

Hoe 23408 - A new post-emergent grass herbicide

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SUMMARY

Hoe 23408 is a new post-emergent grass herbicide, selective in wheat, barley and most broadleaved crops. It is particularly effective for the control of wild oats (*Avena* sp.), annual ryegrass (*Lolium* sp.), barnyard grass (*Echinochloa crus-galli*) and certain other grasses, at rates between 375 and 938 g a.i./ha when applied at the two to four leaf stage of the weed. There are indications that the addition of a wetting agent improves the results. At this stage it appears to be compatible with certain herbicides such as linuron and bromoxynil used for killing broadleaf weeds.

There is considerable scope for its use not only with conventional cultivation systems, but also in minimum cultivation techniques.

INTRODUCTION

Hoe 23408 is a post-emergent grass herbicide developed by Hoechst AG. The active ingredient is 2-(4-(2', 4' - dichloro-phenoxy) - phenoxy) - methyl propionate and the common name diclofop-methyl has been proposed. The formulation currently available in Australia is an emulsifiable concentrate containing 375 g a.i./ℓ.

Hoe 23408 has shown activity against a number of grass species primarily as a post-emergent application, but there are indications that it also has a degree of pre-emergence effect. This paper summarizes some of the available data on the product based on the work conducted in Australia by Hoechst Australia Limited and on some data received from Hoechst AG.

METHODS

More than 70 field trials have been conducted in Australia since 1974 by staff of Hoechst Australia Limited. These field trials usually took the form of a simple randomized block design, using four replications. The aim of these trials was basically to determine effective rates of product under different conditions and against different weeds. Results were measured by taking yield data where possible and by weed counts and/or using a rating scheme.

RESULTS

1. Effect on weeds

The species in Table 1 have been well controlled at rates as indicated. The degree of control has been in excess of 85% compared to an unsprayed control.

Table 1. Weed species controlled with Hoe 23408

Annual ryegrass	(<i>Lolium</i> spp.)	375 g a.i./ha			
Wild oats	(<i>Avena fatua</i>)	560 to 938	"	"	"
" "	(<i>A. ludoviciana</i>)	560 to 938	"	"	"
Barnyard grass	(<i>Echinochloa crus-galli</i>)	750	"	"	"
Crowsfoot grass	(<i>Eleusine indica</i>)	750 to 938	"	"	"

With canary grass (*Phalaris minor* and *P. canariensis*) control is variable, and further work is in progress, particularly at very early growth stages.

Some degree of control is obtained against green summer grass (*Brachiaria miliformis*) and liverseed grass (*Urochloa panicoides*) at higher rates than those mentioned in Table 1.

2. Crop tolerance

All broadleaved crops exhibited a good tolerance. These included clovers, medics, lucerne, oilseeds, tobacco, vegetables, tomatoes, cucumbers and onions. Wheat is also tolerant to rates up to three or four times the accepted application rate for weed control. Some varieties of barley appear to be less tolerant, particularly in the early stages of growth (one to two leaf), and further work is required to clarify this.

3. Effect of wetting agent

The addition of wetting agent appears to enable some reduction in active ingredient to be made, particularly against wild oats. The type of wetting agent does not seem to be critical and a rate of between 0.25 and 0.5% active ingredient in the spray solution appears optimum at this stage. It is suggested that wetting agent increases the rate of absorption of the active ingredient, and leads to a faster kill of the weeds. In some circumstances, this results in a slightly better yield increase than with no wetting agent, due probably to an earlier reduction in competition.

4. Compatibility

There is marked antagonism when Hoe 23408 is combined with 2,4-D and similar products, although the rate used does have some influence on this. The antagonism is one way only; the effect of Hoe 23408 is reduced. Current indications are, however, that it can be safely used as a tank mix with linuron, bromoxynil, bromoxynil + MCPA, methabenzthiazuron and methabenzthiazuron + 2,4-D when used at recommended rates in wheat.

It would seem that the low rates of MCPA or 2,4-D used in the above proprietary mixtures are not high enough to cause any noticeable antagonism.

5. Time of application

The effect on weeds is generally related to the stage of development. The optimum time appears to be the two to four leaf stage of the weed. Later stages, particularly with wild oats and barnyard grass, require increased rates of active ingredient to obtain a similar degree of control. With cereal crops, early application

(two to four leaf stage of weeds) also leads to greater yield responses than application at later stages.

DISCUSSION

Hoe 23408 appears to be a very reliable post-emergent herbicide for use in cereals and obviously has a place in conventional cultivation systems, as well as in systems using minimum cultivation techniques.

The use in conventional systems is obvious, but the potential usage in minimum cultivation systems is considerable. One of the limiting factors in this has been the problem of grass weeds germinating after the treatment of broadleaf weeds, and after sowing. Some work has been done in this field and is continuing.

There is also the possibility in cereal culture for the combination of certain broadleaf herbicides and Hoe 23408 in reduced cultivation techniques, where a relatively weed free seed bed can be quickly prepared, and this combination applied as an early post-emergent treatment. Both these systems can allow earlier sowing and greater use of available moisture.

There is also a considerable potential use in oilseed crops (especially lupins and linseed) as well as in vegetables. In the latter crops, this will not replace pre-emergent treatments, but will be a useful "back up" herbicide.

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