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Herbicidal weed control in kharif onion

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ABSTRACT

Ten herbicides were evaluated for weed control in kharif onion at Chhindwara, zonal agricultural research station of Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.) India. The two years study revealed economically effective weed control and higher bulb yield under oxyfluorfen 0.25 kg/ha (240.73 q/ha), oxadiazon 1.0 kg/ha (234.42 q/ha), pendimethalin 1.0 kg/ha (230.56 q/ha) as compared to rest herbicides and control (67.13 q/ha). But all these were at par to one hand weeding at 30 days after transplanting (232.48 q/ha) and weed free treatment (244.97 q/ha). Other herbicides viz. alachlor 1.0 kg, butachlor 2.0 kg, fluchloralin 1.0 kg, isoproturon 1.0 kg, thiobencarb 2.0 kg as pre planting were at par among themselves (185.71 to 198.91 q/ha) and significantly better than control. All the above herbicides had broad spectrum effects and controlled grassy weeds viz. *Echinochloa crusgalli* (L), P. Beauv, Dinebra aerabica L. and Commelina benghalensis L.

Key words : Herbicides, Onion, Weed control.

The onion (*Allium cepa* L.) is a cash crop and the most important vegetable because of its outstanding characteristics of pungency, mild flavor, medicinal qualities and spice value. To meet the fast increasing consumption and exorbitent demand, emphasis is being laid on growing onion crop in kharif (rainy) season. The management of weed is one of the most serious problem during kharif which limits the crop yield and decrease profits. Yield losses in kharif onion due to weeds have been reported to the extent of 10-70 per cent by Phogat *et al.* (1989). The traditional method of weed control i.e. hand weeding is widely practiced in vegetable fields in india but with the rapid industrialization, increased literacy and mass migration of rural populations to urban areas, labour availability is becoming increasingly scare and costlier. The mechanical cultivation in onion is difficult due to high plant density. Hence, these factors have induced interest in herbicidal weed control. Experiments were conducted to determine if considerable increases in yield of onion could be obtained, with effective weed control for longer duration, by using herbicides.

MATERIALS AND METHODS

The field experiment was carried out at Krishi Vigyan Kendra farm, ZARS, Chhindwara during kharif 1991 and 1992 in clay-loam soil. The experiment was laidout in randomized block design having 14 treatments as in tables in four replicatons. The spraying of herbicides was done as pre plant treatment one day before transplanting. Hand weedings was done as per treatment i.e. 30 and 45-DAT. Weed free treatment were kept free from weeds for entire crops season, whereas, in weedy check (control) weeding was not done. The thiram treated seeds of variety N-53 was sown in lines on 15th june and 45 days old healthy and uniform seedings were transplanted on 1st August at a spacing of 20 cm x 10 cm during both years. A uniform dose of farm yard manure @ 100 q/ha, and nitrogen, phosphorus and potash @ 125:60:60 kg/ha were applied to the crop. Data on weed population were recorded species wise by list count quadrat (size 0.5m^2) from four random places in each treatment. The weed biomass was recorded at harvest and the weed control efficiency (WCE) was calculated by using the following relationship.

$$WCE = \frac{DWC\text{-}DWT}{DWC} \times 100$$

Where,

DWC = Dry weight of weeds in control plots
DWT = Dry weight of weeds in treated plots

The weed competitional index (WCI) was calculated by using the following formula.

$$WCI = \frac{X - Y}{X} \times 100$$

Where,

X= Yield from weed free treatment.
Y = Yield from the treatment for which

WCI is to be worked out :

Data were recorded for plant height, leaf area, dry weight per plant, radial bulb diameter, bolting precentage and bulb yield/ha. The leaf area (A) was computed by the following formula.