

Effect of integrated weed management in *Rabi* onion (*Allium cepa* L.)

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ABSTRACT

A field experiment was conducted during *Rabi* season at Agronomy farm College of Agriculture, Pune (M.S.) to study the effect of different weed control practices on growth, yield and yield attributes of onion. The results indicated that the application of two hand weedings at 20 and 40 days after transplanting was significantly superior for weed control followed by spraying of pendimethalin 30 EC @ 1 kg a. i. ha⁻¹ as pre plant incorporation + one hand weeding at 40 days after transplanting in *Rabi* onion in clayey textured and slightly alkaline soils under Pune region.

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Key words : Onion, Weeds, Pendimethalin, Pre plant incorporation, Hand weeding

INTRODUCTION

Onion (*Allium cepa* L.) is one of the most widely used vegetable in the world. Onion is consumed in salad, pickles and chutney. It has a high nutritive value as it contains proteins, carbohydrates, minerals like calcium and vitamin A, riboflavin, ascorbic acid and thiamine. It is a commercial vegetable crop, which is extensively cultivated in India. It is grown over an area of 3.13 lakh ha with total production of 45.5 lakh tones (Anonymous, 2000). Weeds compete severely with this crop for essential plant nutrients, sunlight and thus reduce the bulb yield from 48 to 85 per cent, depending upon the duration of crop, weed competition, weather condition and intensity of weeds (Bhalla, 1978). Though hand weeding is effective, however, it is difficult due to narrow row spacing. Therefore, in recent years herbicides are very commonly used as a mean to overcome the farm labour pressure besides its beneficial effects in controlling the competition of weeds with main crop at critical growth stage (Shetty *et al.*, 1977).

MATERIALS AND METHODS

The field experiment entitled effect of integrated weed management on growth yield and yield attributing characters of onion (*Allium cepa* L.) was conducted during *Rabi* 2002 at Agronomy Farm, College of Agriculture, Pune (MS). The soil was clayey in texture and slightly alkaline with low available nitrogen (200.00 kg ha⁻¹), medium in available phosphorus (18.44 kg ha⁻¹) and very high available potassium (402.40 kg ha⁻¹). The experiment was laid out in Randomized Block Design

(RBD) with eight treatments (Table 1) replicated thrice. The gross and net plot size were 3.0 x 1.8 m² and 2.4 x 1.2 m², respectively. Seven weeks old, healthy uniform seedlings were used for transplanting. Transplanting of variety N – 2 – 4 – 1 was done in dry soil at 15 x 10 cm spacing. All the recommended management practices were followed. Pre-planting herbicide pendimethalin 30 EC @ 1kg a.i. ha⁻¹ and oxyflourfen 23.5 EC @ 0.2 kg a.i. ha⁻¹ were sprayed one day before transplanting and same dose of above herbicides was sprayed in post emergence treatment at 20 days after transplanting through 500 litres of water ha⁻¹. Weed control efficiency of each treatment was calculated by using formula given by Gautam and Mishra (1995).

RESULTS AND DISCUSSION

The growth attributes (Table 2) *viz.*, plant height, number of functional leaves and neck thickness were significantly improved under the treatment; two hand weedings at 20 and 40 DAT than rest of the treatments except pendimethalin (PPI) + one hand weeding at 40 DAT. This might be due to no weed competition and the lowest values in unweeded control might be due to continuous competition of weeds resulted in reduced growth of plant due to poor exposure to sunlight. Similar trend was also observed by Manjunath *et al.* (1989) and Prakash *et al.* (2000). The dry matter production of bulb was significantly more with the treatment two hand weedings at 20 and 40 DAT as compared to rest of the treatments, particularly during advanced growth stages. Similar results were also observed by Manjunath *et al.*

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