

## Short communication

### Studies on effect of pollarding in papaya

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#### ABSTRACT

An experiment was carried out during 2007-09 to enhance fruiting in ratoon papaya crop (one-year-old). The pollarding operation in the month of January was done at a height of 15, 30, 45, 60, 75 and 90 cm under field conditions at ICAR, Tripura Centre, Lembucherra. The sprouting percent was higher under 60 cm height followed by 75 cm. The number of sprouted buds were maximum under 90 cm pollarded plants and it was minimum under 15 cm. The survival percentage was very poor under lower height of the pollarding. Flowering and fruiting were earliest under 60 cm pollarded plants. The retention of two sprouted buds was ideal in terms of fruit yield. The retention of higher number of sprouted branches was recommended for pruning during fruit growth and development. The average fruit yield was highest (34.56 kg/plant) under 60 cm pollarding. Both higher and lower pollarding heights did not produce encouraging results due to shattering of branches at fruiting stage.

**Key words:** Papaya, pollarding, fruit, yield.

Papaya (*Carica papaya* L.) is one of the most important commercial fruit crops of tropical and sub-tropical regions of the globe and India as well. It has tremendous yielding potential due to precocious bearing and indeterminate growth habit with simultaneous vegetative growth, flowering and fruiting (Mishra and Chandra, 4). The congenial conditions for growth in Tripura makes plant tall and thin and they often get broken during cyclones and rainy season. The fruit yield is also poor which makes orchard uneconomical after first year crop of the papaya. Hence, this study was carried out with the objective to standardize the height of pollarding after first year of the crop in order to reduce the plant height and enhance yield and productivity. The present investigation was carried out at the Experimental Orchard of ICAR, Research Complex for NEH region, Tripura Centre, Lembucherra during 2007-09.

The healthy seedlings of the papaya var. RCTP-I were planted during February 2007 at a spacing of 1.8 m × 1.8 m and pollarding operation was performed after completion of the first crop during January 2008 at a height of 15, 30, 45, 60, 75 and 90 cm. Optimum fertilization and crop management practices were followed during investigation including the pesticide application for aphid (Purohit, 5). Twelve plants in each treatments were selected for observation on sprouting percentage, days taken for shoot emergence, number of shoots per plant, fruiting zone, fruit maturity, fruit weight, fruit number and fruit yield per plant. The marketable fruits were harvested and fruit yield was

recorded on per plant basis. Data obtained for different parameters were subjected to ANOVA (Gomez and Gomez, 2).

It is clear from the observations and data presented in Table 1 that there was significant effect of the pollarding of the one-year-old papaya plants on fruiting and yield attributes. The bud sprouting percentage was highest under 60 cm pollarding and it was at par with the 75 cm pollarding, whereas, it was lowest with 15 cm pollarding. This indicates that the sprouting buds are active in the middle and upper zone of one-year-old papaya plants. Shoot emergence was earliest (14.6 days) in 45 cm pollarding followed by 60 and 75 cm; whereas it was late (18.50 days) in case of the 15 cm pollarding. This might be due to inactive buds available on the lower part of the stem. Similar finding was reported by Bisht *et al.* (1) in *bhimal* (*Grewia* spp.) The data also indicate the effect of pollarding height on number of shoot emergence, which was significantly higher (14.5) at 90 cm followed by 75 cm (12.5) and 60 cm (10.0); whereas, it was least (3.5) for the minimum height (15 cm). It is revealed that there was a significant increase in fruit yield contributing traits (fruiting zone, number of fruits per plant and days taken for fruit maturity and average fruit weight) in the pollarding at the height of 60 cm followed by 75 cm among the treatments pollarded at different heights. The maximum fruit yield was recorded (41.50 kg/plant) in the treatment where pollarding was performed at a height of 60 cm followed by 75 cm (37.15 kg/plant), 90 cm (33.12/plant); whereas minimum fruit yield (25.15 kg/plant) followed by least height of pollarding. The higher fruit yield under 60 cm pollarding might be due to

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**Table 1.** Effect of pollarding on flowering, fruiting and fruit yield of papaya in ratoon crop.

Pollarding treatment (cm)	Sprouting (%)	Days to shoot emergence	No. of emerged shoots	Fruiting zone (cm)	No. of fruits/plant	Days taken to fruit maturity	Fruit weight (g)	Fruit yield kg/plant
15	66.66	18.50	3.5	69.4	21.40	138.66	1145	26.50
30	75.00	15.6	4.5	62.0	24.20	139.25	1185	27.90
45	83.33	14.6	8.6	75.5	24.25	137.50	1266	31.20
60	100	14.8	10.0	85.6	35.25	131.25	1225	41.50
75	100	15.3	12.5	75.3	30.50	132.66	1230	37.15
90	91.66	16.0	14.5	72.4	27.25	129.50	1225	33.12
Control	NA	NA	NA	52.8	23.5	128.25	1210	25.15
CD <sub>(P = 0.05)</sub>	NA	2.05	2.56	6.06	3.90	6.37	10.13	3.02

wide crotch angle between two shoots which were retained for flowering and fruiting. Similar findings were reported by the Hossain (3) in woody plants of agro-forestry in Bangladesh and Tipu *et al.* (6) in *Leucaena leucocephala*.

The significant effect of the height of pollarding on the fruiting and yield contributing traits offers scope to harvest the two crops successfully in the heavy rainfall areas with high wind velocity and frequent cyclones. The findings of the present study reveals that the RCTP-I has to be undergo for pollarding at a height of 60 cm from the plant base to harvest higher yield to enhance the production.

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