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Research Paper :

Efficiency of chemical weed control methods in onion seed production for controlling weeds and its effect on yield

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SUMMARY

The experiment was laid out, in Randomised Block Design with three replications. Onion seed crop was grown in ridges and furrow layout and in eight treatments. All the herbicides were applied after planting of bulbs after second irrigation. An experimental soil was clayey in texture, low in available N (241.41 kg ha^{-1}), medium in available phosphorus (19.81 kg ha^{-1}) and moderately rich in available potassium (350.50 kg ha^{-1}). The yield contributing characters were influenced by herbicide + hand weeding at 30 DAP and weed free treatment up to 70 days after planting, resulting into significant increase in seed yield as compared to herbicide alone and weedy check treatments. The seed weight per umbel, test weight and seed yield were found to be significantly higher in weed free check followed by oxyfluorfen @ 0.1875 kg ha^{-1} + one hand weeding. Among the herbicide treatments oxyfluorfen @ 0.25 kg ha^{-1} recorded higher seed weight per umbel, test weight and seed yield followed by oxadiargyl @ 0.09 kg ha^{-1}. The gross, net monetary returns and B: C ratio were maximum in weed free check. The integration of oxyfluorfen @ 0.1875 kg a.i. ha^{-1} along with one hand weeding showed higher benefit : cost ratio followed by oxadiargyl @ 0.0675 kg a.i. ha^{-1} coupled with hand weeding. Integrated weed management of oxyfluorfen (PE) @ 0.1875 kg a.i. ha^{-1} in conjugation with one hand weeding at 30 DAP was the most viable proposition in controlling weeds in onion seed crop and increasing the seed yield and net monetary returns, followed by oxadiargyl (P.E.)@ 0.0675 kg a.i. ha^{-1} +one hand weeding at 30 days after planting.

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Onion (*Allium cepa* L.) is one of the most important vegetable cash crops grown for vegetable in green stage as well as for mature bulb. India is prominent in the world for production and its export. The area of onion crop in India is 410.25 thousand ha with production 5451.45 thousand tonnes. Maharashtra has a predominant position in the country in respect of area (65,000 ha) and production (13.75 lakh tonnes). The productivity of onion in Maharashtra was (124.5 q ha^{-1}).

It is essential to produce fresh seed every year for the next sowing. Limited availability of quality seed is due to high incidence of diseases and pests over the seed crop. Purity of seed is less due to its highly cross pollination and the use of self seed saved for raising the onion crop. The bulb yield from 48 to 85 per cent depending upon the duration of the crop, weed competition, weather condition and intensity of weeds (Bhalla, 1978). Adequate supply of high quality seed free from noxious weeds is the basic need for increasing the production of onion bulb. Though hand weeding is the effective measure, but it is not feasible and economic in onion seed production due to narrow spacing and more labourious. Therefore, in recent years herbicides are very commonly used as a means to overcome the farm labour pressure besides its beneficial effects for controlling the competition of weeds with main crop at critical growth stages. Therefore, the present investigation was carried out to study the efficiency of chemical weed in the onion seed production for controlling weeds and its effect on yield.

MATERIALS AND METHODS

The experiment was conducted during *Rabi* season on Central Farm, Mahatma Phule Krishi Vidyapeeth, Rahuri. Dist. Ahmednagar (Maharashtra). It lies between 19^0 48'N and 19^0 57' N latitude and between 74^0 35' E and 74^0 18'E longitude. The altitude varies from 495 to 569 meters above mean sea level. Climatologically, this area falls in the scarcity zone (semi-arid tropics) with an annual rainfall ranging from 317 to 619 mm. The average annual rainfall is 520 mm. The soil of the