I J T A
© Serials Publications
National Academy of Agricultural Science (NAAS)
Rating : 3. 03

Weed Management PRACTICES IN Spring Planted Sugarcane of Assam

Mahima Begum, Bijnan C. Bordoloi & Dhiman D. Singha

Abstract: *A field experiment was conducted on different weed management practices in spring planted sugarcane at Sugarcane Research station, Assam Agricultural University, Buralikson during 2011-12. Result revealed that weed management practices had significant effect on the weed growth and yield. Pre emergence application of metribuzine @ 1.25 kg a.i/ha along with dicamba 350 gm a.i/ha at 75 days after planting recorded the highest number of millable canes (80.3 thousand/ha), cane length (2.8 m) and highest cane yield (52.9 t/ha).*

Key words: *CCS, Millable canes, Sugarcane, weed control*

INTRODUCTION

Sugarcane is the most important sugar crop of Assam occupying an area of 30 thousand ha with average productivity of 37 t/ha (Govt. of Assam 2015). Cultivation of traditional local cultivars, low use of chemical fertilizers and heavy infestation of weeds are the major reasons for low productivity. Out of all these, the low productivity is mainly due to heavy weed infestation in early growth stage and poor weed management practices (Srivastava *et al.* 2002).The high humidity and high rainfall create a favorable environment for weed growth in *kharif* season. Besides this, initial slow growth and wider row spacing provide ample opportunity for weeds to occupy the vacant spaces between rows and offer serious crop- weed competition. Weed infestation reduces not only the cane yield but also the sugar recovery.

It has been reported that yield loss due to weeds can be up to 40% depending on the spectrum of weeds, soil type, duration and time of competition (Kumar *et.al* 2012). In some cases it may cause total crop failure also. Manual weeding is laborious and cost effective. Therefore, chemical method of weed control may be an effective method. Therefore an experiment was carried out for management of weeds in sugarcane.

MATERIALS AND METHOD

A field experiment was conducted during 2011-12 at Sugarcane Research Station, Assam Agricultural University, Buralikson on clay loam soil with PH 5.1, low in organic C (0.50%), available P 20.23 kg (P_2O_5/ha) and medium in available K 172 kg (K_2O/ ha). The experiment was laid out in randomized block design with ten treatments with three replications. The treatments were $\mathbf{T}_1$: Control (weedy check), T_2: Hoeing at 30, 60 and 90 DAP, T_3: Atrazine @ 2 kg (PE) followed by 2,4-D (1 kg/ha) at 75 DAP, T_4: Atrazine @ 2 kg after Ist irrigation and hoeing followed by 2,4-D (1kg/ha) at 75 DAP, T_5: Metribuzine @ 1.25 kg /ha (PE) followed by 2,4-D (1 kg/ha) at 75 DAP, T_6: : Atrazine @ 2 kg *a.i* (PE) + almix 20g/ha at 75DAP, T_7: Metribuzine @ 1.25 kg/ ha (PE) + almix 20 g/ha at 75 DAP, T_8: Atrazine @ 2 kg (PE)+ ethoxysulfuron 50 g/ha at 75DAP, T_9: Atrazine @ 2 kg (PE) + dicamba 350 g/ha at 75 DAP, T_{10}: Metribuzine @ 1.25 kg /ha (PE) + dicamba 350 g/ha at 75 DAP. The sugarcane crop var. Barak (Co Bln 9103) was planted on 11 March, 2011.

* Sugarcane Research Station, Assam Agricultural University, Buralikson-785618, *E-mail: mahimabegum25@rediffmail.com*

Recommended dose of fertilizer 135: 70: 60 of N, P_2O_5 and K_20 was applied in each plot. Other cultural practices were followed as per package & practices. Weed control methods were followed as per treatments and herbicides as per treatments were applied as spray using 600 liters of water per hectare.

RESULT & DISCUSSION

The experimental field was infested with predominant weeds species such as *Borreria articularis* (L.F) Will, *Ageratum haustanium* L, *Setaria palmifolia* spp, *Dicanthium annalntum*, *Melochia corchifoliaL*, *Anoxopus compresus*, *Convovulus arvensis* L, *Sida rhombifolia*, *Brachiaria remosa, Cyperus pilosus* L, *Commelina Spp*, and *Mimosa invisa*. Out of these the problem of *Borreria articularis* (L.F) Will, *Ageratum haustanium* L, *and Mimosa invisa is severe*. All the weed control measures significantly reduced the weed density and weed dry weight over control (Table 1). Pre-emergence application of metribuzine @ 1.25 kg a.i/ha followed by dicamba 350 gm/ha significantly reduced the highest weed density at 75 DAP (27 no/m^2) followed by application of atrazine @ 2 kg a.i/ha (PE) + dicamba 350 g a.i/ha (62 no/m^2) which is at par with the application of atrazine @ 2 kg a.i/ha (PE) + ethoxysulfuron 50 g a.i/ha (66 no/m^2). Mishra *et. al* (2012) also reported that application of metribuzine significantly reduced the weed density. The lowest dry weed dry weight (12 gm/m^2) was recorded with pre-emergence spraying of metribuzine @ 1.25 kg a.i/ha followed by post emergence application of dicamba 350 gm/ha at 75 DAP which is closely followed by pre-emergence spraying of atrazine @2 kg *a.i* along with the applictaion of ethoxysulfuron 50g a.i/ha at 75DAP (13 gm/m^2).

Table 1
Effect of weed control treatments on weed growth at 90 days in sugarcane

Treatments	*Weed density (No/m^2)*	*Weed dry weight (g/m^2)*	*Weed Control efficiency (%)*
T1	264	44	– –
T2	165	32	27.27
T3	101	30	31.82
T4	121	36	18.18
T5	162	39	11.36
T6	199	27	38.64
T7	132	25	43.18
T8	66	13	70.45
T9	62	25	43.18
T10	27	12	72.73
SED (±)	40.98	3.15	-
CD (0.05)	NS	9.4	-

The combined application of metribuzine @ 1.25 kg a.i/ha (PE) along with dicamba 350 gm/ha

Table 2
Effect of weed control treatments on growth and yield of sugarcane

Treatments	*Germination %*	*No of shoots ('ooo/ha)*	*No of Millable canes ('ooo/ha)*	*Cane length (mm)*	*Cane Diameter (cm)*	*Yield(t/ha)*	*Sucrose (%)*	*CCS (%)*
T1	34.6	60.4	55.6	2.2	2.3	17.6	17.2	12.7
T2	37.9	64.3	57.7	2.3	2.2	22.6	17.0	12.3
T3	42.1	72.8	68.4	2.5	2.3	33.7	16.2	11.9
T4	44.4	73.6	69.4	2.6	2.4	35.4	17.2	12.6
T5	44.0	74.7	70.0	2.4	2.5	41.1	17.0	12.5
T6	45.4	78.1	74.3	2.7	2.7	44.0	17.1	12.5
T7	47.0	78.8	74.6	2.6	2.6	44.0	17.1	12.5
T8	45.6	76.2	71.6	2.7	2.6	50.8	17.0	12.4
T9	45.2	84.8	79.6	2.7	2.8	44.3	16.9	12.2
T10	49.2	83.7	80.3	2.8	2.8	52.9	16.8	12.2
SED(±)	2.03	3.26	3.23	0.05	0.28	2.93	0.39	0.31
CD(0.05)	6.02	9.67	9.59	0.16	NS	8.71	NS	Ns

signicantly recorded the highest weed control efficiency (72.73%) over all other treatment followed by pre-emergence application atrazine @ 2 kg) along with ethoxysulfuron 50 g/ha at 75DAP (70.45%). The high control efficiency of metribuzine in sugarcane was also reported by Singh *et al*. (2001) and Mishra *et al*. 2012.

All the weed control method had a significant impact on number of miliable canes, cane length and cane yield. Combined application of metribuzine @ 1.25 kg a.i/ha (PE) along with dicamba 350 gm/ha (83.7) produced the highest number of miliable canes (80.3 thousand) followed by combined application atrazine @2 kg *a.i* (PE) along with dicamba 350 g a.i/ha at 75DAP (79.6 thousand). The similar treatment also significantly recorded the individual cane length (2.8m) over all the other treatment. In case of cane yield also combined application of metribuzine @ 1.25 kg a.i/ha (PE) + dicamba 350 gm/ha significantly produced highest cane yield (52.9 t/ha) than all over treatments. This might be due to high weed control efficiency in early growth stage (Table1) which might have increased the availability of plant nutrients and increased the absorption of plant nutrient (Kumar *et al* 2012).

It was concluded that integrated application of Metribuzine @ 1.25 kg a.i/ha (PE) along with Dicamba 350 gm a.i/ha at 75DAP is an effective weed management practice of sugarcane in the prevailing situation.

References

Mishra, M M; Mishra, S S; Mishra, N K and Nayak, K P (2012), Effect of different weed management practices on yield of sugarcane ratoon. *Indian J. sugarcane Technology* **27(02)**: 76-78.

Kumar V; Kumar, S and Kumar, S (2012), Effect of fertility level and weed management practices on weed dynamics and yield potential of spring planted sugarcane. *Indian J. Sugarcane Technology* **27(02)**: 55-58.

Singh SN; Singh R K and Singh B (2001), Herbicide cum integrated approach of weed management in spring planted sugarcane. Indian J weed sci. 33(3&4): 136-138.

Srivastava TK; Singh A K and Srivastava SN (2002), Critical period of crop-weed competition in sugarcane ratoon. *Indian J. Weed Science* **34:** 320-321.