

 UI Extension Forestry Information Series

The Basics of Weed Control

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It is never too early (or late) to begin thinking of weed control. Everyone has their own definition of a “weed”, but the one I like best is “a plant growing where some human does not want it growing”. Controlling unwanted vegetation is critical in reforestation and helpful in many other forestry efforts as well. In order to understand how herbicides can control weeds, it is best to understand some terms and definitions related to weeds and herbicides.

Classification of Plants. It is important to distinguish between grass and broadleaf plants because they differ in reaction to herbicides, desirability, and method of control. For weed control purposes, plants are divided into three main categories – grass, broadleaf, and woody.

- *Grass type plants* have one seed leaf. They generally have narrow, upright, parallel veined leaves and fibrous root systems.
- *Broadleaf plants* have two seed leaves. They generally have broad, net-veined leaves and tap roots, or coarse root systems.
- *Woody plants* include shrubs, brush, and trees. Brush and shrubs are regarded as woody plants that have several stems and are less than 10 feet tall. Trees usually have single stems and are over 10 feet tall.

Growth Habits of Plants. It is also important to know the growth habits of the vegetation you are trying to control.

- *Annuals* complete their life cycle from seed in less than one year. Some weeds are specifically winter or summer annuals. Other species are adapted and can germinate and grow either in the fall or spring. Knowing the growth habits of annuals is important

in planning how and when to control them.

- *Winter annuals* germinate in the fall, overwinter, mature, set seed, and die in the spring or early summer. For best results, control winter annuals in the seedling stage of growth in fall or early spring.
- *Summer annuals* germinate in the spring, make growth, set seed, and die before fall. For best results, summer annuals should be controlled soon after germination in the seedling stage of growth.
- *Biennials* complete their life cycle within two years. The first year the plant forms basal leaves (rosette) and a tap root; the second year it flowers, matures, and dies. For best results, control biennial weeds in their first year of growth.
- *Perennials* live more than two years and may live almost indefinitely. They reproduce by seed and many are able to spread and reproduce vegetatively. Perennials are difficult to control due to their persistent root system. Consequently, try to avoid letting seedling perennials to the yearly growth cycle of the specific species. Control during the period when growth is fastest, which is prior to flowering or during the regrowth period after fruiting or cutting.
- *Simple perennials* spread by seed, crown buds, and cut root segments. Most have large and fleshy tap roots.
- *Creeping perennials* spread vegetatively as well as by seed. Grass plants generally have a shallow root system compared to the deep root system of broadleaf plants.
- *Brush, shrubs, and trees* may spread vegetatively as well as by seed. Woody plants can be controlled at any time of year using a variety of herbicide methods.

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Plant Susceptibility. Plant susceptibility, or sensitivity to herbicides, depends on a number of factors: time of year; stage of plant growth; type of application and spray carrier; soil moisture before, during, and after application; precipitation; and temperatures of soil and air before, at, and immediately after the application. The addition of a surfactant (or adjuvant) will enhance performance and sometimes is essential for control of some species. A surfactant enhances the coverage of a sprayed herbicide (pesticide) by reducing the surface tension of the spray droplets and allowing greater pesticide contact, enhancing the toxicity of the material.

Classification of Herbicides. Herbicides are classified based upon how they are used for weed control and how they work.

Classification by Use -

- *Selective herbicide* (e.g. 2, 4-D) implies that certain weeds are killed but most desirable plants are not significantly injured.
- *Nonselective* (e.g. Roundup) refers to chemicals that are generally toxic to plants without regard to species.

Remember, plants differ in susceptibility to any specific chemical, and the choice of herbicide and application rate depends on the species to be controlled. Compounds that can be used selectively in some situations may be used non-selectively by increasing the rate of application.

Classification by Mode of Activity - There are generally three classes of herbicides based on mode of activity: contact, translocated, and soil applied (all may be selective or nonselective).

- *Contact herbicides – foliage applied* – control weeds by direct contact with plant parts. They are referred to as chemical “mowers”, as only the plant part contacted is controlled. Good coverage is necessary.
- *Translocated herbicides – foliage applied* – products move through the entire plant system in both the water stream and the food stream. They accumulate in, and affect, the active growth centers. In general, these compounds are selective,

some are also effective in the soil and can be taken into the plant through the roots. However, they are most effective when applied to the plant foliage.

- *Root or emerging shoot absorbed herbicides – soil applied* – are referred to as residual herbicides. The length of time the soil remains relatively weed-free depends upon the chemical used, amount applied, rainfall, soil type, and the plant species invading the treated area.

Soil residual herbicides generally have little effect upon plants when sprayed on foliage. The main effect is when they are absorbed by the root system and translocated throughout the plant.

Timing and Rates of Herbicide Treatments. The timing of herbicide treatments is very important and depends on the herbicide used and its persistence, characteristics of target species, cultural practices, weather, and soil conditions. Three categories of timing are recognized: preplanting, preemergence, and postemergence. The herbicide rate is determined by label direction and use experience (when using less than the label recommended rate or when label rate recommendation varies according to site conditions). Always read and follow the direction on the label.

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