

A.N. Rao., J.K. Ladha and S. P. Wani. 2015. Weeds and weed control in finger millet in India. – A review. pp. 114. In: S.V.R. Shetty., T.V.R. Prasad., M.D. Reddy., A.N. Rao., J.S. Mishra., Gita Kulshreshta and C.T. Abraham (eds.). Proceedings, Volume II (Oral Papers). 25th Asian-Pacific Weed Science Society Conference, Hyderabad, India. Indian Society of Weed Science, Jabalpur.



APWSS - 2015

Proceedings

Volume II (Oral Papers)

25th Asian-Pacific Weed Science Society Conference
Hyderabad, India



Organized by
Indian Society of Weed Science

In collaboration with
Indian Council of Agricultural Research
Directorate of Weed Research
PJT State Agricultural University



Weeds and weed control in finger millet in India – A review

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Eleusine coracana (L.) Gaertn is a nutritious and under exploited minor millet with several edible and industrial uses. Finger millet is cultivated on 1.176 million ha, with average yields of 1.64 t/ha, in India (DMD, 2014). The major finger millet growing (with area more than 10,000 ha) states of India are: Karnataka, Uttarakhand, Maharashtra, Tamil Nadu, Orissa, Andhra Pradesh, Gujarat, Jharkhand, West Bengal, Bihar and Chattisgarh. About 13.3% and 20.6% of the total area and production of finger millet is contributed by irrigated ecosystem in India. Finger millet is cultivated, mainly as rainfed crop, by seeding (broadcast- or row-seeding) and transplanting methods of establishment in India. Weeds are the major constraints limiting the productivity of finger millet due to initial slow growth of the small seeded finger millet which favors weed growth resulting in severe competition for limited resources. The objective of this review is to list weeds associated with finger millet in different parts of India and summarize the weed management options for effectively managing weeds in finger millet.

METHODOLOGY

The literature published in national and international journals on “Weeds and weed management in finger millet in India” was collected. All the papers published were read, analyzed and summarized as a review in this paper.

RESULTS

Of 88 weed species reported to be associated with finger millet in India, the most commonly reported weeds (in decreased order of importance) include: *Cyperus rotundus*, *Cynodon dactylon*, *Commelina benghalensis*, *Ageratum conyzoides*, *Echinochloa colona*, *Dactyloctenium aegyptium*, *Digitaria marginata*, *Eleusine indica*, *Spilanthes acmella*, *Acanthospermum hispidum*, *Eragrostis pilosa*, *Parthenium hysterophorus*, *Amaranthus viridis*, *Celosia argentea*, *Alternanthera sessilis*, *Dinebra retroflexa*, *Digitaria sanguinalis*, *Euphorbia hirta* and *Ocimum canum*. The pre-dominant weed flora varied in different states of India. If un-weeded, weeds smother the

finger millet resulting in significant reduction in the yield by 5-70% owing to weed competition. Critical period for weed competition was identified to be first 4-6 weeks from planting in irrigated transplanted finger millet and first 5 weeks under rainfed conditions, respectively and thus should be kept weed free to prevent losses in yield.

Traditionally, direct row-seeded finger millet is often cultivated, twice or thrice at ten-day intervals, by farmers with tined implements drawn by draft animals. In regions where animal or machine power is not available, the weeding and cultivation operations are usually carried out by hand. Pre-emergence application of bensulfuron methyl + pretilachlor, butachlor, isoproturon, metoxuron, neburon, nitrofen, oxadiazon, oxyfluorfen and post-emergence application of 2,4-D, chlorimuron ethyl, MSMA and propanil, were found to be effective in managing weeds either alone or in combination with hand weeding or inter cultivation. Non-chemical method like stale seedbed with inter cultivations was also found to be effective in managing weeds. Integrated weed management was found to be more economical in managing weeds in finger millet.

CONCLUSION

For improving finger millet productivity, it is important to manage weeds during the critical period of crop weed competition and create conducive environment for crop. Integrated weed management strategies that are effective, economical and environment friendly are to be designed, tested and popularized among farming community to manage weeds and improve productivity and production of finger millet in India.

REFERENCES

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