

SUMMER OKRA AS INFLUENCED BY WEED MANAGEMENT

ZINZALA, M. J.; *PATEL, T. U.; PATEL, H. H., PATEL, D. D., PATEL, H.M.
AND ITALIYA, A.P.

DEPARTMENT OF AGRONOMY
N. M. COLLEGE OF AGRICULTURE,
NAVSARI AGRICULTURAL UNIVERSITY
NAVSARI - 396 450, GUJARAT, INDIA

**EMAIL: tushagri.ank@nau.in*

ABSTRACT

An experiment was conducted at Navsari Agricultural University, Navsari to study the effect of weed management on okra fruit yield and weeds during summer season of 2013-14. Highest weed control efficiency and lowest weed population was recorded with three HW at 20, 40 and 60 DAS. Likely, plant height, number of nodes/main stem, number of fruits/plant and fruit yield/plant were recorded significantly higher under three HW at 20, 40 and 60 DAS. Ultimately the higher fruit yield (16.78 t/ha) were also recorded with the treatment three HW at 20, 40 and 60 DAS, which found at par with two hand weeding at 20 and 40 DAS and Pendimethalin 1.0 kg/ha as pre-emergence + Quizalofop ethyl 0.040 kg/ha at 30 DAS. Moreover, three HW at 20, 40 and 60 DAS was found appropriate and superior with secure net returns of 105233/ha.

KEY WORDS: Okra, summer, weed control efficiency

INTRODUCTION

Okra is one of the most popular vegetables in tropical or sub-tropical region. Okra suffers heavy yield losses due to weed infestation owing to congenial environmental conditions for luxurious weed growth coupled with wider row spacing and slow growth at early stages. Yield losses due to weeds varied from 40 to 80 per cent depending on the type of flora, their intensity and stages (Patel *et al.*, 2004). The most critical period of weed competition in okra is up to 2-6 weeks after sowing. Scarcity of manpower at critical period of crop-weed competition, costly herbicides and their availability in desired quantity are also problematic.

It was, therefore, considered necessary to undertake a study to find the performance of various pre-emergence as well as post emergence herbicides applied with other weed management practices so that it reduce the farmers extra expenditure incurred on manual weeding in scorching summer conditions.

MATERIALS AND METHODS

A field experiment was conducted during summer season of 2013-14 at the College Farm, N. M. College of Agriculture, Navsari Agricultural University, Navsari to study the “Weed management practices in summer okra (*Abelmoschus esculentus* L. Moench)

under South Gujarat condition". The experiment consisted of ten weed management treatments viz., W₁: Stale seed bed, W₂: Pendimethalin 1.0 kg/ha pre-emergence, W₃: Oxyfluorfen 0.24 kg/ha pre-emergence, W₄: Pendimethalin 1.0 kg/ha as pre-emergence + Quizalofop ethyl 0.040 kg/ha at 30 DAS), W₅: Oxyfluorfen 0.24 kg/ha as pre-emergence + Quizalofop ethyl 0.040 kg/ha at 30 DAS, W₆: Quizalofop ethyl 0.040 kg/ha at 20 DAS + One hand weeding at 40 DAS, W₇: One hand weeding + Straw mulch 3 t/ha at 20 DAS, W₈: Two hand weeding at 20 & 40 DAS, W₉: Three hand weeding at 20, 40 and 60 DAS and W₁₀: Weedy check (control) were evaluated on okra. The experiment was laid out in randomized block design with four replications. The data on dry weed weight (g/m²) at 90 DAS was collected from plots of different treatments. Fresh pod yield (q/ha) was recorded by adding the weight of pods at different pickings. The weed control efficiency was calculated as per standard method.

RESULTS AND DISCUSSION

Weeds

The major weed flora of experimental field consisted of *Echinochloa* spp., *Convolvulus arvensis*, *Trianthema portulacastrum*, *Digera arvensis*, *Physalis minima* and *Cynodon dactylon* were dominant weeds. The crop experienced severe weed competition during investigation which might be due to favourable environmental conditions leading to vigorous growth of weeds. All the weed management practices caused significant reduction in weed density. The treatment three hand weeding at 20, 40 and 60 DAS (W₉), two hand weeding at 20 and 40 (W₈) and among chemical method of weed control, treatment W₄ (Pendimethalin 1.0 kg/ha as pre-emergence + Quizalofop ethyl

0.040 kg/ha at 30 DAS) and W₆ (Quizalofop ethyl 0.040 kg/ha at 20 DAS + One hand weeding at 40 DAS) significantly reduced the dry weight of weeds (Table 1). The effective control of weeds under these treatments resulted in the highest weed control efficiency. Effectiveness of various herbicides against different weed species in okra crop has been reported by many workers including Kumar *et al.* (2009), Singh *et al.* (2010) and Sharma and Patel (2011).

Crop growth and fruit yield

All weed management practices significantly improved the growth (plant height) and yield attributes (number of nodes/main stem, number of fruit/plant and fruit yield/plant) of okra over weedy check (Table 1). Data clearly showed that, plant height, number of nodes/main stem, number of fruit/plant and fruit yield/plant were significantly higher with three hand weeding treatment. However, all the weed management treatments produced significantly higher fresh fruit yield than weedy check. Higher fresh fruit yield (16.8, 14.3 and 13.9 t/ha, respectively) were obtained under treatment three hand weeding at 20, 40 and 60 DAS followed by treatments two hand weeding at 20 and 40 DAS and Pendimethalin 1.0 kg/ha as Pre-emergence + Quizalofop ethyl 0.040 kg/ha at 30 DAS during the course of investigations (Figure 1). This might be due to proper weed management treatments controlled weeds effectively, reduced the competition from the weeds to a greater extent and thus, helped in faster growth and development of okra crop, resulting in obtaining higher values of all yield attributing characters. The findings are in closely vicinity of those reported by Kumar *et al.* (2011) and Sharma and Patel (2011) with respect to okra yield.

Economics

From the economics point of view, the highest net profit of 1,05,233/ha was obtained from treatment three hand weeding at 20, 40 and 60 DAS followed by treatments two hand weeding at 20 and 40 DAS (Rs. 83442/ha) and Pendimethalin 1.0 kg/ha as Pre-emergence + Quizalofop ethyl 0.040 kg/ha at 30 DAS (Rs. 82277/ha) (Figure 1).

CONCLUSION

From the study, it was concluded that three hands weeding at 20, 40 and 60 DAS was found very effective in achieving higher and profitable fruit yields of okra crop. Alternatively, where farm labours are scarce, application of Pendimethalin 1.0 kg /ha as pre-emergence + Quizalofop ethyl 0.04 kg/ha at 30 DAS (W4) is also found remunerative.

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Table 1: Dry weight of weeds, WCE, yield and yield attributes of okra at harvest as influenced by weed management

Treatments	Dry Weight of Weeds (kg/ha)	Weed Control Efficiency (%)	Plant Height (cm)	Number of Nodes/ Main Stem	Number of Fruits /Plant	Fruit Yield /Plant (g)
Stale seed bed	556.0	45.9	32.0	12.3	6.6	64.7
Pendimethalin 1.0 kg/ha (PE)	502.8	51.2	33.3	13.3	8.7	91.9
Oxyfluorfen 0.24 kg/ha (PE)	649.9	37.2	31.4	12.8	6.7	67.0
Pendimethalin 1.0 kg/ha (PE) fb Quizalofop ethyl 0.040 kg/ha at 30 DAS	281.5	73.1	40.0	16.5	9.4	111.4
Oxyfluorfen 0.24 kg/ha (PE) fb Quizalofop ethyl 0.040 kg/ha at 30 DAS	537.9	48.1	34.8	13.2	7.1	79.4
Quizalofop ethyl 0.040 kg/ha at 20 DAS fb One hand weeding at 40 DAS	299.6	70.9	37.7	16.2	9.2	110.1
One hand weeding fb Straw mulch 3 t/ha at 20 DAS	470.7	54.2	35.5	14.9	7.3	80.5
Two hand weeding at 20 & 40 DAS	183.5	82.1	42.2	16.8	10.3	126.1
Weed free check (Three hand weeding at 20, 40 and 60 DAS)	119.4	88.4	48.5	19.0	11.6	144.2
Weedy check (Control)	1047.1	0.0	26.2	11.1	4.0	44.4
LCD (P=0.05)	85.76	--	5.17	2.41	1.22	10.42

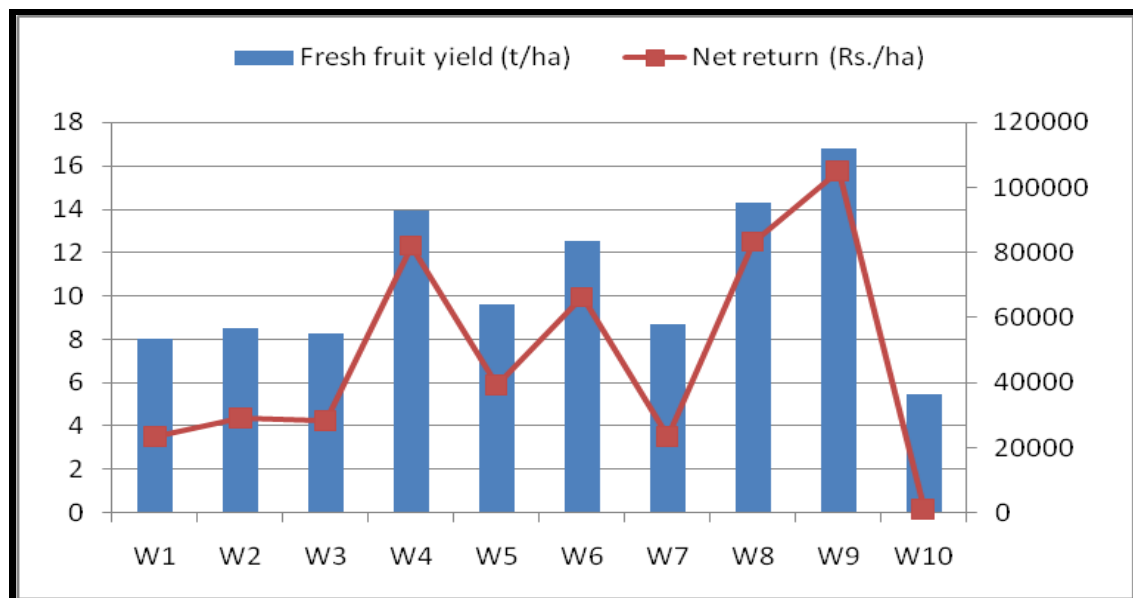


Fig. 1: Yield and economics of okra crop as influenced by weed management

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