

HOE 33171 - A NEW SELECTIVE GRASS HERBICIDE FOR USE IN BROADLEAF CROPS

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Summary. HOE 33171, proposed common name fenoxaprop-ethyl, is a new, post-emergent herbicide for the selective control of annual and perennial grass weeds in broadleaf crops, discovered by Hoechst AG.

In Australian trials, HOE 33171 gave excellent control of Johnson grass (*Sorghum halepense*) in soybeans. Single applications of 0.09 to 0.3kg ha⁻¹ controlled seedling Johnson grass, whereas split applications of 0.12 to 0.3kg ha⁻¹ were required for control of seedlings and plants derived from rhizomes.

HOE 33171 has also shown activity against other commonly occurring summer grasses such as barnyard grass (*Echinochloa crus-galli*) and crabgrass (*Digitaria sanguinalis*) in soybeans, sunflowers and chickpeas.

INTRODUCTION

HOE 33171 (ethyl 2(4(6-chloro-2-benzoxazolyloxy)-phenoxy)-propanoate), proposed common name fenoxaprop-ethyl, is a new post-emergent herbicide for the selective control of annual and perennial grass weeds in broadleaf crops. It was discovered in the laboratories of Hoechst AG and is currently being tested in field trials in Australia.

The acute oral LD₅₀ of the active ingredient ranges from 2357mg/kg for male rats, up to 5490mg/kg for female mice. The acute dermal LD₅₀ is in excess of 2000mg/kg for female rats (Bieringer et. al., 1982).

HOE 33171 is primarily absorbed through the plant leaves and moves to the shoot meristem, where an accumulation of the active ingredient takes place. Good growing conditions generally favour the effectiveness of HOE 33171 of action is slowed down at low temperature and low humidity or moisture levels (Bieringer et. al., 1982).

Australian trials have shown a high degree of control of Johnson grass (*Sorghum halepense*) as well as a wide range of other commonly occurring summer grasses. Tolerance of broadleaf crops such as soybeans, sunflower and chickpeas has been excellent. This paper gives general information on HOE 33171 and reports results from 2 years testing, 1982 and 1983, in Queensland, on Johnson grass control in soybeans.

MATERIALS AND METHODS

Three field trials conducted in Queensland are summarized below. An ec formulation containing 120g active ingredient per litre was used. All trials were laid out using a randomized complete block design with three or four replicates. Plot sizes ranged from 2.5m by 10m to 2.7m by 15m. All treatments were applied using AZO propane gas powered sprayers with flat fan nozzles, in a water volume of 110 to 120L ha⁻¹. Efficacy was assessed by taking plant or panicle counts in each plot.

RESULTS

Johnson Grass. HOE 33171 gave excellent control of Johnson grass in soybeans with single applications of 0.09 to 0.3kg ha⁻¹ (refer Table I).

In two trials HOE 33171 was applied to Johnson grass seedlings that were at 1 leaf to 6 leaf stage and up to 30cm high.

The time of spraying in one trial (QD5/82) was 16 days after the soybeans were planted and in the other trial (QD11/83) approximately 20 days after planting. The weed densities were 25 to 30 Johnson grass seedlings m⁻².

Table I Control of seedling Johnson grass in soybeans with HOE 33171 applied as a single application.

Rate kg ha ⁻¹	Percent control of Johnson grass (seedling)	
	QD5/82 ¹	QD11/83 ²
0.09	-	95
0.12	96	100
0.15	100	-
0.18	100	100
0.21	100	-
0.24	100	100

The trials were assessed ¹ 10 days after spraying in QD5/82 and ² 23 days after spraying in QD11/83.

Trials were also conducted with split applications of HOE 33171 applied to Johnson grass. One trial is presented in Table II (trial QD8/83). Treatments were applied 18 and again, at the same rate, 39 days after planting. Rates of 0.12 kg ha⁻¹ and above, applied at these times, controlled seedlings as well as plants derived from rhizomes.

Table II Control of Johnson grass in soybeans with HOE 33171 applied in sequential treatments.

Rate kg ha ⁻¹	Percent control of Johnson grass	
	10 days after 1st application	52 days after 2nd application
0.12 + 0.12	100	98
0.18 + 0.18	100	98
0.24 + 0.24	100	99
0.30 + 0.30	100	100

Other Grasses. In preliminary trials in New South Wales and Queensland, HOE 33171 at rates of 0.1 to 0.24 kg ha⁻¹, as a pre-tillering, post-emergent application, has given good control of the following grass weeds:

Barnyard grass	<i>Echinochloa crus-galli</i>
Crabgrass	<i>Digitaria sanguinalis</i>
Crowsfoot grass	<i>Eleusine indica</i>
Wild oats	<i>Avena spp</i>
Liverseed grass	<i>Urochloa panicoides</i>
Paradoxa grass	<i>Phalaris paradoxa</i>

Control of *Lolium spp.* and *Hordeum spp.* appears to be poor.

DISCUSSION

HOE 33171 shows potential as a selective, post emergent herbicide for control of numerous annual and perennial grass weeds in agricultural broadleaf crops. Australian trials have demonstrated excellent control of Johnson grass seedlings in soybeans with single applications of HOE 33171. The best control of seedlings and established plants with rhizomes was obtained with two sequential applications of the herbicide. HOE 33171 also controls other important grass weeds in summer crops.

LITERATURE CITED

Bieringer, H., G. Hörlein, P. Langelüddeke and R. Handte, Proceedings 1982 British Crop Protection Conference - Weeds: 11-17