

Effect of Picloram in the Control of *Solanum elaeagnifolium* Cav. Under Irrigated and Dryland Conditions

By

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ABSTRACT

The effect of picloram (Tordon 22K) in the control of white horsenettle under irrigated and dryland conditions was studied. Ten treatments consisted of Tordon 22K at 6, 12 and 18 lit/ha, Tordon 22K at 6 lit/ha plus 0.5, 1.5 and 2.5 kg a.i. of 2,4-D/ha, Tordon 22K at 6 lit/ha applied at 4, 8 and 12 monthly intervals and an untreated control. The population of white horsenettle was estimated four months after the final spray. The results indicated highest degree of weed control (90 per cent) with Tordon 22K at 6 lit/ha applied at four-monthly intervals.

INTRODUCTION

Picloram (Tordon 22K) was reported to be an efficient herbicide for the control of white horsenettle weed by earlier workers (Tideman, 1965; Wiese 1965). The herbicide gets absorbed both through leaves when applied as a post-emergence spray and through roots when applied to the soil. It is a highly persistent and mobile chemical in the soil. Because of these characteristics, its efficacy is very high on the control of white horsenettle when compared to other herbicides (Kailasam *et al.*, 1974). Picloram in combination with 2,4-D has been reported to increase the foliar uptake of the herbicide (Hamill *et al.*, 1972). Therefore, the present study was taken up to find out the combination effect of Tordon 22K and 2,4-D and repeated application of the former at varying intervals on the control of white horsenettle weed.

MATERIALS AND METHODS

Two field experiments were conducted at Peedampalli, Coimbatore district during 1973-75 in a red sandy loam with pH 7.8 with identical treatments both under irrigated and dry land conditions. The experiments under randomised blocks design consisted of ten treatments (Table). The plot size was 2.5 x 1.0 M. Before the layout of experiment, the field which was severely and uniformly infested with white horsenettle was ploughed twice. After the layout, the weeds were allowed to grow for 20 days to attain 4 leaf stage. Then the herbicides were applied as per the schedule.

The weed population was estimated four months after the final application of Tordon 22K at two randomly selected places using a 0.5 x 0.5 m quadrant.

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TABLE. Population of white horse-nettle weed four months after the final application of Tordon 22K (No. of weeds/m²)

Treatments	Irrigated conditions	Dryland conditions
Untreated control	169 (13.01)	240 (15.48)
*Tordon 22K at 6.0 lit/ha	139 (11.48)	201 (14.15)
*Tordon 22K at 12.0 lit/ha	98 (9.78)	163 (12.73)
*Tordon 22K at 18.0 lit/ha	73 (8.52)	80 (8.71)
*Tordon 22K at 6.0 lit/ha+2,4-D at 0.5 kg a.i./ha	113 (10.85)	152 (12.26)
*Tordon 22K at 6.0 lit/ha+2,4-D at 1.5 kg a.i./ha	99 (9.90)	181 (13.44)
*Tordon 22K at 6.0 lit/ha+2,4-D at 2.5 kg a.i./ha	125 (11.09)	199 (14.06)
Tordon 22K at 6.0 lit/ha seven times at four monthly intervals	19 (4.34)	4 (1.89)
Tordon 22K at 6.0 lit/ha four times at eight monthly intervals	47 (6.83)	39 (6.20)
Tordon 22K at 6.0 lit/ha thrice at twelve monthly intervals	84 (9.10)	40 (5.45)
C. D. (P=0.05)	(0.91)	(1.31)

* One application at the commencement of the expt. Figures in parentheses are transformed values.

RESULTS AND DISCUSSION

At the time of weed count although it was 28 months after the single application of Tordon with and without 2,4-D at various levels, the population of the weed was significantly less when compared to untreated control under both irrigated and dry conditions. In the treatment with Tordon 22K at 6 lit/ha the reduction in population was 18 and 17 per cent respectively under irrigated and rainfed conditions. When the dose was increased to 12 lit/ha the weed control increased to 42 and 32 per cent in irrigated and rainfed conditions respectively. A still higher dose, 18 lit/ha had controlled 57 per cent and 68 per cent respectively under irrigated and dryland conditions. Addition of 2,4-D to Tordon 22K at 6 lit/ha, did

not reduce the weed population significantly compared to Tordon alone.

There was 98 and 89 per cent control of the weed under dryland and irrigated conditions respectively in the treatment where 42 lit of Tordon 22K/ha was applied in seven equal splits at four-monthly intervals. The apparent difference between the two conditions may be explained that under dryland conditions the regeneration of the weed was slow because of the moisture deficiency in the soil which resulted in the increased percentage control of the weed. When 24 lit of Tordon 22K/ha was applied in four equal splits at eight-monthly intervals, the per cent control of the weed was 72 and 84 respectively under irrigated and rainfed conditions. The weed control was 51 per cent

under irrigated and 83 per cent under dry land conditions in the treatment where 18 lit of Tordon 22K/ha was applied in three splits at 12 monthly intervals.

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