

TOLERANCE OF SOME LESS COMMON WEEDS OF WASTE AREAS TO RESIDUAL TYPE WEEDKILLERS

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Summary

The unsuspected presence of one or more tolerant weed species on an area treated for total weed control often causes disappointing results.

Before the merits of alternative chemicals available for a particular total weed control project can be decided, it is essential that the area be diligently searched for the visible presence of known tolerant weed species. Local knowledge is the best guide for estimating the potential of tolerant species which have a limited seasonal growth period, such as many annuals.

The restricted range of weed species found on any test plot is always a limitation when relative performance of total weedkillers is under assessment. Extensive railway track trials carried out in some widely scattered districts have presented opportunity to observe responses of many species of weeds to treatment. Some of the data secured are presented, tentatively, for what use they may be to those working in this field.

MATERIALS APPLIED AND RATES OF APPLICATION

MONURON RESULTS are omitted from the tabulation because this material has proved less efficient on cost than diuron in the trials, which were all located in areas where annual precipitation exceeds 20 to 25 in. rainfall. Simazine and diuron were applied at 8 lb (all rates in lb active ingredient per acre) together with an additive in the form of sodium dichloropropionate 10 lb and amitrole 2 lb per acre. Isocil was applied at 5½ lb without additive. The materials were applied in water at the rate of 30 gal/ac with the addition of wetting agent.

The relatively low rates of application were dictated by the need for economy, as well as the fact that residual chemicals exert more toxicity and persistence under stone-ballasted track conditions of low fertility and organic matter content and reduced water-holding capacity than they do under more fertile conditions. All applications were made in late spring because in other trials when application of residuals was made in autumn, winter or early spring, heavy seasonal rainfall depressed toxicity and persistence with the result that there was little effective control of some species of rapidly maturing summer weeds.

KEY TO CLASSIFICATIONS USED IN TABULATION

The classifications shown in Table 1 are mostly tentative and should not be interpreted rigidly for comparative purposes. They should be of value in indicating weeds which should be looked for carefully so that provision may be made for improved control either by increased application rates, by use of alternative additives or by subsequent selective spot application with specifics.

The following categories relate to effect of initial treatment on plants then present:

S—Mostly killed by initial treatment, good control.
 I—Many killed; control inadequate because of recovery, requires increased rate of treatment.

R—Few if any killed; requires alternative treatment.

Hyphenated symbols indicate possible inter-grades.

The following categories relate to tolerance of seedling growth volunteering subsequent to initial treatment:

V—Survival of seedlings volunteering less than six months after initial treatment.

v—Seedlings not appearing until after six months or more.

Probably controllable by maintenance treatment.

o—Very few, if any, seedlings up to twelve months.

The symbol .. indicates that data are lacking.

TABLE 1: RESPONSE TO TREATMENTS

Weeds	Simazine with Additive	Diuron with Additive	Isocil alone
<i>Achillea millefolium</i> , P*	S-I	S	S
<i>Agropyron repens</i> , P	I	I	I
<i>Amaranthus deflexus</i> (?), P	R	R	R
<i>Artemesia absinthium</i> , P	..	S	..
<i>Aster subulatus</i> , A	S v	S v	I-R V
<i>Cardaria draba</i> , P	R	R	..
<i>Cassinia leptophylla</i> , W	V
<i>Centaurea nigra</i> , P	S-I	S-I	S-I o
<i>Convolvulus arvensis</i> , P	R	R	R
<i>Cynodon dactylon</i> , P	I-R	I	S-I
<i>Daucus carota</i> , B	S-I V	S-I v	S-I o
<i>Digitaria sanguinalis</i> , A	I V	S v	S o
<i>Echium</i> spp., B	..	S v	I v
<i>Erechtites</i> spp., A-B	S-I V	S-I V	S-I V
<i>Euphorbia nutans</i> , A-P	..	S-I v	..
<i>Festuca arundinacea</i> , P	S-I V	S v	S o
<i>Foeniculum vulgare</i> , B-P	I-R v	I-R v	I-R
<i>Galium</i> spp., A	I V	I V	S v
<i>Geranium robertianum</i> , A	.. V	.. o	.. o
<i>Glyceria maxima</i> , P	R	R	R
<i>Hypericum perforatum</i> , P	I	S-I	S
<i>Leptospermum scoparium</i> , W V	..
<i>Linum</i> spp., A, A-B	S-I V	S-I V	S v
<i>Lotus pedunculatus</i> , P	I V	S v	S o
<i>Lythrum hyssopifolia</i> , A-B	I-R v
<i>Medicago</i> spp., A	I V	S v	..
<i>Odontites viscosa</i> , A	S V	S o	..
<i>Paspalum distichum</i> , P	R	R	I
<i>Prunella vulgaris</i> , P	I-R V	I-R V	..
<i>Pteridium esculentum</i> , P	R	R	S
<i>Ranunculus</i> spp., A, P	R V	R V	R o
<i>Rumex acetosella</i> , P	I	S-I	S
<i>Senecio jacobaea</i> , A-B-C	R v	R V	R
<i>Ulex europaeus</i> , W	R v	R	S-I o
<i>Verbascum</i> spp., B	I-R v	I-R v	I-R
<i>Veronica</i> spp., A	.. v	.. V	.. v
<i>Vittadinia scabra</i> , P	..	S	S
<i>Wahlenbergia gracilis</i> , P	R	R	..

* Letters following names indicate growth habit, thus:

A—annual; B—biennial; P—perennial; W—woody plant.

Hyphenated letters indicate observed variations in growth habit from that given in botanical literature.