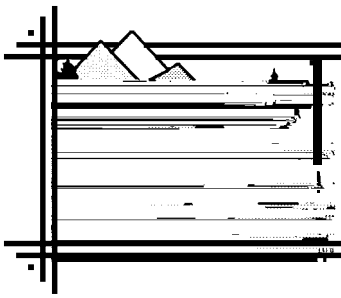

Cooperative Extension System

Forest Herbicides and Their Mode of Action

Randy Brooks

Herbicides are currently one of the most widely used

cide with residual soil activity. It's action is to inhibit enzymes used in synthesis of some amino acids. Imazapyr is readily absorbed through foliage or roots. It is used to control most annual and perennial grasses, broadleaf weeds, and woody species. It can be applied pre- or postemergence for long-term total vegetation control on non-crop lands.

- *Clopyralid* (Stinger, Transline) – This is a highly translocated, selective herbicide. Control is achieved by causing the plant to overexpend energy by producing excess hormones. These chemicals are absorbed through a plant's foliage. It is used postemergence on broadleaf herbaceous weeds, mostly on *Asteraceae, Fabaceae*, and *Polygonacae* families, and does not harm conifers. It provides excellent control of Canada thistle, but does not control grasses or sedges.
- *Metsulfuron* (Escort, Ally) – This is a selective, postemergence herbicide used at low rates to control broadleaf weed and brush in non-cropland areas. It works within a plant by interfering with an enzyme which results in rapid cessation of cell division in both roots and shoots. Escort is used for selective broadleaf weed and brush control in pastures, rangeland, and noncropland. It can be used for site preparation or conifer release.
- *Triclopyr* (Garlon 3a) – This is a systemic, growth-regulating herbicide used to control woody and broadleaf perennial weeds in noncropland, forestland, range, permanent grass pasture, and right-of-ways. It also mimics natural plant hormones.
- *2,4-D* – Probably the most commonly used of all herbicides, 2,4-D is a selective herbicide used to control annual and perennial broadleaf weeds. It mimics natural plant hormones. It is absorbed through the foliage and translocated within the plant. Applications are made postemergence. Plants are most susceptible to 2,4-D when they are young and rapidly growing. Actively growing conifers are very susceptible to 2,4-D.
- *Picloram* (Tordon) – Picloram is a restricted use herbicide. It is a highly translocated, selective herbicide for broadleaf weeds and woody plants. It is active through foliage and roots and has a long persisitence in the soil, requiring precautions to avoid damage to desirable plants.
- *Glyphosate* (Rodeo, Accord, Roundup) – Glyphosate is another one of the more common herbicides. It acts in a plant by inhibiting amino acid production and protein synthesis. It is nonselective and used to control grasses, broadleaf, and woody plants. It is absorbed through the foliage and translocates to the roots, but has no apparent soil activity. Because of this, it is applied postemergence only and requires substantial foliage contact for full effectiveness. Rodeo and Accord may require the addition of a surfactant.
- *Atrazine* (Aatrex) – Atrazine is another restricted use herbicide that inhibits photosynthesis in the targeted species. It is a selective herbicide in agriculture, but is used nonselectively in non-crop areas. It is primarily root absorbed, although some foliar absorption does take place. Due to it's long residual activity in the soil it provides season-long control for weeds, but precautions must be taken to avoid damage to desirable plants.
- *Simazine* (Princep) – Simazine is also a restricted use herbicide that inhibits photosynthesis in the targeted species. Similar to Atrazine, it is used selectively in agriculture. It provides complete vegetation control (broadleaf and grasses) in non-crop areas when used at higher rates. It has long soil residual activity (>1 year), but requires lots of moisture in the soil to activate it.
- *Sulfometuron* (Oust) – Sulfometuron is a broad spectrum herbicide. It acts in the plant to interfere with an enzyme resulting in rapid cessation of cell division. It controls grasses and broadleaf weeds through foliar contact or root uptake, and can be applied pre- or postemergence. It kills plants at low rates. Oust can be applied over the tops of conifers if they are not lacking in vigor (stressed).

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- *Pathway* (Picloram+2,4-D) – Pathway is sold as a combination of Picloram plus 2,4-D and has a forestry label. It can be applied on cut surfaces (stumps) or injected under the bark of woody species where it is translocated to the roots.

Timing and rates of herbicides applications are very important. Timing depends on the herbicide being used and its persistence, along with other characteristics discussed in the last issue. Remember, always read and follow the directions on the label, and check to make sure the chemical you are buying is registered for your intended use and that you or other applicators are licensed where required.

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