

EFFECT OF HERBICIDES ON TRANSPLANTED RICE (IR. 20)

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To study the effect of 2, 4-D compounds and Butachlor on weed control and grain yield of rice (IR. 20), field experiments were conducted at Agricultural Research Station, Bhavani-sagar during summer and Kharif Seasons of 1980 and in Summer, 1981. The results revealed that pre-emergence application of 2, 4-D Ethyl ester 4%G, at 0.8 kg a.i/ha plus one hand weeding on 40th day of the crop was found to give effective weed control and significant increase in grain yield.

With the introduction of the improved high yielding varieties of crops, the weeds also have gained importance. Now a days their control is becoming serious problem and yield loss due to weeds is also considerably more. So it is very essential to control the weeds effectively and use of herbicides (2, 4-D compounds and Butachlor) to control the weeds in different field crops was reported by several authors (Rathinam *et al.*, 1974, Rajan, 1973 and Mosood Ali, 1979).

MATERIAL AND METHODS

Field experiments were conducted during Summer and Kharif seasons of 1980 and during summer 1981 at the Agricultural Research Station, Tamil Nadu Agricultural University, Bhavani-sagar to study the effect of 2, 4-D compounds and Butachlor on weed control and grain yield of transplanted rice IR. 20. The treatments included were 2, 4-D Ethyl ester 4% G at 0.6, 0.8 and

1.0 kg a.i/ha and Butachlor 5% at 2.0 and 4.0 kg a.i/ha with and without one hand weeding on 40th day after transplanting. In addition one control and hand weeding twice treatments also were included. The design adopted was RBD with three replications. The herbicides were applied as pre-emergence on 7th day after transplanting.

Hand weeding twice were given on 15th and 40th day after transplanting. Weed counts were taken at 2nd, 4th, 6th and 8th weeks after transplanting and the mean values for all the three seasons were taken into account. Weed dry weight was taken at 8th week after transplanting. Grain and straw yields were recorded at harvest. The mean data on weed dry weight, grain and straw yield for all the three seasons were pooled and analysed statistically.

RESULTS AND DISCUSSION

Among the weeds found in the field *Marsilea quadrifoliata* L. dominated in

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all the seasons accounting for 60.3, 68.7 and 63.4% in the total weed population in Summer and Kharif, 1980 and in Summer, 1981, respectively. This was followed by *Cynodon dactylon* Pera and *Cyperus rotundus* L. mainly. The observation of weed character at 2nd week revealed that the control was having the maximum number of weeds 84/M² and there was no weed in those plots which were hand weeded twice since the observation was recorded soon after weeding. At 4th week also the control plots recorded maximum number of weeds (83/M²). Both during 2nd and 4th week the lowest number of weeds were observed in 2,4-D Ethyl ester 4% at 0.8 kg a. i./ha applied plots @27 and 24 M² respectively. The results of weed population at 6th week showed that there was no weed in all the treatments where one additional weeding was given. Higher number of weeds were found in the control plots (74/M²). At 8th week, the 2, 4-D Ethyl ester 4% G 0.8 kg a. i./ha and 2, 4-D Ethyl ester 4% at 0.8 kg a. i./ha + one hand weeding recorded the lowest number of weeds of 19 and 14/M² respectively. The highest number of weeds were found in unweeded check (76/M²). The weed dry weight at 8th week was statistically significant among the treatment (Table I). The lowest weed dry matter was noticed in 2, 4-D Ethyl ester 4% G at 0.8 kg a. i./ha + one hand weeding 6.33g/M². The control registered the maximum weed dry weight (43g/M²).

The grain yield data revealed that the 2,4-D Ethyl ester 4%G at 0.8 kg

a. i./ha + one hand weeding on 40th day resulted in the highest yield of 5884 kg/ha. The lowest yield of 4793 kg/ha was obtained in unweeded check. The maximum grain yield in 2, 4-D Ethyl ester 4%G at 0.8kg a.i/ha applied plots might have been due to its effective weed control. Agarkov (1978) reported increased grain yields and effective weed control in rice by application of 2,4-D. Increased grain yields due to 2,4-D application was observed by Mohamad Ali and Balakrishnan (1976) in cumbu and Rajan (1978) in maize.

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Effect of different herbicides on weed dry matter and grain and straw yield on rice (IR, 20)
(Mean value for three seasons)

Treatments	Weed dry	Grain yield	Straw yield
Control	43.0	4193	11971
Hand weeding twice	17.1	4674	13443
2, 4-D Ethyl ester 4% G at 0.6 kg a. i/ha	24.5	4845	13534
2, 4-D Ethyl ester 4% G at 0.8 kg a. i/ha	12.2	5113	14608
2, 4-D Ethyl ester 4% G at 1.0 kg a. i/ha	14.7	4715	13471
Butachlor 5% G at 1.5 kg a. i/ha	16.3	4694	14337
Butachlor 5% G at 2 kg a. i/ha	17.6	4496	13974
2, 4-D Ethyl ester 4% G at 0.6 kg a. i/ha + one hand weeding	12.3	4715	14205
2, 4-D Ethyl ester 4% G at 0.8 kg a. i/ha + one hand weeding	6.3	5884	18471
2, 4-D Ethyl ester 4% G at 1.5 kg a. i/ha + one hand weeding	9.0	5643	16353
Butachlor 5% G at 1.5 kg a. i/ha + one hand weeding	11.2	4921	13931
Butachlor 5% G at 2.0 kg a. i/ha + one hand weeding	12.5	5015	13346
CD (P=0.05)	6.3	489	3280

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