

INTEGRATED WEED MANAGEMENT IN ONION

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ABSTRACT

Field experiments were conducted during rabi seasons of 2003 and 2004 at the Main Garden, University Department of Horticulture, Dr. PDKV, Akola. The results indicated that, the pre-emergence application of fluchloralin at 1.0 kg ha⁻¹ supplemented with superimposition of two hand weedings at 30 and 60 DAT recorded the least weed count and dry matter production favouring the highest yield of onion bulbs (72.4 t ha⁻¹). An application of fluchloralin, pendimethalin, alachlor, trifluralin and oxyfluorfen at lower doses in combination with one and two hand weedings produced significantly the higher yields than an application of these herbicides alone in higher doses.

Key words : Integrated weed management, Yield, Onion.

Onion is the most important commercial vegetable crop grown from ancient times in India. India is the second largest producer and third largest exporter of onion in the world. Maharashtra is the leading producer state of onion in the nation. Being a slow growing crop and having erect tubular leaves, it suffers heavily from weed competition during establishment of seedlings and weeds overtop the crop. Frequent irrigations are required for raising the crop which promote emergence of weeds in several flushes. Weed interfere development of onion bulbs thereby reducing bulbs yield to the extent of 40–80% (Singh *et al.*, 1992, Verma and Singh, 1996). Handweeding, no doubt, is effective; but it is a time consuming, cumbersome and under many situations becomes uneconomical. Herbicides are important tool for weed control, but it is not effective in controlling all the weeds present in the crop. Similarly, late emerging weeds hinder bulb development and create the problems in digging operation. Hence, it becomes necessary to control the weeds during the later period of crop growth.

In an integrated concept, each method has its own role to play in the overall weed management. Now, it is a high time to develop an integrated concept of weed management parallel to package of practices formulated for producing the higher yield of onion bulbs.

MATERIALS AND METHODS

An experiment was conducted during rabi season of the year 2003 and 2004 at University Department of Horticulture, Dr. PDKV, Akola. The soil of the

experimental field was medium black. The experiment was laid out in randomized block design with three replications and seventeen treatments comprised of five herbicides viz., fluchloralin, pendimethalin, alachlor, trifluralin and oxyfluorfen. For each herbicide two concentrations were used of which higher concentration of herbicide alone was tested and lower concentration was supplemented with one hand weeding (HW) at 45 DAT and two hand weedings at 30 and 60 DAT. One cultural treatment of three hand weedings at 20, 40 and 60 DAT and one treatment of unweeded control were included in the study. All the herbicides were applied before transplanting of onion seedlings as a pre-emergence treatment. Sixty days old seedlings of onion variety Akola Safed was transplanted on January 9, during 2003 and 2004 at a spacing of 10 x 10 cm in flat beds. Since the data on weed count and weed dry weight exhibited variations, it was transformed to square root.

RESULTS AND DISCUSSION

Effect on Weeds :

The prominent weed species in the experimental plots were *Cyperus rotundus*, *Cynodon dactylon*, *Physalis minima*, *Chenopodium album*, *Portulaca oleracea*, *Euphorbia hirta*, *Amaranthus viridis*, *Tribulus terrestris* and *Parthenium hysterophorus*. All the weed control treatments caused significant reduction in total weed population and dry weight of weed as compared to unweeded control during both the years of experimentation. During the year 2003 at 80 DAT, the pre-emergence application of fluchloralin at 1.0 kg ha⁻¹ followed by two hand weedings at 30 and 60 DAT