



## Short communication

# Effect of different weed management practices on yield attributing characters and economic feasibility of peach cv. July Elberta

Mukesh K. Meena\*, D.D. Sharma and Rekha Meena\*\*

Dr Y.S. Parmar University of Horticulture & Forestry, Nauni, Solan 173 230, Himachal Pradesh

### ABSTRACT

The present investigations was carried out in the experimental farm to see the effect of different weed management practices on yield and economics of peach cv. July Elberta production, during 2012 and 2013. The study was laid out with 13 treatments in randomized block design and replicated thrice. The results revealed that the treatment combination of grass mulch followed by two applications of glyphosate 0.8 kg/ha (first week of April and second mid-July) was found to be the best treatment for most of the characters among all the treatments, while maximum weed control efficiency was registered in T9. The treatment T11: grass mulch followed by two sprays of glyphosate 0.8 kg/ha was found to be most economical (B:C ratio 4.31:1) for fruit grower's point of view.

**Key words:** Herbicide, economics, peach, weed management, yield.

Peach (*Prunus persica* Batsch.) is one of the most important stone fruit crops belonging to the family Rosaceae. In India, peach is grown on commercial scale in mid-hills of Himachal Pradesh, Jammu & Kashmir and Uttarakhand and to a limited scale in North Eastern states. Peach orchards are generally, infested with various types of annual, biennial and perennial weeds. Weeds compete with the fruit plants for nutrients, space, moisture, light which adversely affect the growth and vigour of plants and thereby directly reducing the productivity of fruit trees. Weeds also provide shelter to various pathogens by becoming an alternate or collateral host of invaded crops by a number of fungal, bacterial and viral diseases. It has been reported that about 37 per cent losses may occur due to inadequate management of weeds in fruits and vegetables (Varshney, 11). The total annual loss of agriculture produce in India from weeds are 45 per cent losses caused by weeds in different fruit crops have been estimated to occur up to 34.0 to 71.8 per cent (Leela, 5). Hence, the present study was conducted to minimize weed incidence in peach.

Field experiment was conducted on seven year old peach cv. July Elberta in the experimental farm of the department of Fruit Science, Dr YSPUH&F, Nauni, Solan. The pre-emergence herbicide (pendimethalin) were applied to tree basins in the first week of March and post-emergence herbicide (glyphosate) in two applications (first spray-first week of April and second

spray-mid July) during 2012 and 2013. Grass mulch (15 cm thick) were maintained during both the years in the tree basins at the first week of March. Hand weeding was done in the 3<sup>rd</sup> week of March and was repeated at monthly intervals. The data on weed population count recorded in a fixed quadrat area of 30 cm square at regular intervals of 30, 60, 90, 120 days after treatment applications. The observations on yield and economics of production of peach were recorded and pooled data statistically analysed as suggested Panse and Sukhatme (7).

Pooled data of both the years presented in Table 1. The maximum fruit volume, weight, fruit yield per tree was recorded in treatment T<sub>11</sub> and it was significantly different from all other treatments. Minimum was recorded in T<sub>13</sub>. These results are in consonance with that of Pande *et al.* (6), who reported that maximum fruit volume (136.7 ml) was found under dry grass mulch and minimum was recorded in control in apple under Tehri Garhwal conditions of Uttarakhand. The present results are in line with the findings of Singh (10) and Khokhar and Sharma (4) who reported that grass mulch followed by single application of glyphosate proved more effective and resulted in highest fruit yield (10.40 kg) with good quality nuts as compared to other treatments in almond under Himachal Pradesh condition. Bhutani *et al.* (3) observed that mulching when combined with post-emergence herbicide glyphosate enable the plant roots to expand more in feeding zone for higher nutrient uptake of water and both nutrients as well as mulching and herbicides influenced the fruit yield through their moderating effect on the hydrothermal regimes of the soil in pome and stone fruits. These

\*Corresponding author's present address: Department of Fruit Science, Horticultural Research Station, Kandaghat, Solan; E-mail: mukeshuhf89@gmail.com

\*\*Department of Floriculture and Landscaping, College of Horticulture and Forestry, Jhalawar (Rajasthan)

**Table 1.** Effect of different weed management practices on yield and yield attributing characters in peach.

Treatment	Fruit volume (cm <sup>3</sup> )			Fruit wt. (g)			Fruit yield (kg / tree)		
	2012	2013	Pooled	2012	2013	Pooled	2012	2013	Pooled
T <sub>1</sub>	93.33	94.00	93.67	89.93	90.63	90.28	10.40	10.63	10.52
T <sub>2</sub>	94.00	95.33	94.67	90.00	91.92	90.96	10.44	10.82	10.63
T <sub>3</sub>	95.00	96.33	95.67	91.42	92.21	91.82	10.54	10.79	10.67
T <sub>4</sub>	97.00	98.67	97.83	92.30	92.78	92.54	10.68	10.86	10.77
T <sub>5</sub>	97.67	99.00	98.33	93.27	93.60	93.43	10.88	10.92	10.90
T <sub>6</sub>	98.67	101.67	100.17	94.47	94.90	94.68	10.99	11.10	11.05
T <sub>7</sub>	99.67	102.33	101.00	95.40	95.56	95.48	11.10	11.21	11.16
T <sub>8</sub>	103.00	104.33	103.67	96.28	97.08	96.68	11.20	11.33	11.26
T <sub>9</sub>	107.00	107.33	107.17	96.50	97.13	96.82	11.16	11.30	11.23
T <sub>10</sub>	106.33	107.67	107.00	96.43	98.34	97.39	11.22	11.51	11.36
T <sub>11</sub>	108.33	109.33	108.83	99.33	100.42	99.88	11.56	12.45	12.00
T <sub>12</sub>	92.33	91.00	91.67	86.17	87.62	86.90	9.91	10.02	9.96
T <sub>13</sub>	92.00	86.00	89.00	86.00	86.52	86.26	9.89	9.98	9.93
Mean	98.79	99.46	99.13	92.88	93.75	93.32	10.77	10.99	10.88
CD <sub>0.05</sub> Treatment	6.20	3.28	3.35	1.34	1.07	0.82	0.25	0.29	0.19
Year			NS			0.32			0.07
Interaction			4.47			1.16			0.27

finding are further supported by Randhawa (9) who also reported similar results in walnut, which may be attributed to better conservation of soil moisture which ultimately cause higher nutrients uptake. Physical barrier provided by dry grass mulch reduced the emergence of weeds.

The action of the herbicides in suppressing weed growth is by starvation of the weeds due to lack of photosynthesis that resulted in increased availability of soil water and nutrients the plants and subsequently enhanced fruit weight. Pooled data of both the years depicted in Table 2 showed highest gross income per

**Table 2.** Economics of various weed control treatments for fruit production of peach cv. July Elberta,

Treatment	Yield (tonnes /ha)	Gross income (₹/ha)	Total cost of cultivation (₹/ha)	Net return (₹/ha)	Profit over control (₹/ha)	B:C ratio
T <sub>1</sub>	26.30	5,26,000	1,07,967	4,18,033	28,291	3.87:1
T <sub>2</sub>	26.58	5,31,600	1,08,522	4,23,078	33,336	3.90:1
T <sub>3</sub>	26.68	5,33,600	1,09,076	4,24,524	34,782	3.89:1
T <sub>4</sub>	26.93	5,38,600	1,08,028	4,30,572	40,830	3.99:1
T <sub>5</sub>	27.25	5,45,000	1,09,198	4,35,802	46,060	3.99:1
T <sub>6</sub>	27.63	5,52,600	1,10,358	4,42,242	52,500	4.01:1
T <sub>7</sub>	27.90	5,58,000	1,09,137	4,48,863	59,121	4.11:1
T <sub>8</sub>	28.15	5,63,000	1,09,692	4,53,308	63,566	4.13:1
T <sub>9</sub>	28.08	5,61,600	1,10,246	4,51,354	61,612	4.09:1
T <sub>10</sub>	28.40	5,68,000	1,14,058	4,53,942	64,200	3.98:1
T <sub>11</sub>	30.00	6,00,000	1,13,028	4,86,972	97,230	4.31:1
T <sub>12</sub>	24.90	4,98,000	1,21,858	3,76,142	-13,600	3.09:1
T <sub>13</sub>	24.83	4,96,600	1,06,858	3,89,742	0.00	3.65:1

hectare amounting Rs. 6,00,000 was obtained in T<sub>11</sub> whereas lowest Income Rs. 4,96,600 was in T<sub>13</sub>. On the other hand, highest cost of cultivation per hectare was found in T<sub>12</sub> (Rs. 1,21,858), while lowest cost of cultivation Rs. 1,06,858 was observed in T<sub>1</sub> (control). Maximum profit over control was registered in T<sub>11</sub> (Rs. 97,230). Maximum B:C ratio (4.31:1) was calculated in T<sub>1</sub>. The results are in agreement with the findings of Bajwa *et al.* (1) who worked on pear at different locations of Punjab.

From the present investigation, it is concluded that the treatment T<sub>11</sub>, *i.e.* grass mulch followed by two applications of glyphosate 0.8 kg/ha (First week of April and second in mid-July) was found to be the best treatment in respect of yield contributing characters and also proved to be most economical. Therefore, treatment T<sub>11</sub> may be recommended for weed management in peach growing areas.

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