



## EFFECT OF WEED CONTROL PRACTICES UNDER SYSTEM OF CROP INTENSIFICATION (SCI) ON YIELD AND QUALITY OF SESAME (*Sesamum indicum* L.)

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### ABSTRACT

A field experiment was conducted to evaluate the “System of Crop Intensification (SCI) practices in Sesame” at Wetland farm of Tamil Nadu Agricultural University, Coimbatore during the early summer season (January to May, 2013) in Randomized complete block design with ten treatments and three replications. Among the different treatments, sesame grown under 30 × 30 cm spacing + TIBA @ 50 ppm at 30 DAS + HW at 35 DAS recorded lower density (7.33 m<sup>-2</sup>) and dry weight of weed at 60 DAS (1.47 g m<sup>-2</sup>), higher seed and oil yield (1.137 t ha<sup>-1</sup> and 502 kg ha<sup>-1</sup>, respectively). Weed management practices under study viz., hand hoeing and mechanical weeding did not influence the oil content of sesame.

**KEYWORDS:** Sesame, SCI, Hand weeding, Mechanical weeding, Yield and Quality.

### INTRODUCTION

In India, sesame (*Sesamum indicum* L.) ranks second in importance next to groundnut amongst oilseed crops. Being a slow growing crop during the early phase, weeds compete with sesame for growth resources and affect the growth of sesame and finally reducing the production unit area<sup>-1</sup>. To reduce the weed competition, some of the agronomical measures like higher plant density per hectare and timely weeding by using hand hoes and mechanical weeders can help to boost the production unit area<sup>-1</sup> of the crop (Narkhede *et al.*, 2000). Present experiment was carried out with the objective to evaluate the effect of weed management practices under System of Crop Intensification (SCI) on yield and quality of sesame.

### MATERIALS AND METHODS

A field experiment was conducted during the early summer season (January to May, 2013) at Wetland farm of Tamil Nadu Agricultural University, Coimbatore, to evaluate the System of Crop Intensification (SCI) practices in sesame. The soil of the experimental field was clay loam in texture belonging to *Typic Haplustalf*. The experiment was laid out in Randomized complete block design, comprised of ten treatments viz., 30 × 30 cm spacing + No nipping + hand weeding (HW) at 35 DAS (Control), 30 × 30 cm spacing + TIBA @ 50 ppm at 30 DAS + HW, 40 × 40 cm spacing + Nipping at 35 DAS + HW, 40 × 40 cm spacing + Nipping at 35 DAS +

mechanical weeding (MW), 40 × 40 cm spacing + TIBA @ 50 ppm at 30 DAS + HW, 40 × 40 cm spacing + TIBA @ 50 ppm at 30 DAS + MW, 50 × 50 cm spacing + Nipping at 35 DAS + HW, 50 × 50 cm spacing + Nipping at 35 DAS + MW, 50 × 50 cm spacing + TIBA @ 50 ppm at 30 DAS + HW and 50 × 50 cm spacing + TIBA @ 50 ppm at 30 DAS + MW. The treatments were replicated thrice. Sesame variety VRI (SV) 2 was used as test cultivar. Recommended dose of fertilizers *i.e.*, 35:23:23: NPK kg/ha was applied as basal.

Application of pendimethalin @ 1.0 kg a.i. ha<sup>-1</sup> as pre-emergence herbicide to all treatments was done on 3 DAS. Both hand and mechanical weeding were done using hand hoe and self-propelled power weeder (weeder details include: name of the weeder- Baby weeder, power source – 1.5 hp petrol engine, depth of cut- 5-6 cm, width of operation- 22.5 cm, speed- 1.8kmph, coverage- 0.084 ha day<sup>-1</sup> and fuel consumption- 0.660 lit hr<sup>-1</sup>) as per the treatment schedule on 35 DAS, respectively. Data on density and dry weight of weed, yield and quality parameters were recorded and statistically analysed.

### RESULTS AND DISCUSSION

Treatments imposed had profound effect on weed density and weed dry weight due to SCI practices in sesame. Lesser weed density (7.33 m<sup>-2</sup>) and weed dry weight (1.47 g m<sup>-2</sup>) was noticed at 60 DAS under 30 × 30 cm spacing + TIBA @ 50 ppm at 30 DAS + HW over

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Table 1. Effect of weed control practices under System of Crop Intensification (SCI) on weed growth, yield and quality parameters of sesame

Treatments	Weed density (No. m <sup>-2</sup> ) at 60 DAS	Weed dry weight (g m <sup>-2</sup> ) at 60 DAS	Seed yield (t ha <sup>-1</sup> )	Oil yield (kg ha <sup>-1</sup> )	Oil content (%)
T <sub>1</sub> : 30 × 30 cm spacing + No nipping + HW at 35 DAS –Control	3.15 (8.00)	1.88 (1.55)	0.793	358	45.2
T <sub>2</sub> : 30 × 30 cm spacing + TIBA @ 50 ppm at 30 DAS + HW at 35 DAS	3.05 (7.33)	1.86 (1.47)	1.137	502	44.2
T <sub>3</sub> : 40 × 40 cm spacing + Nipping at 35 DAS + HW at 35 DAS	4.68 (20.00)	2.43 (3.90)	0.822	381	46.4
T <sub>4</sub> : 40 × 40 cm spacing + Nipping at 35 DAS + MW at 35 DAS	4.15 (15.33)	2.16 (2.69)	1.022	468	45.8
T <sub>5</sub> : 40 × 40 cm spacing + TIBA @ 50 ppm at 30 DAS + HW at 35 DAS	4.95 (22.67)	2.44 (3.96)	0.763	345	45.2
T <sub>6</sub> : 40 × 40 cm spacing + TIBA @ 50 ppm at 30 DAS + MW at 35 DAS	4.22 (16.00)	2.12 (2.49)	0.803	363	45.2
T <sub>7</sub> : 50 × 50 cm spacing + Nipping at 35 DAS + HW at 35 DAS	5.40 (27.33)	2.62 (4.86)	0.775	353	45.6
T <sub>8</sub> : 50 × 50 cm spacing + Nipping at 35 DAS + MW at 35 DAS	4.69 (20.00)	2.17 (2.72)	0.944	418	44.3
T <sub>9</sub> : 50 × 50 cm spacing + TIBA @ 50 ppm at 30 DAS + HW at 35 DAS	5.48 (28.00)	2.47 (4.14)	0.812	380	46.9
T <sub>10</sub> : 50 × 50 cm spacing + TIBA @ 50 ppm at 30 DAS + MW at 35 DAS	4.82 (21.33)	2.19 (2.78)	0.997	459	46.1
<b>SEd</b>	<b>0.25</b>	<b>0.12</b>	<b>40</b>	<b>20</b>	<b>2.4</b>
<b>CD (P=0.05)</b>	<b>0.53</b>	<b>0.24</b>	<b>84</b>	<b>42</b>	<b>NS</b>

\* Values in parenthesis are original. Weed data was transformed to square root transformation.

\* HW: Hand weeding; MW: Mechanical weeding; TIBA: Tri iodo benzoic acid; NS: Non-significant

other treatments (Table 1). This was due to the quick growth of sesame than weeds after weeding at 35 DAS which resulted in higher plant dominance over weeds. Shading of ground area was observed in closer square geometry due to more number of plants m<sup>-2</sup> and coverage of row spacing by spreading branches and leaves. Similar results were reported by Narkhede *et al.* (2000) in sesame.

Effect of SCI practices brought out a significant influence on seed yield of sesame. Among the treatments, 30 × 30 cm spacing + TIBA @ 50 ppm at 30 DAS + Hand weeding at 35 DAS had shown its superiority over other treatments in recording higher seed yield (30.25% higher over control). Higher seed yield could be due to better weed control during critical stage and more plant population m<sup>-2</sup>. These results are in conformity with the findings of Tripathi *et al.* (2009) in pigeonpea.

Oil content is largely governed by genetic nature. The weed management practices under study *viz.*, hand hoeing and mechanical weeding did not influence the oil content of sesame. These findings are in support of Ahmad *et al.* (2002) in sesame (Table -1).

Square planting with 30 × 30 cm spacing + TIBA @ 50 ppm at 30 DAS + HW at 35 DAS gave higher oil yield (502 kg ha<sup>-1</sup>) than other treatments. Since, oil content values were not varied much, the impact of seed yield had a marked effect on oil yield of sesame. The results are in line with Ahmad *et al.* (2002) in sesame.

## CONCLUSION

Sesame grown under 30 × 30 cm spacing, TIBA @ 50 ppm at 30 DAS and hand weeding at 35 DAS recorded lower density and dry weight of weed at 60 DAS, higher seed and oil yield.

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