

Weed Management Studies in Kharif Onion (*Allium cepa* L.) on Economy

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ABSTRACT

The present investigation entitled "Weed management studies in kharif Onion (*Allium cepa* L.)" was conducted at Horticulture Complex, Dept. of Horticulture, Maharajpur, Jawaharlal Nehru Krishi Vishwa vidyalaya, Jabalpur (M.P.) during the year 2016-17. The treatments consisted of Ten combination of different agro input management practices viz., Oxyflurofen 23.5% EC + one hand weeding at 40-60 DAT (T₁), Oxyflurofen 23.5% EC + one hand weeding at 30 DAT + Quizalofop Ethyl 5% EC at 60 DAT (T₂), Pendimethalin 30% EC + one hand weeding at 30 DAT + Quizalofop Ethyl 5% EC at 60 DAT (T₃), Black Plastic Mulch (T₄), Organic Mulch- 6 t/ha (T₅), Weedy check (T₆), Silver Plastic Mulch (T₇), Organic Mulch- 9 t/ha (T₈), Organic Mulch- 12 t/ha (T₉), Weed free check (T₁₀), The maximum net return of Rs 162588/ha and cost benefit ratio of 1:2.66 were found with the treatment T₄ of black plastic mulch at 30, 60 and 90 DAT followed by T₂ (net return of Rs 151736/ha and maximum cost benefit ratio of 1:2.86 and treatment T₁ recorded a net return of Rs 145256/ha with cost benefit ratio of 1:2.79.

Key words: Oxyflurofen, Quizalofop Ethyl, Pendimethalin and Onion.

INTRODUCTION

Onion (*Allium cepa* L., 2n = 16) is one of the most important bulb crop grown all over the world. It belongs to the family Alliaceae and considered to be originated in Central Asia. It is an indispensable item in every kitchen used as salad, culinary purpose for flavoring as spices in pickles, sauce and vegetable. In India, it is being cultivated as annual crop for bulb production and as biennial crop for seed production. It is a naturally packaged vegetable consisting of fleshy, concentric scales which are enclosed in paper-like wrapping leaves, connected at the base by a

flattened stem disc. India ranks first in area and second in production of onion with about 19.9% share after China in the world. The average productivity of India is 16.3 MT/ha, which is low as compared to other onion producing countries of the world. It is cultivated in an area of 1320.13 thousand ha with a production of onion 20931.25 thousand MT out of which Maharashtra is the leading state and covers an area of 522 thousand ha with a production of 6529 thousand MT followed by Madhya Pradesh, Karnataka, Rajasthan and Gujarat.

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In Madhya Pradesh, it is grown in about 118 thousand ha with a production 2848 thousand MT. (NHRDF Database 2015-16). The average productivity of India is 16.3 MT/ha, which is low as compared to other onion producing countries of the world. There are several factors which influence the production of onion. Standardization of agro techniques particularly nutrient management is one of the main constraints. Among the macro and micronutrients, nitrogen, phosphorus, potassium and sulphur are pre-requisite. Onion responded to nitrogen and sulphur positively in terms of yield and quality of bulbs². Herbicides play an important role in weed management in onion. Early season weed competition significantly reduces onion bulb yield. Most weed seeds germinate over a long time and pre-emergence herbicides with their relatively short residual life, may not control weeds long enough to optimize onion yield. The post emergence herbicides may be needed along with other control measures. Chemical weed control is regarded to be better than hand weeding due to drudgery of involved in weeding and unavailability of labour at peak period of weed infestation. In this aspect, application of new and wide spectrum herbicide alone or in combination may give satisfactory weed control. In Madhya Pradesh,

onion is adversely affected mostly by weeds. The weeds grow in all the places of onion fields. Dominant weed species associated with onion are *Cyperus rotundas*, *Cynodon dactylon*, *Dinebraretro flexa*, *Digeraarvensis*, *Boerhaviadiffusa*, *Parthenium hysterophorus*, *Chenopodium album*, *Medicago denticulate* and *Rumaxdentatus*.

MATERIAL AND METHODS

Economics (Rs)

Cost of cultivation for each treatment was worked out separately gross return (Rs ha⁻¹) was obtained by converting the harvest in to monetary terms at the prevailing market rate during the course of investigation. Net return was obtained by deducting cost of cultivation from gross return. The benefit: cost ratio was calculated with the help of following formula⁴.

$$\text{Benefit cost ratio} = \frac{\text{Gross return (Rs)}}{\text{Total cost of cultivation}}$$

RESULTS AND DISCUSSION

Higher money value and less cost of cultivation are desirable traits for getting higher returns. Hence, economics of each treatment was worked out and presented in Table 1 and cost of cultivation incurred in various treatments is presented.

Table 1: weed management studies in kharif onion (*Allium cepa* L.) on economy

Treatments	Bulb yield (q/ha)	Gross income (Rs/ha)	Expenditure (Rs/ha)	Net income (Rs/ha)	C:B Ratio
T ₁ : Oxyflurofen 23.5% EC + one hand weeding at 40-60 DAT	226.19	221690	80934	145256	1:2.79
T ₂ : Oxyflurofen 23.5% EC + one hand weeding at 30 DAT + Quizalofop Ethyl 5% EC at 60 DAT	233.35	233350	81614	151736	1:2.86
T ₃ : Pendimethalin 30% EC + one hand weeding at 30 DAT + Quizalofop Ethyl 5% EC at 60 DAT	220.96	220960	82487	138473	1:2.68
T ₄ : Black Plastic Mulch	260.31	260310	97722	162588	1:2.66
T ₅ : Organic Mulch- 6 t/ha	203.85	203850	79922	123928	1:2.55
T ₆ : Weedy check	140.02	140020	89322	50698	1:1.57
T ₇ : Silver Plastic Mulch	235.95	235950	97722	138228	1:2.41
T ₈ : Organic Mulch- 9 t/ha	217.75	217750	93822	123928	1:2.32
T ₉ : Organic Mulch- 12 t/ha	219.79	219790	98322	121468	1:2.24
T ₁₀ : Weed free check	242.46	242460	105922	136538	1:2.29

It is revealed from the data, that maximum net return of Rs. 162588 /ha were found under treatment T₄ (black plastic mulch), followed by treatment T₂ (Oxyflurofen 23.5% EC + one

hand weeding at 30 DAT + Quizalofop Ethyl 5% EC at 60 DAT) with net return of Rs. 151736/ha. While the lowest net return of Rs. 50568 /ha recorded in treatment T₆ (weedy

check).The C:B Ratio found maximum and recorded (1:2.86) in T₂ (Oxyflurofen 23.5% EC + one hand weeding at 30 DAT + Quizalofop Ethyl 5% EC at 60 DAT) and recorded minimum (1:1.57) in T₆ (weedy check).These findings collaborate with the results obtained by Vavrina and Roka⁶, Pramanick *et al.*³, Saini and Walia⁵.

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