

Evaluation of Various Levels of Pruning in Falsa (*Grewia asiatica* L.)

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Abstract: It was found that the maximum length of the branches were observed in unpruned trees. Maximum number of branches (110.00) number of leaves per branch (37.67), number of cluster per plant, (85.00) number of fruits per cluster (58.33), weight of cluster per plant 42.36 g and total yield per plant (3.64kg), was observed in the pruning level of 90 cm above the ground level, while the minimum, in all the above mentioned parameters, were found in un-pruned trees.

Key words: Falsa, *Grewia asiatica*, pruning, branches, cluster, yield

Introduction

Falsa (*Grewia asiatica* L.) belongs to the family Tiliaceae and is of commercial importance. It is a deciduous bushy plant and thrives best in the tropical climate. Hot dry summers are considered typical for ripening of fruits. Stino and Barket (1979) reported that fruit size and fruit weight were much greater in pruned trees than unpruned peach trees. Singh (1980) recommended that the cutting of the plant at a height of about 0.5 to 1 meter from the ground level. Whereas Ginai (1969) suggested that pruning at a height of 3.5 to 4 feet is considered to be the best, which produces a greater number of shoots and a much higher yield than pruning at 1.5 to 2 feet or at just ground level. He also indicated that the size of the fruit was inversely proportional to the yield, however the smaller fruits gave juice of a higher specific gravity. Shanker (1985) proposed the desirable height for pruning as 0.9 to 1.2 meters from the soil surface. Wazir (1980) reported that pruning Falsa 91.44 cm above the ground level produced higher yield than Control and the pruning at 30.48 cm above the ground level. Similarly, Ghaffoor and Rehman (1987) obtained better response in term of vigour, yield, fruit size and quality of Falsa from pruning bushes at 90 cm above the ground level. Falsa fruit has aesthetic value and is favoured for making beverages. Its juice has an attractive light purple colour and has a pleasing flavour and is relished much during the summer season. It is commonly grown in D.I.Khan Division where the climatic conditions are favourable for its production. However, the productivity and quality of this fruit plant is low. Of many factors, pruning is one of the most important factors responsible for its production.

Materials and Methods

A field experiment to observe the response of various pruning levels on Falsa bushes was carried out in the Gomal University, Falsa Orchard, D.I.Khan during the years 1993, 1994 and 1995.

About seven years old Falsa bushes were selected for the study. The trees were spaced 8 feet apart and received uniform cultural practices. Two plants of similar size and vigour were included in each treatment. The experiment was laid out in Randomized Complete Block Design (RCBD) with three replications.

Pruning was done in the first week of February, 1993, 1994 and 1995 before sprouting of buds. The observations on number of branches, length of branches (cm), number of leaves per branch, number of clusters per plant, number

of fruits per cluster, weight of cluster (gm) per plant and yield (kg) per plant were recorded. The data were analyzed by using the Analysis of Variance Techniques (Steel and Torrie, 1980) and Duncan's New Multiple Range Test (Duncan, 1955) was used to check the differences among the different treatment means, if any.

Results and Discussion

Number of branches per Plant: Data given in Table 1, regarding the number of branches per plant showed that the pruning at 90 cm above the ground level gave the maximum of 110 branches per plant, while the minimum number of branches were recorded in un-pruned treatment. Almost similar results were obtained by (Shanker, 1985).

Length of Branches (cm): Maximum length of branches were recorded in un-pruned trees as shown in the Table 1, while the minimum length of 143.7 cm was observed in the pruning level of 150 cm above the ground level. This might be due to the fact that as in the un-pruned trees, the branches were not pruned and their length increased while the pruned trees also increased in length but not as much as the un-pruned trees.

Number of Leaves per Branch: The data concerning number of leaves per branch is shown in Table 1, which elaborates that the maximum number of leaves per branch were recorded in the pruning at 90 cm above the ground level, while the minimum of 29.33 leaves per branch were obtained in un-pruned trees. Shanker 1985 also reported the similar results.

Number of fruit clusters per plant: The results pertaining to the number of clusters per plant are shown in the Table 2. Different pruning levels significantly effected the number of fruit clusters per plant with maximum fruit cluster of 85 was observed in the pruning at 90 cm above the ground level, while the minimum number of fruit cluster was recorded in un-pruned trees. Almost similar results were recorded by (Singh, 1980) who also reported that pruned trees produced more number of fruit clusters than un-pruned.

Number of fruits per cluster: It is one of the most important yield component. Different pruning levels significantly effected the number of clusters per plant. The maximum number of fruits per cluster were counted at 90 cm pruning weight of cluster were significantly affected

Ghaffoor *et al.*: Levels of pruning in falsa

Table 1: Effect of various levels of Pruning on different aspects of Falsa

Pruning Intensities	Year			Mean
	1993	1994	1995	
Number of Branches per Plant				
Control (No Pruning)	85f	90e	85e	87e
15 cm above the ground	101cd	105bc	103c	103c
30 cm above the ground	99d	103c	104bc	102c
60 cm above the ground	105ab	107b	106b	106b
90 cm above the ground	108a	110a	113a	110a
120 cm above the ground	104bc	106b	103c	104bc
150 cm above the ground	95e	100d	97d	97d
Length of Branches (cm)				
Control (No Pruning)	153NS	152NS	154a	153.0a
15 cm above the ground	149	146	147b	147.3bc
30 cm above the ground	148	145	144d	145.7cd
60 cm above the ground	151	147	145cd	147.7bc
90 cm above the ground	151	149	147bc	149.0b
120 cm above the ground	150	148	149b	149.0b
150 cm above the ground	146	144	141e	143.7d
Number of leaves per Branch				
Control (No Pruning)	29NS	28e	31NS	29.33d
15 cm above the ground	30	31cd	33	31.33d
30 cm above the ground	33	30cde	32	31.67cd
60 cm above the ground	33	32cd	31	32.00cd
90 cm above the ground	39	38a	36	37.67a
120 cm above the ground	37	35b	33	35.00b
150 cm above the ground	35	33bc	35	34.33bc

Any two means in the column having common letter(s) are non-significant at 5% level.

Table 2: Effect of various levels of Pruning on different aspects of Falsa

Pruning Intensities	Year			Mean
	1993	1994	1995	
Number of Fruit Clusters per Plant				
Control (No Pruning)	30e	25f	23f	26.00e
15 cm above the ground	33d	27e	25f	28.33de
30 cm above the ground	35cd	31d	30e	32.00d
60 cm above the ground	37cd	40c	42c	39.67c
90 cm above the ground	83a	85a	87a	85.00a
120 cm above the ground	71b	65b	64b	66.67b
150 cm above the ground	38c	40c	38d	38.67c
Number of Fruits per Cluster				
Control (No Pruning)	11e	09e	07f	09.00e
15 cm above the ground	27c	28c	26c	27.00c
30 cm above the ground	18d	16d	21d	18.33d
60 cm above the ground	53b	42b	41b	45.33b
90 cm above the ground	60a	56a	59a	58.33a
120 cm above the ground	54b	42b	43b	46.33b
150 cm above the ground	17d	15d	13e	15.00d
Weight of Clusters (gm) per Plant				
Control (No Pruning)	05.98f	06.38e	05.42g	05.93e
15 cm above the ground	19.63c	20.18c	19.55d	19.79c
30 cm above the ground	13.33d	11.35d	17.85e	14.29d
60 cm above the ground	28.76b	30.27b	30.80c	29.94b
90 cm above the ground	43.52a	40.36a	44.02a	42.63a
120 cm above the ground	29.15b	30.87b	40.08b	33.37b
150 cm above the ground	11.70e	10.76d	09.08f	10.51de
Yield (Kg) per Plant				
Control (No Pruning)	0.18g	0.16g	0.12g	0.15e
15 cm above the ground	0.65d	0.54d	0.49e	0.56d
30 cm above the ground	0.48e	0.35f	0.54d	0.45d
60 cm above the ground	1.64c	1.21c	1.29c	1.19c
90 cm above the ground	3.61a	3.43a	3.83a	3.64a
120 cm above the ground	2.07b	2.00b	2.56b	2.21b
150 cm above the ground	0.44f	0.43e	0.34f	0.40de

Any two means in the column having common letter(s) are non-significant at 5% level.

level above the ground whereas the minimum of 9.00 fruits per cluster were recorded in un-pruned trees. Similar results were obtained by Myert and Ferree (1983) who also observed that pruned trees produced more number of fruits

per cluster than un-pruned trees in apples.

Weight of cluster (gm) per plant: The data concerning the weight of cluster (gm) is shown in Table 2. The data on by

Ghaffoor *et al.*: Levels of pruning in falsa

pruning at different levels. The maximum weight of cluster were weighed in the 90 cm pruning level above the ground whereas the minimum weight of 05.93 gm were recorded in un-pruned trees. These results are in agreement with those the findings of Stino and Barket (1979) and Kolev *et al.* (1980) who resulted that the fruit weight was much greater in pruned trees than un-pruned trees in Peach.

Yield (kg) per plant: The ultimate aim of the research is to get the maximum yield. Highly significant results were obtained in term of total yield as effected by different pruning levels. The highest yield of 3.62 kg per plant was obtained at a pruning level of 90 cm above the ground level, whereas the lowest yield of 0.16 kg per plant was observed on the un-pruned trees. Ghaffoor and Rahman (1987) also reported that at a certain pruning level, i.e. 75 to 100 cm the yield of Falsa per plant is highest as compared to the other levels of pruning or un-pruned trees

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