

not controlled by chlorthal alone but were removed completely when Diuron was added to chlorthal on 1:8 active ingredient ratio basis.

In situations where standing weed growth occurred initially, paraquat was added to the chlorthal spray. Apparently only an additive reaction occurred between the herbicides. Complete contact kill by the paraquat was important for success, as chlorthal showed no post-emergence activity.

Weed control of susceptible species by normal rates of chlorthal lasted for 6 weeks to more than 15 weeks, depending on site. The shorter control occurred under the typical heavy summer irrigation programmes of the Goulburn Valley while longest control was achieved under dryland conditions.

CP44939 - A NEW HERBICIDE FOR THE CONTROL OF *CYPERUS ROTUNDUS*

W.H.L. Hazard

Department of Primary Industries, Queensland

INTRODUCTION

CP44939 is an experimental pre-emergence herbicide developed by the Monsanto Company. It was made available to the Queensland Department of Primary Industries in 1968 for testing against nut-grass (*Cyperus rotundus*). A chemically similar compound, CP31675, had been evaluated by the Department from 1963 to 1968 for a similar purpose, with very encouraging results.

THE HERBICIDE

The formulation tested was a 48% w/v emulsifiable concentrate. The compound has a relatively high water solubility (1,280 ppm) and an acute oral LD₅₀ for rats of 1,945 mg per kg body weight. While full details of the influence of environmental factors on the performance of CP44939 are not available, it has been observed that the

herbicidal effect is enhanced by soil incorporation.

TRIAL WORK

CP44939 was evaluated in a replicated field trial in a heavily infested area of nut-grass during the summer of 1968-69. The herbicide was applied as a soil-incorporated treatment at dosage rates of 0, 3, 4, 5, 6, and 7 lb a.i. per acre (0, 2.24, 3.36, 4.48, 5.0, 6.72, and 7.94 kg per hectare). EPTC at 6 lb a.i. per acre (6.72 kg per hectare) was used as a standard. The trial was sampled each 14 days over a period of 28 weeks. At each sampling counts were made of the number of nut-grass plants in each of three fixed 3 ft² (0.27 m²) quadrats per plot.

An earlier trial with CP31675 has shown that maize was tolerant when a delay period of 4 weeks was allowed between herbicide application and planting. For this reason the tolerance of maize to CP44939 at various dosage rates applied at different time intervals prior to planting was investigated in a pot trial.

RESULTS

At 6 weeks after herbicide application all treatments exhibited a degree of control of nut-grass significantly better than the untreated control. The percentage control ranged from 100% in the case of CP44939 at 7 lb a.i. per acre (7.94 kg per hectare) to 38% in the case of EPTC at 6 lb a.i. per acre (6.72 kg per hectare). From the 6-week stage the residual control of a number of treatments declined. No significant measure of control was shown with EPTC at 6 lb a.i. per acre 8 weeks after spraying or with CP44939 at 2 lb a.i. per acre after 10 weeks, 3 lb after 14 weeks, or 4 lb after 16 weeks.

At 28 weeks after application, areas treated with CP44939 at 5, 6, and 7 lb a.i. per acre were still showing significant control of nut-grass (52% control at 5 lb, 69% control at 6 lb, and 98% control at 7 lb).

DISCUSSION

Of a large range of herbicides evaluated to date CP44939 has shown the greatest initial activity and the longest residual effect. For example, the rate of 7 lb a.i. per acre gave 100% control of nut-grass for 3 months, and 4 months later, at the conclusion of the trial, it was still maintaining 98% control. These results were obtained in the absence of competition from other weed species.

The use of this herbicide for the control of nut-grass in a selective role in crops warrants further attention. Encouraging results in sugarcane are being obtained by workers in Queensland but the results of the tolerance study indicate that CP44939 cannot be used selectively in maize. However, many other summer-growing and perennial crops in which nut-grass can be a problem offer possible avenues for use of this potentially valuable herbicide.

RH-315 - A SELECTIVE HERBICIDE

M.J. van de Loo
Primal Chemicals Pty. Ltd., Victoria

RH-315 (Kerb), a new compound discovered by the Rohm and Haas Company, USA, is being developed in Australia as a selective pre-emergence herbicide for the control of annual grasses and broadleaved weeds in lettuce, cotton, peas, beans, peanuts, small-seeded legumes, small fruits, vineyards, and turf. Effective rates range from 0.5 to 2 lb a.i. per acre. RH-315 acts through root adsorption both before and after emergence. It has a relatively low order of mammalian toxicity.

Its melting point is 154-156° C, its water solubility 15 ppm at 25°C, and its vapour pressure 8.50×10^{-5} Torr. at 25°C. The formulation is being tested as a 50% wettable powder.

TOXICOLOGY

The accurate oral LD₅₀ of technical RH-315 in a corn oil solution administered to male rats by stomach tube is 8,350 mg per kg body weight. The acute oral LD₅₀ female rats is 5,620 body weight. The acute dermal LD₅₀ of technical RH-315 for adult albino rabbits is greater than 3,160 mg per kg.

WEED CONTROL AND CROP TOLERANCE

The herbicide is promising for the control of certain grasses including *Echinochloa crus-galli*, *Digitaria sanguinalis*, *Poa*