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Timing of Selective Herbicide Applications

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Timing of herbicide applications can influence both the effectiveness and selectivity of the treatment. Herbicides can be grouped by times of application as preplant, preemergence, or postemergence treatments. Some of the herbicides fit into more than one of these groupings, but each herbicide is listed for the most common time of application in Oregon crops.

Preplant

Herbicides in this group are volatile compounds and require incorporation into the soil to prevent excessive losses. These herbicides are applied before planting (pre-plant) in most cases. In some instances, they can be applied after planting but before crop emergence. This is often the case with deep-planted crops such as potatoes. The herbicides listed below are volatile and require incorporation for effective weed control.

- | | |
|--------------------|-----------------------|
| benefin (Balan) | nitralin (Planavin) |
| butylate (Sutan) | pebulate (Tillam) |
| cycloate (Ro-Neet) | trillate (Avadex BW) |
| diallate (Avadex) | trifluralin (Treflan) |
| EPTC (Eptam) | vernolate (Vernam) |

Incorporation is best accomplished with a rotary tiller or by cross-discing. Immediate incorporation will give more consistent weed control, especially when the soil is warm and moist. Less herbicide is lost from a dry soil because more of it is adsorbed or tied up. These herbicides primarily are taken up by the emerging shoots, with a limited amount of root uptake also. The optimum depth of incorporation varies with the herbicides; therefore, follow label directions closely.

Preemergence

These herbicides are applied before the weeds emerge and require movement into the soil, by precipitation or sprinkle irrigation, to be effective. Very little herbicide can be taken up (absorbed) by roots of emerging shoots from dry soil. For effective uptake, soil moisture must be present in the uptake zone because these herbicides are absorbed from the soil solution. This partially explains the need for adequate surface moisture after herbicide application.

Flow irrigation does not provide good activation of preemergence herbicides. On soils having higher amounts of clay and organic matter, higher application rates are required because more of these herbicides are inactivated. The following herbicides are primarily soil-active and applied preemergence.

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|-----------------------------|------------------------|
| alachlor (Lasso) | metobromuron (Patoran) |
| atrazine (AATrex) | monuron (Telvar) |
| bensulide (Betasan, Prefar) | naptalam (Alanap) |
| SD 15418 (Bladex) | nitrofen (TOK) |
| bromacil (Hyvar X) | nitro (Arban) |
| CDA (Randex) | prometryne (Caparol) |
| CDEC (Vegadex) | propachlor (Ramrod) |
| chloramben (Amiben) | propazine (Milogard) |
| chlorbromuron (Maloran) | propham (Chem-Hoe) |
| chlorpropham (Chloro IPT) | pyrazon (Pyramin) |
| DCPA (Dacthal) | sesone (Sesone) |
| dichlobenil (Casoron) | simazine (Princep) |
| diphenamid (Lynnal, Gnide) | terbacil (Sinbar) |
| diuron (Karmex) | terbutryn (Ignite) |
| linuron (Lorox) | |

Many of these herbicides are formulated as wettable powders and require good mechanical agitation in the tank to insure uniform application over the field. In some cases, these herbicides can be applied after the weeds have emerged but before they are very large. Preemergence applications of these herbicides generally give more reliable weed control if they are followed by precipitation or sprinkler irrigation within 10 days.

Postemergence

Herbicides in this group are taken up through the foliage primarily and, therefore, are applied after the weeds emerge. These herbicides can be subdivided into contact and translocated materials. The contact materials depend on differential uptake, directed spraying, or location of growing points for their selectivity. Translocated or systemic herbicides depend on differential uptake or physiological and biochemical differences for selectivity. The following lists of herbicides separate the contact and systemic materials:

Contact

- | | |
|---|--------------------------|
| barban (Carbyne) | dinoseb—phenol (General) |
| bromoxynil (Buctril, Brominal) | diquat (Diquat) |
| chloroxuron (Tenoran) | endothall |
| dinoseb—salts (Dow Premerge, Sinox PE., Dow Selective, Sinox W) | paraquat (Paraquat) |
| | phenmedipham (Betanal) |

Translocated

- | | |
|------------------|--------------------------|
| 2,4-D | mecoprop (2-(MCP)) |
| dalapon (Dowpon) | picloram (Tordon) |
| 2,4-DB | silvex (2,4,5-TP, Kuron) |
| dicamba (Banvel) | 2,4,5-T |
| MCPA | TCA (sodium TCA) |
| MCPB | |

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Timing of translocated herbicide applications varies with the growth cycle of the weed. Annual weeds are sprayed while they are small and before they form flowers for most effective control. Perennials, on the other hand, are most effectively controlled when herbicide application is made at the bud stage. This is due to the direction of sugar movement in perennial weeds at this time. At the bud stage, sugars begin movement to the roots and will transport the herbicide with them. Repeated applications, combined with good crop man-

agement, are necessary for control of most perennial weeds.

Another important aspect of good weed control is that of uniform spray application. To avoid spray skips and overlaps, the spray equipment must be functioning properly and care must be used in making the application. Spray skips will result in a potential weed seed source in unsprayed areas for reinfesting the field. Spray overlaps may cause a loss in selectivity where higher rates are applied and result in crop injury or death.

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