



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2018; 6(5): 1969-1970

© 2018 IJCS

Received: 15-07-2018

Accepted: 20-08-2018

**Veerendra Kumar**Department of Agronomy,  
CoA, Indira Gandhi Krishi  
Vishwavidyalaya, Raipur,  
Chhattisgarh, India**Rakesh Kumar Ratre**Department of Agronomy,  
CoA, Indira Gandhi Krishi  
Vishwavidyalaya, Raipur,  
Chhattisgarh, India

## Effect of weed management practices on yield attributes and yields of sweet corn

**Veerendra Kumar and Rakesh Kumar Ratre**

### Abstract

The experiment was carried out during *rabi* season of 2016 at Research Cum Instructional Farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (Chhattisgarh). Maize has been an important cereal because of its great production potential and adoptability to wide range of environments. In Indian agriculture, maize assumes a special significance on account of its utilization as food, feed and fodder. The maximum plant height, number of green cobs, cob weight, highest length of cobs, number of rows cob<sup>-1</sup> and number of grains row<sup>-1</sup> were observed under atrazine 1.25 kg *a.i.* ha<sup>-1</sup> (PE). The highest green cob yield of maize was obtained under atrazine 1.25 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing and lowest in the weedy check. Whereas, the maximum grain cob<sup>-1</sup> was recorded under hand weeding twice.

**Keywords:** environments, atrazine, hand weeding and weedy check

### Introduction

Maize (*Zea mays* L.) belong to family poaceae is a one of the most important staple food crop of the world and ranks next to wheat and rice. Maize has been an important cereal because of its great production potential and adoptability to wide range of environments. Maize occupies an important place in Indian economy. Maize is considered as the "Queen of Cereals". Being a C<sub>4</sub> plant, it is capable to utilize solar radiation more efficiently even at higher radiation intensity. In Indian agriculture, maize assumes a special significance on account of its utilization as food, feed and fodder besides several industrial uses for the production of starch, syrup, alcohol, acetic acid, lactic acid etc. Sweet corn has highest edible quality in milk stage. In sweet corn best nutritional quality depends on moisture (72.7%) and total solids (22.3%) comprising of carbohydrate (81%), protein (13%) and lipids (3.5%). Yield loss due to weeds in maize varies from 28 to 93 %, depending on the type of weed flora and intensity and duration of crop-weed competition (Sharma and Thakur, 1998) [4]. They reported that unchecked weed growth in sandy loam soils of Punjab reduced maize yield by 61.3 % compared to weed free check. Weed infestation is a major constraint in maize cultivation that can cause 33 to 72 % of yield loss (Thakur and Sharma, 1996) [5]. Reduction in Average global yield losses due to weed competition ranged from 34 to 60 % (Akobundu 1987) [1].

### Materials and Methods

The experiment was carried out during *rabi* season of 2016 at Research Cum Instructional Farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (Chhattisgarh). The field experiment was work out in randomize block design with 11 treatments *viz.*, Oxadiargyl 0.090 kg *a.i.* ha<sup>-1</sup>PE (T<sub>1</sub>), Metribuzin 0.40 kg *a.i.* ha<sup>-1</sup> PE (T<sub>2</sub>), Atrazine 1.25 kg *a.i.* ha<sup>-1</sup> PE (T<sub>3</sub>), Tembotrione 0.120 kg *a.i.* ha<sup>-1</sup> PoE (T<sub>4</sub>), Sulfosulfuron 0.030 kg *a.i.* ha<sup>-1</sup> PoE (T<sub>5</sub>), Atrazine 1.25 kg *a.i.* ha<sup>-1</sup>EPoE (T<sub>6</sub>), Oxadiargyl 0.090 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing at 30 DAS (T<sub>7</sub>), Metribuzin 0.40 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing at 30 DAS (T<sub>8</sub>), Atrazine 1.25 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing at 30 DAS (T<sub>9</sub>), Hand weeding twice at 20 & 40 DAS (T<sub>10</sub>) and Weedy check (T<sub>11</sub>). Treatments were replicated thrice in randomize block design. The allocation of these treatments was done randomly and all the cultural practices were followed as per recommended. Five tagged plants were used for recording plant height, which was measured in cm from the ground surface to the fully opened leaf. Mean height was computed by dividing the summations with five. The numbers of green and fully opened leaves on the observational plants were counted manually.

### Correspondence

**Veerendra Kumar**Department of Agronomy,  
CoA, Indira Gandhi Krishi  
Vishwavidyalaya, Raipur,  
Chhattisgarh, India

The numbers of cobs<sup>-1</sup> were counted from five tagged plants in each plot. After counting cobs the average was worked out to get number of cobs plant<sup>-1</sup>. The complete filled green cobs were picked from the five tagged plants from each treatment and their fresh weight were recorded and expressed in gram. The length of five cobs were randomly selected from each plot and was measured from the base of the lower most primary rachis to the tip of the cob and the average was recorded as cob length in cm. Five cobs randomly selected from five plants of each treatment and number of rows cob<sup>-1</sup> were counted and the average rows cob<sup>-1</sup> was noted on number of rows cob<sup>-1</sup>. Randomly selected five cobs for cob weight, length and rows cob<sup>-1</sup> were used to count number of grain rows<sup>-1</sup>. The number of grains cob<sup>-1</sup> was calculated as follows Number of grains cob<sup>-1</sup>= Number of rows x Number of grains.

## Results and Discussion

The maximum plant height was recorded under atrazine 1.25 kg *a.i.* ha<sup>-1</sup> (PE) followed by one hand hoeing (T<sub>9</sub>) during all the observation date except 30 DAS, which was found at par with hand weeding twice, metribuzin 0.40 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing at 30 DAS and tembotrione 0.120 kg *a.i.* ha<sup>-1</sup> PoE. The number of green cobs significantly influenced by different weed management practices. Superior number of cobs (1.50) plant<sup>-1</sup> was produced by atrazine 1.25 kg *a.i.* ha<sup>-1</sup> (PE) followed by one hoeing at 30 DAS (T<sub>9</sub>) which was at par with hand weeding twice (T<sub>10</sub>) and metribuzin 0.40 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing at 30

DAS (T<sub>8</sub>). The results are in close conformity to that reported by Mandal *et al.* (2004) [3] and Chopra and Angiras (2008) [2]. Highest cob weight obtained from by atrazine 1.25 kg *a.i.* ha<sup>-1</sup> (PE) followed by one hoeing at 30 DAS (T<sub>9</sub>) and lowest in weedy check (T<sub>11</sub>). Atrazine 1.25 PE followed by one hoeing (T<sub>9</sub>) recorded significantly the highest length of cobs (24.44 cm) over all the weed management practices except metribuzin 0.40 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing at 30 DAS and hand weeding twice. Significantly, more number of rows cob<sup>-1</sup> was observed under atrazine 1.25 kg ha<sup>-1</sup> PE followed by one hoeing at 30 DAS (16.08) with on par effect of hand weeding twice (T<sub>10</sub>). Among all weed management practices the significantly higher number of grains row<sup>-1</sup> was recorded under atrazine 1.25 kg *a.i.* ha<sup>-1</sup> (PE) followed by one hoeing at 30 DAS (T<sub>9</sub>) which was at par with hand weeding twice (T<sub>10</sub>) (34.56 g) and metribuzin 0.4 kg *a.i.* ha<sup>-1</sup> (PE) followed by one hoeing at 30 DAS (T<sub>8</sub>) (34.25) over other weed management practices. However, the grain cob<sup>-1</sup> in hand weeding twice (T<sub>10</sub>) and application of metribuzin 0.4 kg *a.i.* ha<sup>-1</sup> (PE) followed by one hoeing at 30 DAS (T<sub>8</sub>) was statistically at par with atrazine 1.25 kg ha<sup>-1</sup> PE followed by one hoeing at 30 DAS this is might be due to minimum weed crop competition and lower number of grains were recorded under weedy check (350.67). Significantly the highest cob yield of maize (18.22 t ha<sup>-1</sup>) was obtained under atrazine 1.25 kg *a.i.* ha<sup>-1</sup> PE followed by one hoeing at 30 DAS over rest of the weed management practices due to effective weed control in this treatment which enhanced the growth and yield contributing characters of sweet corn.

**Table 1:** Plant height, number of cob plant<sup>-1</sup>, cob length, cob weight, number of row cob<sup>-1</sup>, number of grain row<sup>-1</sup> and green cob yield of maize as influenced by weed management practices

Treatments	Plant height (cm)				No. of cob plant <sup>-1</sup>	Cob length (cm)	Cob weight (g)	No. of row cob <sup>-1</sup>	No. of grain row <sup>-1</sup>	Green cob yield t ha <sup>-1</sup>
	30 DAS	60 DAS	90 DAS	At harvest						
T <sub>1</sub> : Oxadiargyl 0.090 kg <i>a.i.</i> ha <sup>-1</sup> PE	37.30	100.67	186.67	210.73	1.13	14.71	250.69	12.82	30.67	13.68
T <sub>2</sub> : Metribuzin 0.40 kg <i>a.i.</i> ha <sup>-1</sup> PE	37.33	106.20	205.45	214.82	1.21	15.55	266.33	13.16	31.44	14.14
T <sub>3</sub> : Atrazine 1.25 kg <i>a.i.</i> ha <sup>-1</sup> PE	38.07	112.00	210.07	223.13	1.28	18.55	293.67	13.89	32.78	15.01
T <sub>4</sub> : Tembotrione 0.120 kg <i>a.i.</i> ha <sup>-1</sup> PoE	38.67	114.30	215.28	227.53	1.31	20.95	312.67	14.24	33.76	16.32
T <sub>5</sub> : Sulfosulfuron 0.030 kg <i>a.i.</i> ha <sup>-1</sup> PoE	37.07	-----	-----	-----	-----	-----	-----	-----	-----	-----
T <sub>6</sub> : Atrazine 1.25 kg <i>a.i.</i> ha <sup>-1</sup> EPoE	38.67	113.50	214.20	223.50	1.30	19.90	304.67	14.00	33.22	15.78
T <sub>7</sub> : Oxadiargyl 0.090 kg <i>a.i.</i> ha <sup>-1</sup> PE followed by one hoeing at 30 DAS	37.53	110.13	209.39	220.89	1.25	16.26	282.33	13.56	32.00	14.60
T <sub>8</sub> : Metribuzin 0.40 kg <i>a.i.</i> ha <sup>-1</sup> PE followed by one hoeing at 30 DAS	38.33	117.01	218.53	232.40	1.34	22.31	341.33	14.55	34.25	17.28
T <sub>9</sub> : Atrazine 1.25 kg <i>a.i.</i> ha <sup>-1</sup> PE followed by one hoeing at 30 DAS	38.84	125.07	229.02	240.74	1.50	24.44	364.67	16.08	34.89	18.27
T <sub>10</sub> : Hand weeding twice at 20 & 40 DAS	38.87	121.27	223.17	237.40	1.43	23.20	349.33	15.11	35.56	17.61
T <sub>11</sub> : Weedy check	34.54	83.87	162.47	191.53	1.00	12.11	168.33	12.33	28.44	7.98
SEM±	1.13	3.63	4.64	4.44	0.05	0.73	8.07	0.54	0.37	0.34
CD (P=0.05)	NS	10.71	13.67	13.11	0.14	2.17	23.81	1.58	1.10	1.01

## Conclusion

The maximum plant height, number of cob plant<sup>-1</sup>, cob length, cob weight, number of row sand green cob yield were recorded under atrazine 1.25 kg *a.i.* ha<sup>-1</sup> (PE) followed by one hand hoeing whereas, higher number of grain was recorded under hand weeding twice at 20& 40 DAS.

## References

1. Akobundu IO. Weed science in the cowpea (*Vigna unguiculata*) in the humid tropics. Weed Science. 1987; 30:331-334.
2. Chopra P, Angiras NN. Influence of tillage and weed control methods on weeds, yield and yield attributes of

maize (*Zea mays* L.). Indian Journal of of Weed Science. 2008; 40 (1&2):47-50.

3. Mandal S, Mondal S, Nath S. Effect of integrated weed management on yield components, yield and economics of baby corn (*Zea mays*). Annals of Agriculture Research. 2004; 25(2):242-244.
4. Sharma V, Thakur DR. Integrated weed management in maize (*Zea mays*) under mid-hill condition of north-western Himalayas. Indian Journal of Weed Science. 1998; 30:158-162.
5. Thakur DR, Sharma Y. Integrated weed management in rainfed maize (*Zea mays* L.). Indian Journal of Weed Science. 1996; 28(3&4):207-208.