EFFECT OF STALE SEEDBED TECHNIQUE ON WEED CONTROL IN Bt COTTON INTERCROPPING WITH GREEN GRAM

A.D.PANDAGALE, V.K.KHARGKHARATE, G.L.KADAM

Abstract: Field experiments were conducted at cotton research station Nanded VNMKV, Parbhani (MS) during Kharif season 2010 and 2011 to explore the practical feasibility of stale seedbed technique for exhausting weed seed bank before the crop emergence in Bt cotton based intercropping system with green gram.
Removal of germinated weeds one week after irrigation i.e one week before sowing followed by hand weeding (35-40 DAS) recorded maximum seed cotton yield followed by weed control by stale seed be using paraquat at 1.0 kg + pendimethalin 1.0 kg followed by 1 hand weeding 35-40 DAS treatment. Minimum seed cotton yield was recorded by the unweeded check treatment. Highest B:C ratio was recorded by removal of germinated weeds, one week after irrigation followed by hand weedings. Lowest B:C ratio was recorded by unweeded check.

Keywords: Weed, maize, intercrop, equivalent yield.

Introduction: Cotton crop is a most important crop of the world without which we can not fulfill our daily needs. Cotton which is commonly known as "White Gold" is a leading fibre crop, food, feed and industrial crop of the world. Cotton crops area, production and productivity India is 115.53 lakh ha, 375 lakh bales and 552 kg/ha respectively (Anonymous,2014). Rainfed cotton cultivation on large scale is the cause for low productivity in the country. Maharashtra's productivity as compared to national productivity is low which is due to incidence of insect, pest, diseases and weeds. Now a days due to scanty of human labour at peak season of the work therefore a noticeable increase in cost of cultivation is there. Therefore, we have to depend on other ways which can reduce the weed control cost. Herbicides and stale seedbed are other options which can give better alternative for weed management in cotton. Due to this reason present investigation was undertaken to study feasibility of stale seedbed technique in Bt cotton based intercropping system.

Material and Methods: Experiment was conducted for two years during kharif 2010-11 and 2011-12, respectively at Cotton Research Station, Nanded. The soil of experimental field is vertisols. The recommended dose of fertilizers to cotton was given as per recommendation. Half dose of nitrogen and full dose of phosphorus and potassium were applied at the time of sowing and remaining half dose of nitrogen was applied at the time of square formation stage by ring method. Weed control practices were followed as per the treatments. Plant protection schedule was followed as per the occurrence of insect, pest and diseases. The experiment was conducted in Randomized Block Design (RBD) with Bt cotton + Green gram system with six treatments i.e.T1-Weed control by stale seed bed using paraquat 1.0 kg (spraying of paraquat once one week after the first irrigation i.e. one week before sowing) fb 1 HW 35-40 DAS, T2- Weed control by stale seed bed technique using pendimethalin 1.5 kg/ha(herbicide spraying on third day after irrigation) fb 1 HW 35-40 DAS, T3-Weed control stale seed bed using paraquat 1.0 kg + pendimethalin 1.5 kg/ha (spraying of herbicide mixture once one week after the first irrigation i.e. one weed before sowing) fb 1 HW 35-40 DAS, T4-Pre-emergence weed control using pendimethalin 1.5 kg on third day of cotton sowing fb hand weeding at 35-40 DAS, T5-Removal of germinated weeds one week after irrigation i.e. one week before sowing be hand weeding (35-40 DAS) and T6-Unweeded check.

Results and Discussion:

Seed cotton yield: On the basis of the pooled data of two year as presented in Table.1 revealed that due to various weed control treatments significant differences were observed in seed cotton yield. Removal of germinated weeds one week after irrigation i.e. one week before sowing fb hand weeding (35-40 DAS) treatment (T5) recorded maximum seed cotton yield (1844 kg/ha) followed by weed control by stale seed bed using paraquat 1.0 kg + pendimethalin 1.0 kg (spraying of herbicide mixtures onec one week after the first irrigation i.e. one week before sowing) fb 1 HW 35-40 DAS treatement (T3). Minimum seed cotton yield was recorded by the unweeded check treatment.

Intercrop yield (Kg/ha): Significantly superior green yield was recorded by removal of germinated weeds one week after irrigation i.e. one week before sowing followed by hand weeding (35-40DAS) treatment (T5) which was at par with weed control by stale seed bed using paraquat 1.0 kg + pendimethalin 1.0 kg (Spraying of herbicide mixture once one week after the first irrigation i.e. one week before sowing)
fb 1 HW 35-40 DAS treatment (T3) and weed control by stale seed bed using paraquat 1 kg (spraying of

paraquat once one week after the first irrigation i.e. one week before sowing) fb 1 HW 35-40 DAS. Lowest seed cotton yield was recorded by the unweeded check treatment.

Seed cotton equivalent yield (Kg/ha):m Significantly highest seed cotton equivalent yield was recorded by removal of germinated weeds one week after irrigation i.e. one week before sowing followed by hand weeding (35-40 DAS) treatment (T5) and it was followed by T3 treatment. Significanlty lowest seed cotton equivalent yield was recorded by unweeded check.

Economics: Net monetary returns (Rs./ha) received from cotton and intercrop as influenced by different weed control treatments were significant. Highest Net monetary returns and Benefit cost (B:C) ratio was received from removal of germinated weeds one week after irrigation fb HW (T5). It was significantly superior over PE Pendimethalin @ 1.5 kg/ha fb 1 weeding (T4) and unweeded check (T6) treatment. Lowest net monetary returns was recorded by unweeded check.

Weed Studies: The different types of weeds associated with cotton in field during the season were Commelina benghalensis L., Amischopacelus cucullata, Cyperus rotundus L., Cynodon dactylon, (L)Per., Brachiaria eruciformis (J.E.Sm) Griseb., Dinebra retraflexa (Vahl) Parizer, Achyranthus aspera L., Amaranthus viridis L., Celosia argentea L., Alternanthera echinata Sm., Acalypha indica L., Abutilon indicum (L).Sweet, Lagascea mollis Cav., Xanthium strumarium L., Tridex procumbens L.,etc.

Weed dry matter (g/m): The mean weed dry matter recorded were significant differences due to weed control treatments on weed dry matter.

Lowest weed dry matter was noticed in removal of germinated weeds one week after irrigation followed by hand weeding (T5) followed by stale seed bed – paraquat 1.0 kg + Pendimethalin 1.0 kg followed by 1 hand weeding (T3) at 3 weeks after sowing. Highest weed dry matter was recorded in unweeded check

Table. 1 Effect of Stale seed bed technique on cotton seed yields, SCEY, Intercrop yield, Net monetary returns (NMR), Weed dry matter (Pooled mean of two years)

Treatments	Seed cotton yield (Kg/ha)	Seed cotton Equivalent yield (Kg/ha)	Intercrop yield (kg/ha)	Net monetary returns (Rs./ha)	B:C ratio	Weed dry matter mean (g/m2)
T1- SSB-Paraquat @1 kg/ha	1899	2413	671.5	61245	2.95	5.92
T2- SSB-Pendimethalin @1.5 kg/ha fb 1 HW	1682	2128	578	50160	2.60	9.79
T3- SSB –Paraquat @ 1 kg/ha + Pendimethalin @1.5 kg/ha fb 1 HW fb 1 HW	1992	2527	698	63785	2.91	4.37
T4- PE Pendimethalin @ 1.5 kg/ha fb 1 W	1620	2004	491.5	45963	2.49	10.80
T5- Removal of germinated weeds one week after irrigation fb HW	2090	2680	769.5	69933	3.15	4.22
T6- Unweeded check	840	1048	271	13551	1.54	39.96
SE+	72.21	83.90	----	3444	0.10	----
CD at 5 %	199.86	232.21	-----	9532	0.30	-----
General Mean	**1687**	**2133**	**----**	**50773**	**2.61**	**12.50**

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G.L.Kadam/ Asstt Prof. RGAC/VNMKV Parbhani / kadam.gajanan@gmail.com
A.D.Pandagale/Asstt Prof. CRS/Nanded VNMKV Parbhani/
V.K.Khargkharate / Associate Prof./VNMKV Parbhani