

Efficiency of Integrated Weed Management on Weed Control in Onion (*Allium cepa* var. *aggregatum*) cv. Gnanamedu Local

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Onion, belonging to the family Alliaceae, is an important vegetable-cum-condiment growth throughout the tropical and sub-tropical belt of the world. Our country encounters for one third of the world production in onion due to intensive cultivation. Weeds in onion is a global problem and losses due to weed competition were as high as 70-75% (Mani and Gautam, 1976). Onion has very poor competitive ability with weeds due to its inherent characteristics such as short stature, non-branching habit, sparse foliage, shallow root system and extremely slow growth in initial stages which cause rapid growth of roots. To ensure higher yield in any crop, effective control of weeds at the right time with right method is imperative. Complete control of weeds is hard to achieve by using any single method of weed control. The integrated weed management system is basically an integration of effective, dependable and workable weed management practices that can be used economically by the producers as a part of sound farm management system. With this background,

the present study was conducted to study the influence of integrated weed management on growth parameters in onion cv. Gnanamedu Local.

The experiment was undertaken in the Department of Horticulture, Faculty of Agriculture, Annamalai University during 2001-02. The treatments comprised manual weeding, herbicides (fluchloralin, pendimethalin and oxyfluorfen), mulching alone and in combinations (Table 1). There were 13 treatments in three replications and the experiment was conducted in randomized block design. Pendimethalin, oxyfluorfen as pre-emergence and fluchloralin as pre-planting herbicide were applied as spray using 600 l water ha⁻¹. Mulching (saw dust at 10 t ha⁻¹) was done 30 DAT as per the treatment.

The important weed species recorded in the experimental field were : *Cynodon dactylon*, *Cyperus rotundus*, *Dactyloctenium aegyptiacum*, *Echinochloa colona*, *Trianthema portulacastrum*, *Acalypha indica* and *Amaranthus viridis*, etc.

Implementation of various weed control

Table 1. Efficiency of integrated weed management on weed control in onion

Treatment	Weed population (No. m ⁻²)	Weed dry matter (g m ⁻²)	Bulb yield (t ha ⁻¹)
Control	215	420.3	6.05
Weedings (30 and 60 DAT)	155	331.6	13.71
Weedings (30, 60 and 90 DAT)	72	220.8	23.51
Fluchloralin 1 kg ha ⁻¹	191	389.3	8.86
Pendimethalin 1 kg ha ⁻¹	167	350.9	12.11
Oxyfluorfen 0.25 kg ha ⁻¹	180	370.2	10.51
Mulching alone	203	401.3	7.36
Fluchloralin 1 kg ha ⁻¹ +weeding 45 DAT	140	313	15.31
Pendimethalin 1 kg ha ⁻¹ +weeding 45 DAT	112	274	20.01
Oxyfluorfen 0.25 kg ha ⁻¹ +weeding 45 DAT	123	293	18.50
Fluchloralin 1 kg ha ⁻¹ +mulching	94	252	21.51
Pendimethalin 1 kg ha ⁻¹ +mulching	68	205	25.51
Oxyfluorfen 0.25 kg ha ⁻¹ +mulching	82	233	23.00
LSD (P=0.05)	11	12	1.27

treatments had greater influence over the total weed population during the crop intervals. Among the treatments tested the control plot recorded the highest weed density based upon the maximum weed growth when compared to other treatments. The treatment applied with pendimethalin at 1.0 kg ha⁻¹ with mulching recorded the least weed population (67.90 m²). This may be due to the timely and effective control of broad spectrum of weeds in the critical stages of competition. On the other hand, soft mulches such as sawdust checked the emergence and delayed the growth of weeds, as compared to control thus significantly reducing the weed population. The effectiveness of mulches in restricting weed growth has been reported by Vinay Singh *et al.* (1997) in onion. Among the weed control treatments, the control plot recorded significantly higher dry weight of weeds (205.21 g m⁻²) as compared to the other treatments. All the treatments applied with herbicides supplemented with mulching or hand weeding resulted in significantly reduced dry weight of weeds. The maximum dry weight of weeds may be due to the increased weed population and continuous growth and may also be due to the highest amount of nutrients removal.

All the weed control treatments produced significantly higher bulb yield as compared to the unweeded control (Table 1). The highest bulb yield was recorded with the application of pendimethalin at 1.0 kg ha⁻¹+mulching (25.51 t ha⁻¹), followed by hand weeding thrice (23.51 t ha⁻¹) and oxyfluorfen at 0.25 kg ha⁻¹ (23.00 t ha⁻¹), respectively. The lowest bulb yield was recorded in the weedy check (6.05 t ha⁻¹). The increased bulb yield in the best treatment may be due to the reduced weed application and weed dry weight per hectare.

The results of the study undertaken to find out the efficiency of integrated weed management on weed control in onion revealed that the treatment applied with fluchloralin at 1.0 kg ha⁻¹ plus saw dust mulching at 10 t ha⁻¹ recorded an efficient weed control when compared to the other weed control treatments.

REFERENCES

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