

Growth and Yield of Ber (*Ziziphus mauritiana* Lamk) cv. Seo Under Different Pruning Severities

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Abstract Effect of different pruning severities were studied on the performance of ber (*Ziziphus mauritiana* Lamk.) CV. *Seo* for 2 consecutive years. The treatments consisted of five pruning severities namely ; no pruning (control), pruning upto 4th, 6th and 8th secondaries and also at 90 cm or 3/4th length of the shoot. The weight of pruned wood, plant height, plant spread, stock and scion girth, number of primary buds upto which secondary branches were arising, annual shoot growth, per cent fruit set and fruit drop and yield differed significantly with various pruning severities. The maximum yield (61.82 kg) was obtained from trees which were pruned upto 6th secondaries.

Key words Pruning severities, Secondary, Gain

Pruning studies in ber showed that light to moderate pruning gave highest yield as compared to severe pruning (Lal & Prasad 1980, Bajwa *et al.* 1988). Extent of usefulness of any cultural technique, like pruning varies with the agroclimatic conditions and also, with differnt cultivars. Therefore, in order to standardize the pruning and to observe the effect on growth and yield attributes under semi arid conditions of Rajasthan, the work was initiated and results are reported in this paper.

Materials and Methods

The experiment was conducted for 2 years at SKN College of Agriculture, Jobner from April, 1987 to March 1989. The treatments (Table 1) were

replicated four times in Randomised block design. There were 15 plants per replication. Observations for various characters (Table 1) were recorded twice, immediately after pruning and after fruit harvesting. The difference in two measurements was taken as "gain" and pooled analysis of the two years data was done according to the methods given by Panse and Sukhatme (1967).

Results and Discussion

Effect on growth characters : Results shows that sixth secondary pruning gave the highest amount of gain in pruned wood, plant height, plant spread, scion girth, stock girth, number of primary buds and

Table 1 Effect of severity of pruning on gain in growth characters of ber CV. *Seo*

Pruning treatments	Pruned wood (kg)	Plant height (m)	Plant Spread (m ²)	Scion girth (cm)	Stock girth (cm)	No. of primary buds upto which secondary branches were arising	Annual shoot growth (cm)
Control	4.54	0.59	13.08	7.2	6.4	4.9	86.7
4th Secondary	24.66	1.39	21.59	9.6	7.7	6.7	101.9
6th Secondary	30.25	1.57	29.10	13.6	11.9	7.9	126.2
8th Secondary	22.20	1.13	27.34	13.3	11.3	7.9	118.0
90 cm or 3/4th shoot	19.75	0.84	15.47	9.6	6.9	6.4	100.4
CD at 5%	—	0.19	0.97	—	—	0.18	1.37
Q value (6th Secondary v/s control)	87.103*	—	—	37.97*	66.48i*	—	—
t value (6th Secondary v/s control)	9.35*	—	—	6.27*	12.04*	—	—

Table 2 Effect of severity of pruning on yield characters of ber cv. *Seo*

Pruning treatments	Fruit set (%)	Fruit drop (%)	Fruit size (cm)	TSS (%)	Yield (kg plant ⁻¹)
Contol	21.8	76.3	8.3	17.6	29.18
4th Secondary	31.8	74.7	8.7	17.8	49.13
6th Secondary	35.4	72.6	9.6	18.1	61.82
8th Secondary	30.1	73.6	9.7	18.7	48.03
90 cm or 3/4th shoot	28.3	75.3	8.5	17.9	35.03
CD at 5%	—	—	N.S.	N.S.	4.57
Q value (6th Secondary v/s control)	145.23*	4.02*	—	—	—
t value (6th Secondary v/s control)	12.38*	2.14*	—	—	—

* Significant at 5% level

Values are pooled means of 4 replications and of two years

annual shoot growth compared to control (Table 1). Error variances were heterogenous for gain in pruned wood, scion and stock girth and homogenous for gain in plant height, spread and primary buds. There was no interaction between years and treatment for most of the characters except gain in plant spread. It might be due to more rainfall during 1988-89 which produced different trend regarding plant spread in both the years.

Gain in vegetative growth characters was more in pruned plants than in unpruned plants probably because of more number of buds were left in unpruned plants which resulted more number of shoots. Whereas, in pruned plants, since the number of buds left and shoots produced were few (Table 1), they got comparatively more water and nutrients compared to unpruned. Therefore, the growth put forth by them was vigorous and ultimately the vegetative growth was more. Pruning in ber increased the height of plants (Awasthi & Misra 1969), length of branch (Lal & Prasad 1979), spreading (Sharma *et al.* 1980) and number of per secondary branches (Dhaliwal & Sandhu 1982).

Effect on yield characters : Results shows that sixth secondary pruning resulted in maximum fruit set, least fruit drop and maximum yield as compared to control (Table 2). Analysis show that error variances were heterogenous for per cent fruit set and fruit drop, whereas, it was homogenous for the yield. Interaction between years and pruning treatments was absent for all the characters (Table 2).

Higher fruit set and decreased fruit drop in the pruned plants might be due to increased availability of essential elements, decreased production of abscission layer and balance in growth regulators. Fruit set in ber was improved by pruning (Sandhu *et al.* 1983, Bajwa *et al.* 1988). Pruned plants

produced more yield probably because of more number of shoots, more fruit set and more fruit retention. Pruning increased the yield in ber (Singh *et al.* 1978, Sharma *et al.* 1980).

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