KNOW YOUR WEEDS
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Correct identification of weeds is an important key to effective weed control. The first step in understanding any problem is to correctly identify it. It is said identification is halfway to control. Identifying seedling stages of weeds is important because they are most susceptible to chemical or mechanical control at this stage. It is equally important to identify the weeds in their adult stage so that we can understand why they should not be allowed to produce seed. One mature lambsquarters plant may produce 72,000 seeds.

Why is weed identification important?

The major reasons for importance of correct weed identification are:

- No single herbicide or weeding technique controls all weeds. Effectively controlling weeds usually requires a combination of options. A common reason for herbicide failure is applying materials that do not control the weeds present in your field or orchard.
- The skill in choosing the right herbicide is in knowing what weeds you have in your field, their biological characteristics, and using herbicides designed to control them.
- All weeds do not cause equal damage to crops. Some species cause more losses to crops than others. Almost a third of the world’s worst weeds belong to the Gramineae (grass), Compositae (sunflower), or Cyperaceae (sedge) family.
- Weeds that emerge with or before the crop can cause more damage than those that emerge after the crop. Perennial weeds like field bindweed can cause economic losses even after the crop is well established.
- Different weed species, and even variants within a single weed species, respond to management tactics very differently.
- Different weed species may have different modes of reproduction. For example, annual weeds produce seeds within a year that may emerge the following season. Perennial weeds that reproduce vegetatively will grow from pieces of roots or stems.

What are the important things to know about weed identification?

- Are they terrestrial or aquatic?
- Are they annual, biennial or perennial?
  - Annuals reproduce from seeds and complete their life cycle in one season. It is important to control them before they set seeds or if they have already set seed try to minimize seed scatter.
    - Are they summer or winter annuals?
      - Summer annuals germinate in spring and summer, produce flower and fruit in mid- to late summer and die in the fall. Examples include velvetleaf, foxtail, and cocklebur.
      - Winter annuals germinate in the fall and winter, flower and fruit in mid- to late spring and die in the spring and summer. Examples include filaree, shepherd’s purse, and wild mustard.
  - Biennials live for two growing seasons. Seeds germinate and overwinter as a basal rosette with a thick storage root. The stems flower and produce seed in the
summer of the second season and die in the fall. Examples include wild carrot and burdock.

- Perennials live more than two years and may reproduce many times before dying. These weeds may be:
  - *Simple herbaceous*—reproduce only from seeds but if the plant is injured or cut, each piece usually regenerates into a new plant. Examples include dandelion, and plantain.
  - *Creeping herbaceous*—over-winter and produce new vegetative structures such as rhizomes, tubers, stolons, bulbs, corms, and roots. Examples include nutsedge, bermudagrass, and Johnsongrass.

- *Woody plants*—have woody stems. Examples include poison oak and stink tree.

  - Are they dicots or monocots?
    - *Dicot* seedlings produce two cotyledons or seed leaves. Leaves have netted venation. Examples include mustard, nightshade, and annual morningglory.
    - *Monocot* seedlings have only one cotyledon. Leaves have parallel venation. Monocots may be:
      - *Grasses*—presence or absence of a ligule or auricle. The leaf sheaths are split and wrapped around the stem. Examples include foxtail, barnyardgrass, and large crabgrass.
      - *Sedges*—leaves do not have ligules or auricles and the leaf sheath are continuous around the stem. The stems may be triangular in cross section. Examples include nutsedge and smallflower umbrella sedge.

![Netted venation (dicot leaf) Parallel venation (monocot leaf)]

**How to identify weeds**

Weeds can be divided into two main categories: *Broadleaves* and *grasses.*

- **Broadleaf weeds:** what to look for.
  - Cotyledons.
  - First true and subsequent leaves.
  - The shape of the cotyledon may be linear, oblong, oval, round, or butterfly-shaped.
**Linear**  **Oblong**  **Oval**  **Round**  **Butterfly**

- True leaves are attached to the stems in an alternate pattern or opposite of each other.

![Alternate Opposite](image)

- The shape of the leaf base: round, clasping, etc.
- The shape of the leaf apices or tips: round, acute etc.
- The texture of the leaves: waxy or hairy, thick or thin
- Color of leaves: light green, dark green, bluish, purplish, etc.

**Grasses**

- In order to identify grasses correctly, we need to know some terms on morphology:
  - **Culm**: A grass stem is called a culm. Like stems they also consist of nodes and internodes.
  - **Leaf blade**: The thin, usually flat part of leaf excluding the petiole.
  - **Leaf sheath**: lower section of a grass, enclosing its associated culm internode.
  - **Auricles**: short, often claw-like appendages at the base of the leaf blade which tend to clasp the sheath at the culm internode.
  - **Ligule**: a variously modified extension of the sheath lying at the base of the blade; often a vertical membrane, and in certain cases, mere bristles.

**How are these structures important in identification?**

- The shape of the leaf blade, presence or absence of hairs on the blades, the presence or absence of keel, and shape of leaf tips help in identification.
- The presence or absence of hairs on the sheath, and shape of the sheath can help in identification. For example, wild oat has a rounded sheath, large crabgrass has a flattened sheath, and jointed goatgrass has hairs on the sheath.
- The presence or absence of auricles at the base of the blade and features of the auricle can help in identification. For example, bermudagrass and foxtail have no auricles, perennial ryegrass has a small auricle, and the auricle of jointed goatgrass is short, rounded with hairs on the margin.
- The presence or absence of ligules and the features of the ligule can help in identification. For example, ligules are absent in baryardgrass, membranous in annual bluegrass, and hairy in foxtails.

**Some examples of the importance of these structures in identification:**

- Barnyardgrass
- Green foxtail
- Yellow foxtail
- Large crabgrass
- Wild oat

Figure Source: http://www.extension.umn.edu/distribution/cropsystems/components/DC0776_01.html