

Research Paper :

Study on Physical and Chemical Methods of Weed Control in Onion Crop

J.M. VASHI, H.V. PANDYA AND R.M. NAIK

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SUMMARY

A Field experiment was carried out during *rabi* season of 2001-2002 at the Instructional Farm, ASPEE college of Horticulture and Forestry, Gujarat Agricultural University, Navsari Campus, Navsari, to study the response of onion (*Allium cepa* L.) to spacing and weed control treatments. The treatments comprising of two spacing viz., 10 x10 cm and 15 x 10 cm and ten weed control treatments viz., T₁-Pendimethalin @ 1.00 kg a.i. ha⁻¹ (pre-emergence), T₂-Pendimethalin @ 1.00 kg a.i. ha⁻¹ (post-emergence at 20 DATP), T₃-Alachlor @ 1.00 kg a.i. ha⁻¹ (pre-emergence), T₄-Alachlor @ 1.00 kg a.i. ha⁻¹ (post-emergence at 20 DATP), T₅-Oxyfluorfen @ 0.20 kg a.i. ha⁻¹ (pre-emergence), T₆-Oxyfluorfen @ 0.10 kg a.i. ha⁻¹ (post-emergence at 20 DATP), T₇-One hand weeding at 20 days after transplanting, T₈-Two hand weeding at 20 and 40 days after transplanting, T₉-Two hand weeding at 20 and 40 days after transplanting + Soil stirring and T₁₀-Unweeded control. All 20 treatment combinations were arranged in Factorial Randomized Block Design (FRBD) with three replication. The population of weed flora was significantly influenced by these treatments. The monocot weeds viz., *Cynodon dactylon* (L.) Pers., *Echinochloa crus-galli*, *Sorghum halpense* L., *Echinochloa colonum* Link, *Digitaria obsendens* Scop and dicot weeds viz., *Phyllanthus maderaspatien* Sis, *Ephorbia hirta* L. *Amaranthus viridis* L., *Digera arvensis* Fork., *Trianthema portulacastrum* L., *Convolvulus arvensis* L., *Physalis minima* L. and sedges viz., *Cyprus rotundus* L. were the major weed flora of the experimental field and different herbicides applied as pre-emergence or post-emergence influenced significantly the population of these weeds.

See end of the article for authors' affiliations

Correspondence to :

H.V. PANDYA

Department of
Entomology, N.M.
College of Agriculture,
Navsari Agricultural
University, NAVSARI
(GUJARAT) INDIA

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Onion (*Allium cepa* L.) is an important bulbous vegetable crop grown in India from the ancient times. The crop is grown for green vegetable as well as mature bulbs. It is popular salad crop and is also widely used as a cooked vegetable in soups, stews and casseroles as flavouring in many dishes. The outstanding characteristics of onion is the pungency which is due to volatile oil known as Allyl-propyl-disulphides. Because of its importance in cookery, onion is called "queen of the kitchen" by Germans. Onion contains 87.5 per cent water and provides energy to the extent of 49 calories, proteins 1.4 g, calcium 32 g, vitamin A 20 I.U., riboflavin 0.12 mg, niacin 0.1 mg, albuminoides 1.2 mg and ash 0.4 mg per 100 g of fresh edible portion.

The growth and yield of any cultivated crop is mainly influenced by genetical and cultural or management factors. The first factor deals with various plant breeding techniques for the improvement in crop varieties. The second factor, deals with the supply of adequate nutrition, irrigation, cultivation, plant population, plant protection and weed control etc. These factors have been exploited by various

research workers with varied success. However, efforts are still continued in these directions to gain further higher profitable yields.

The integrated methods of weed control offer the possibilities of increasing crop production under weed free environment by keeping the crop more healthy by suppressing the weeds competing for nutrients and sunlight. Hence, there is imperative need to screen out suitable herbicides for weed control along with manual weeding/soil stiring in onion bulb crop under different spacings. Keeping abreast with the above mentioned facts, the present investigation was under taken to study density of weed flora in weed control different treatments in onion.

MATERIALS AND METHODS

An experiment was conducted on plot No. F-3 of the Instructional Farm, ASPEE College of Horticulture and Forestry, Gujarat Agricultural University, Navsari during *rabi* season of 2001-2002. The experimental field was fairly leveled and was uniform. The soils of Navsari Campus are heavy deep black,

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