinguishing such seeds as oat and rye. The shape is important when distinguishing seed of hard red winter wheat from soft red winter wheat and seed of alfalfa from sweetclover.

Color - Color cannot be used to distinguish between seeds of alfalfa and sweetclover, but it is very useful for distinguishing the seed of Alsike clover from White clover.

Seed Surface Texture - Some seeds like triticale and jimsonweed are very rough. Other seeds like redroot pigweed and johnsongrass are very smooth.

Special Structures and Coverings - Some grass seeds like oat, tall fescue, and ryegrass retain their lemmas and paleas after threshing. Some grass seeds like wheat, rye, and sometimes timothy thresh free. Some grass seeds like tall fescue and ryegrass have a stem-like structure at the base of the seed on the grooved side. This structure is called the rachilla and the size and shape of the rachilla is useful in distinguishing between certain grasses. For example, johnsongrass seeds have knobbed rachilla while sudangrass seed have two rachilla with broken, irregular tips.

Grass plants that have only one floret per spikelet, such as reed canarygrass, do not have a rachilla. Some seeds such as cheat and downy brome retain their beard or awn after threshing. Seeds like Korean lespedeza are frequently enclosed within an outer covering or hull. Legume seeds during development are attached to the pod at the hilum. This point of attachment is frequently useful in identification, especially in soybean. A cultivar may be described by its hilum color.

## **GRAIN STATISTICS AND INFORMATION**

- The 2021 agricultural statistic estimates indicate that Indiana farmers harvested approximately 5,380,000 acres of corn, 5,640,000 acres of soybeans, and 270,000 acres of wheat.
- 75% of this grain enters the market and is sold as a cash crop. The remaining 25%, which is mostly corn, is utilized as a feed grain.
- Grading standards have been established for corn, soybeans, wheat, barley, canola, oats, rye, sorghum, flax, other wheat classes, triticale, sunflower, and mixed grains.

Regardless of the manner of handling, many sales and purchases are conducted which require knowledge of the market grades by both the buyer and the seller. For instance, most of the marketed corn changes hands on the basis of U.S. No. 2 Yellow Corn. Market reports, either by television, radio, or newspaper, are usually in terms of the "U.S. No. 2 Yellow Corn."

Soybeans, however, are usually reported in terms of "U.S. No. 1 Yellow Soybeans."

With widespread use of price quotations, it is essential that agriculture students be familiar with the quality factors which serve as a basis for the federal grain grading standards. These factors are also used in the preparation of discount schedules which are widely used in determining the prices which are paid to farmers

Once the farmer becomes aware of the quality factors which determine the grade of grain, the value of the grain from the farm may be calculated from market quotations. This will aid one in deciding whether further handling as needed to secure a higher grade would be profitable to him/her.

This event will be concerned with the grading of corn, soybeans, and wheat. Grading standards have also been established for barley, canola, oats, rye, sorghum, flax, other wheat classes, triticale, sunflower, and mixed grains.

## **INFORMATION ON INDIANA GRAIN**

[http://www.nass.usda.gov/Quick\\_Stats/Ag\\_Overview/stateOverview.php?state=INDIANA](http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=INDIANA)