

EVALUATION OF PERIODS OF WEEDFREE MAINTENANCE FOR SARSON (*BRASSICA COMPESTRIS* L.) AND POTATO IN SIKKIM

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Sarson (*Brassica campestris* L.) cultivation in Sikkim has been introduced successfully in 1979 and since then, the area under mustard has been expanded to 6400 ha. Potato (*Solanum tuberosum* L.) is an old crop of this state and area under this crop is 4180 ha. (Suba, 1994). Most of the annual weeds grow in wide spacing of both the crops and cause severe crop weed competition particularly during the early crop growth stage and markedly reduce the yields. The reduction in tuber yield varies from 19.5-48.4% (Nankar and Singh, 1980).

The experiments were conducted at ICAR Complex Farm, Tadong in rabi 1993-94 and 1994-95. The crop was sown in October and harvested in February. Total rainfall received during experimentation was 442 mm, respectively. Experiment was carried out in randomized block design with four replications.

During both the years, the experiments were sown in October and harvested in the middle of March. The row spacing was 30 cm apart. A fertilizer dose of 40 kg N, 60 kg P₂O₅ and 40 kg K₂O/ha were applied. Phosphorus and potash were applied as basal dressing but nitrogen was applied in 2 splits i.e., half at basal and remaining at branching and flowering stages. There were seven treatments viz., weed free maintenance till 0, 20, 35, 50, 65, 80 DAS and till harvest Sikkim Sarson-1 was taken as test crop variety.

A fertilizer dose of 100 kg N, 80 kg P₂O₅ and 60 kg K₂O/ha was applied in potato. Entire phosphorus and potash were applied as basal dressing but nitrogen was applied in two split i.e., half at the time of sowing and remaining at the time of early tuberization. There were seven treatments viz., weed free maintenance till 0, 15, 30, 45, 60, 75 DAS and till harvest. Kufri Jyoti taken as a test crop variety.

The predominant weed flora observed in both the crops were *Polygonum capitata*, L., (17.54-20.00%), *Cyperus rotundus* L., *Cyperus iria* L., *Cynodon dactylon* (L) Pers. (12.28-13.33%), *Drymaria cordata*, L. (12.28-8.30%),

Amaranthus hybridis L., *Bidens pilosa* L., *Splianthus paniculata* L., *Sida rhombifolia* L., (7.01-6.66%) and *Gnaphalium affine*, L. (5.26-5.00%).

Maximum weed population/sq.m. (57.5) and weed dry matter (859 kg/ha) was observed in weedy check till zero days in comparison to weed free maintained plots for different duration (Tosh and Jana, 1983). Minimum weed population/m (29.50) and weed matter (102 kg/ha) was obtained in the treatment when plots were kept weed free till harvest followed by weed free maintain till 50 DAS (Table 1).

Maximum seed yield 13.0. q/ha was obtained in the treatments where plots were kept weed free till harvest followed by weed free maintenance till 50 DAS (11.49 q/ha) with an increase of 70.40 and 50.60% over weed free maintenance till zero and found significantly superior (Table 2). Maximum height of plant was observed in weed maintenance till harvest followed by weed free maintenance till 50 DAS and found significantly superior. Difference in number of pods per plant was non-significant but some trend was observed.

Minimum weed population/sq.m. (17.5) and weed dry matter (252 kg/ha) in case of potato was observed in the treatments, where plots were kept weed free till harvest followed by weed free maintenance till 45 DAS (Table 2). Similarly, maximum weed population and weed dry water were recorded in weed free maintenance till zero days (Singh and Tripathi 1983).

Maximum tuber yields (100.2 q/ha) was recorded in weedfree maintenance throughout the crop season followed by weedfree maintenance till 45 DAS (98.8 q/ha) with an increase in tuber yield of 39.1 and 37.2% over weedfree maintenance till zero days respectively and found significantly superior over other treatments. Similar finding was reported by Bhan and Tripathi (1981). Maximum height of plants were recorded in weedfree maintenance throughout the crop reason followed by weedfree maintenance till 45 DAS and found significantly superior.

Table 1. Influence of period of weed free maintenance on weed biomass, seed yield and contributory characters of mustard (1993-94 and 1994-95 -pooled)

Treatment	Dry weight of seeds	Weed population mm	Seed yield (q/ha)	Seed yield increase over control (%)	Straw yield (kg/ha)	Height of plant (cm)	Number of pods/plants
Weed check	859	57.5	7.6	-	1580	82.8	72.7
Weed free maintenance till 20 DAS	533	48.0	8.5	11.1	169.70	83.4	73.1
Weedfree maintenance till 35 DAS	480	40.5	9.1	19.0	1911	88.6	77.9
Weedfree maintenance till 50 DAS	175	30.5	11.5	50.6	2173	96.9	93.8
Weedfree maintenance till 65 DAS	383	35.0	11.5	50.5	2204	93.6	89.2
Weedfree maintenance till 80 DAS	285	33.0	11.2	45.6	2186	92.5	86.1
Weedfree maintenance till harvest	102	29.5	13.0	70.4	2202	102.2	106.0
C.D. at 5%	72	13.0	1.7	-	N.S.	10.1	N.S.

Table 2. Effect of duration of weeding on weed biomass, tuber yield and height of plant of potato (1993-94) and (1994-95) - pooled

Treatments	Weed dry weight kg/ha	Weeds/m ²	Tuber yield (q/ha)	Increase in yield over control (%)	Plant height (cm)
Weed check	2575	60.0	72.0	-	22.6
Weed free maintenance till 15 DAS	1763	47.5	78.0	8.3	24.5
Weedfree maintenance till 30DAS	1465	33.0	78.3	8.3	24.8
Weedfree maintenance till 45 DAS	313	17.5	98.8	37.2	27.0
Weedfree maintenance till 60 DAS	612	18.0	83.4	15.8	25.9
Weedfree maintenance till 75 DAS	1090	32.5	87.7	21.7	24.8
Weedfree maintenance till harvest	252	17.5	100.2	39.1	28.4
C.D. at 5%	839	15.6	9.8	-	2.2

REFERENCES

- Bhan, V.M. and S.S. Tripathi, 1981. Effect of different herbicides on the control of weed and yield of potato (*Solanum tuberosum*). *Indian J. Weed Sci.* 13(2): 142-145.
- Nankar, J.T. and Mukhtar Singh, 1980. Weed problem in relation to season and location in potato in Hills and Plains of North western India. Abstract ISWS. Annual Meet. OUAT, Bhubaneswar.
- Singh, O.P. and S.S. Tripathi, 1983. Efficiency of herbicides for control of weeds in potato. *Indian J. weed sci.* 15(2): 232-34.
- Subha, J.R. 1984. Agriculture in the hills of Sikkim. Science Society Gangtok : 109 - 111.
- Tosh, G.C. and B.C. Jana 1983. Comparative efficiency of herbicides for control in groundnut. *Indian J. Weed Sci.* 16(1): 62-64.