

EFFECT OF WEEDS ON CANE YIELD AND CONTENT OF SUGAR CANE

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ABSTRACT

The effect of weed infestation was studied on cane yield and sugar content of sugar cane variety Bannu-1, in a weedicidal trial at Agricultural Research Station Serai Naurang (Bannu) during 2001-02. The treatments included Gesapex Combi @2.5 kg ha⁻¹ at pre and post emergence stages (1st week of January and mid February), hand weeding and weedy check. The trial was laid out in RCB design with three replications and plot size of 3.0 x 4.5 m². Significant differences were found between treatment means for cane yield. The study revealed that significantly higher yield (68.31 t ha⁻¹) was obtained through effective weed control by using weedicide Gesapex Combi at pre emergence stage (1st week of January). While application of above weedicide at post emergence stage (mid February) showed the next higher yield of 58.59 t ha⁻¹. Treatments with no weeding and hand weeding responded with lower cane yield of 47.72 and 51.60 t ha⁻¹, respectively. Similarly treatment with pre emergence application of weedicid showed higher sugar contents (9.41 %) and sugar yield of 6.43 t ha⁻¹. The lowest sugar content (7.48%) and sugar yield of 3.57 t ha⁻¹ were obtained from the weedy check.

INTRODUCTION

Sugar cane is grown as a major cash crop in southern zone of NWFP. The agro-climatic conditions of the tract are quite favorable and the existing sugar mills provide most feasible market for this crop. However, due to certain limitations like lack of suitable production technology coupled with poor financial position of the growers, the over all productivity of sugar cane is comparatively lower in this area. Hence, the sugar mills usually depend upon the sugar cane supply from Punjab. As regards the national position, Pakistan ranks 5th in sugarcane cultivation and 6th in its production, having the average cane yield of 50.0 t ha⁻¹ (Ali *et al.*, 1999). Khisro *et al.*, (2001) reported the world average cane yield as 63.70 t ha⁻¹ and that of NWFP as 46.30 t ha⁻¹. The average cane yield of Bannu is 40.41 t ha⁻¹ (Anonymous, 2000). Sugar cane is the most profitable crop and its improved cultivation would certainly change the socio-economic situations of this poor and back ward area. Besides sugar production it plays very positive role in the agrarian economics, generates employment in various sectors, its by products serve as raw material for other industries and feed for cattle. It also adds into the national economy through sugar production and thus saving the huge foreign exchange. Sugar cane is comparatively long duration crop and is being usually intercepted by weed competition, affecting the over all potential by more than 20-25 %.

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There are many factors affecting the cane yield, however sub standard technology greatly affects the crop production. Hussain *et al.*, (1999) and Bakhsh *et al.*, (2001) depicted the absence of improved production technology as the main cause for lower yields in Pakistan. Hussain and Afghan (2001) referred weeds as major cause for higher cost and lower yields in sugar cane. In fact the cultural operations are highly important for increased productivity in all crops. Unfortunately majority of the growers do not pay due attention to timely operations in farming and thus fail to obtain standard yields. To evaluate the effective technology, weedicid trial was conducted on sugar cane at Agricultural Research Station Serai Naurang (Bannu) during 2001-02.

MATERIALS AND METHODS

The study was conducted on sugar cane approved variety Bannu-1 under four different treatments of weeds control by using chemical weedicid Gesapex Combi @ 2.5 kg ha⁻¹ at pre emergence, post emergence stages (1st week of January and mid February), hand weeding and a control. The trial was laid out in randomized complete block design with three replications and plot size 3.0 x 4.5 m². The recommended levels of all inputs like nutritional requirements, insecticides and agronomic practices were uniformly adopted at appropriate intervals in the trial. Observations pertaining to the major aspects like cane yield, sugar % and sugar yield were recorded at different stages. Data on cane yield were analyzed statistically and the means were separated using LSD test (Steel and Torrie, 1980).

RESULTS AND DISCUSSION

Cane yield (t ha⁻¹)

Data in Table-1 indicated significant differences in treatment means for cane yield. It is evident from the above table that the highest significant stripped cane yield of 68.31 t ha⁻¹ (30.14 % higher than control) was obtained from treatment where weedicid Gesapex Combi was applied at pre emergence stage. Applications of above weedicid at post emergence stage responded with next higher significant yield of 58.59 t ha⁻¹ i.e 18.55 % higher than control. Hand weeding and treatment with no weeding showed the lowest cane yields of 51.60 and 47.72 t ha⁻¹. Other scientists also conducted similarly studies. Ali *et al* (1999) reported the lower cane yield of sugar cane due to many factors like weeds infestation etc. Hussain and Afghan (2001) estimated that cane yields are reduced up to 26-27 % by weeds competition. They obtained the highest cane yield (92.8 t ha⁻¹) through effective weeds control by application of weedicid Gesa Pex Combi at pre emergence stage. They also proposed the chemical control of weeds as most effective and economical. Ali *et al.*, (2001) recorded 20-29 % reduced cane yield for weedy check treatment. Deho *et al* (2001) reported higher cane yield of 58.34 t ha⁻¹ through weed control by trash mulching and the lowest yield under weedy check. Ayaz *et al* (1997) quoted that poor management of weeds/conventional methods of plantation resulted with lower yields of sugar cane. Chattah *et al* (2001) also found 43.75 % improved cane yield over weedy check with integrated weeds control. They also suggested that the cane yield could be increased up to 68% over check through proper weeds management in sugar cane ratoon crop.

Sugar Recovery (%)

Gesapex Combi applied as pre emergence showed the highest sugar recovery of 9.41% being 20.51% higher than control. Post emergence application of the above weedicid and hand weeding responded with next higher but mutually at par recovery of 8.61, 8.60% (13.12 and 13.02% higher than control) [Table-1]. Other researchers have

also communicated similar findings. Hussain and Afghan (2001) recorded the highest significant sugar recovery of 9.29 and 9.25% from pre emergence application of weedicides Vesa Combi and Gesapex Combi. Deho et al (2002) found the maximum CCS% (12.79%) in sugar cane under proper weed control through straw mulching.

Sugar yield (t ha⁻¹)

The application of weedicide Gesapex Combi in sugar cane at pre emergence stage also resulted in maximum sugar yield of 6.43 t ha⁻¹ (44.48% higher than weedy check) [Table-1]. Post emergence application of the same weedicide showed the next higher sugar yield of 5.04 t ha⁻¹ (29.16% higher than weedy check). Hand weeding produced 4.44 t ha⁻¹ of sugar yield ranking 19.59 % higher than weedy check. Treatment with no weeding showed the lowest sugar yield of 3.57 t ha⁻¹ (Table-1). Ali *et al.*, (1999) also obtained lower average sugar yield of 3.15 t ha⁻¹ in Pakistan due to many factors including weed infestation. Hussain and Afghan also recorded higher and on par sugar yields through application of weedicides and manual weeding (8.5 and 8.52 t ha⁻¹). They concluded the pre emergence applications of weedicides as most effective, less harmful, economical and time saving intervention in sugarcane production.

Table-1. Sugar recovery %, cane and sugar yield data of weedicide trial of sugar cane (plant crop 2001-02) at Agricultural Research Station Serai Naurang (Bannu)

Treatment	Sugar %	% increase over check	Cane yield t ha ⁻¹	% increase over check	Sugar yield t ha ⁻¹	% increase over check
Gesapex Combi@2.5 kg ha ⁻¹ Pre em	9.41	20.51	68.31a	30.14	6.43	44.48
Gesapex Combi@2.5 kg ha ⁻¹ Post em.	8.61	13.12	58.59b	18.55	5.04	29.16
Hand weeding	8.60	13.02	51.60c	7.52	4.44	19.59
Weedy check	7.48	-	47.72d	-	3.57	-

LSD_{0.05} for cane yield

3.183

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