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The Impact of Weedicides on Cotton Production

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Abstract: The effect of Olitref and Agil weedicides alone and in combination was studied in cotton. Combine application of Olitref and Agil at pre and post emergence stages respectively gave the best weed control and the maximum seedcotton yield (2415 kg ha^{-1}). Olitref weedicide was found better than Agil and the yield was 2093 kg ha^{-1} and 1863 kg ha^{-1} respectively. The seedling density and final plant height were not effected by the application of weedicides. However, the plots treated with Olitref and Agil gave the maximum plant height of (167.75 cm). The number of mature bolls per plant was also maximum in plots where these weedicides were applied.

Key words: Weedicides, cotton production

Introduction

Pakistan is basically an agro-based country, therefore the importance of its agricultural development and achievement can hardly be over emphasized. Moreover, Pakistan's agriculture economy is highly dependent upon the cotton crop, both as source of cash for the rural masers and as foreign exchange earner, and contributes 60% of export earnings to the national exchanger. Efforts therefore are needed to rise per hectare yield through chemical control of weeds. Weed infestation is the most important factor responsible for low yield of cotton in our country. Weeds cause a reduction in the yield from 25 – 30% (Gill and Anwar, 1981) therefore weed control plays an important role in maximizing the cotton yield per hectare. The chemical weed control is being successfully used in advance countries of the world, Jain and Jain (1980) reported that the maximum control of 65 – 80% of weeds and high cotton yield were obtained with pre + post emergence spray of herbicides, Gill *et al*. (1981) concluded that maximum yield of seedcotton was obtained with Stomp by using it as pre emergence weedicide. Frans and Kenedy (1982) observed that application of Na and Mg satt of Dalapan at 24 cm and 40 cm plant height of cotton resulted in good control of burnuda grass by nodon – dectylon Malik *et al* (1983) found that the highest yield was obtained with pre-emergence application Stomp and Dowpon. Barar and Gill (1985) reported that pre-emergence application of Diuran controlled most of the annual weeds from cotton but its post emergence application failed to control the weeds. Chanceller and Cooke (1992) reported pre-emergence herbicides are usually applied in a band over the row in the cotton to control the weeds between rows.

Buchanan (1992) reported that pre-emergence herbicides, Trifluralin, pendimethalin and Fluometaron alone or in combination with pyrithobac provided sicklepod control. Thiazopyr applied pre-emergence provided large crabgrass, Digitaria sanguinalis control without crop injury and 90% control of weed. Prickly- sida, Sida-spinosa. L. and Veler leaf, Alutilon–theophatti Medik. Nadarman (1993) reported that fluometuron pre-emergence (Pre) provided good (80%) control of sicklepod, but did not adequately control velverleaf. Pitted and iveleaf morning glory (I. Lacumosa L. and I. Hedevacea L. Jacq) were controlled by bromoxynil (OT.) and flumeturon PRE followed by bromoxynil OT, provided good to excellent control of prickly sida, velverleaf, sickle pod and both morning glory species. No injury was observed for bromoxynil treatment.

The present study was conducted to evaluate the effectiveness of Litref and Agil for weed control at experimental field of CCRI – Sakrand.

Materials and Methods

The experiment was conducted at experimental field of CCRI – Sakrand to see the effect of some weedicides on the growth and yield of seedcotton during the year 1992-93 at Sakrand. The randomized complete block design with four replications having a plot size of 32.5′ x 36′ used. The cotton variety CRIS-9 was sown with the help of single row cotton drill keeping plant to plant distance 25 cm and row to row distance 2.5′ (75 cm) on 10th May 1992. The fertilizer applied were one bag DAP/acre at sowing time and two bags Urea per acre at Ist irrigation and peak flowering time. The crop was sprayed two times during the season to protect it from the sucking pests and bollworms. The Litref was sprayed before the sowing of the crop (at the time of seed bed preparation) and Agil after Ist irrigation on well moist soil. The spray volume at 500 liters of water per hectare was used for spraying the chemicals. The seedling density data were taken at the completion of the seedlings emergence at four different randomly sleeted places of one square meter from each treatment. The weed population data were recorded thrice i.e. after Ist, 2nd and 3rd irrigation. Ten plants per plot at random were selected and labeled for recording the observations. The observations recorded on different growth and yield parameters of the crop during the growth season were as follows.

Weeds count per square meter
Final plant height (cm)
Number of mature bolls
Number of open bolls/plant
Boll weight
Yield of seedcotton

The weedicides used for evolution with the doses are as under:

T1 = Olitref pre-emergence at 600 ml/acre
T2 = Agil post-emergence at 300 ml/acre
T3 = Olitref + Agil after Ist irrigation
T4 = Control (No weeding)

Results and Discussion

The results of the experiment are presented in Table 1. It is clear from the Table that the seedlings density in all the treatments, did not differ significantly from one an other.

Table 1: The effect of Oiltref and Agil as pre and post emergence weedicides in cotton

Treatments	1st weed count m^2	2nd weed count m^2	3rd weed count m^2	No. Of mature bolls/plant	No. Of open bolls/plant	Plant height (cm)	Boll weight (g)	Seedcotton yield kg ha^{-1}
T1 = Olitref	15.12b	30.58b	3.58b	23.1b	16.5a	152.6a	3.1a	1725b
T2 = Agril	63.33a	51.41b	5.12b	21.8b	15.2b	154.9a	3.0a	1615b
T3 = Olitref + Agril	1896.0b	1.41d	0.63c	26.2a	17.3a	158.4a	2.9a	1922a
T4 = control (No weeding)	70.05a	81.65a	24.95a	18.23c	13.5c	150.9a	2.6c	1332c

Mean followed by similar letter are not significantly different at 5% level.

These results are in conformity with those of Jain and Jain (1980). The data regarding weeds population showed that all the weedicides significantly decreased the weed population as compared with those of control. In the first counting (One moth after sowing of the crop. The Olitref treated with plots were found better than the other plots but did not differ significantly from the combination of Olitref and Agil treated plots. In the second counting (two month after sowing of the crop). The combination of Olitref and Agil treated plots showed significantly less number of weeds per square meter than all the other plots.

The next better results were showed by the Olitref application alone. In the third counting (three months after sowing the crop) the combination of Olitref and Agil treated plots were significantly better than all of other treatments. The plots treated with Olitref and Agil alone were statistically similar. Similar results were obtained by Frans and Kennedy (1982), the total number of bolls per plant were statistically higher than the control in all treatments. The combination of Litref and Agil gave significantly higher number of bolls per plant than all the other treatments. The results of Olitref and Agil alone application were statistically similar regarding the number of bolls per plant. The data on number of mature bolls per plant revealed that all weedicides were significantly better than that control. The plant height was not affected by the application of weedicides as the results were not affected by the application of the weedicides and the results were not significant even with those of control. The boll weight was statistically higher in all the treated plots than that of control. The chemical treated plots did not differ significantly from one another. The yield of seedcotton followed similar trend and was obtained significantly higher in all the weedicide treatments. The combination of Litref and Agil gave significantly higher yield that other treatments. The results of Litref and Agil alone were statistically similar. The results have confirmed the previous findings of Jan and Jan (1980) who reported that the combination of Olitref and Agil weedicides was significantly better than all the other treatments.

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