

### Acknowledgements

Mr. Alan Robson of Canterbury Orchard Services for the information on reversion in commercial orchards of 'Royal Gala'.

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Varieties Journal 48(4):225-228 1994

## Variation in Local Apricots Growing in District Kinnaur of Himachal Pradesh (India)

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### Abstract

The variation on 700 apricot (*Prunus armeniaca* L.) seedling trees in respect of physico-chemical characters, leaf area and yield were studied. The population had distinct variation for these characters. The fruit weight ranged between 4.0-29.3 g, fruit length 1.9-3.6 cm, fruit diameter 1.9-3.5 cm, fruit volume from 2.1-27.5 cm<sup>3</sup>. The stone weight varied from 0.5-2.9 g, kernel weight 0.2-0.7 g, flesh weight 3.5-21.6 g and flesh/stone ratio from 2.7-15.5. The total soluble solids ranged between 6.5 to 18.0%, acidity from 0.4 to 3.4% and oil content from 25.0 to 60.2 per cent. The leaf area varied from 8.2-39.9 cm<sup>2</sup> and yield per tree from 10.0 to 175.0 kg.

### Introduction

Wild apricot (*Prunus armeniaca* L.) trees are found in large number in district Kinnaur of Himachal Pradesh. These trees are scattered around the villages. The villages where these studies were undertaken had elevation between 1600 to 3050 m above mean

sea level. The Kinnaur region (Fig. 1) of Himachal Pradesh in India extends from longitude 77°45' to 79°00', 35E and latitude 31°05' to 32°05', 15N. The rainfall decreases rapidly from south east to north eastern regions bordering Tibet are almost semi arid. Average rainfall of the whole district is about 450mm. The temperature goes up to 35°C in summer and minimum up to -25°C in winters. There are practically no rains from June to October when fruit development and ripening takes place. Some of these seedlings produce fruits comparable to those of commercial cultivars and are even superior in some aspects. The fruits are mainly used for table purposes, extraction of liquor, extraction of oil from kernels, fed to animals and preparation of chutney, jam, juice, etc.

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The apricot oil in district Kinnaur is used for cooking as well as for other domestic uses. This oil has medicinal value and is also used for various cosmetics and pharmaceutical products (12). Apricot oil is similar in its physical characteristics to almond oil (8) and fatty acid composition (4).

Because of the importance of this fruit and large populations of seedling trees growing in Kinnaur region, the present studies were undertaken.

### Materials and Methods

The present investigations were carried out in district Kinnaur of Himachal Pradesh during 1990 and 1991. Sixty villages located at different altitudes varying in altitude from 1600 to 3050m above mean sea level, were surveyed and 10 trees from each village were randomly selected out of a large population. These seedlings are found growing in wild forms around the villages which might have been introduced in ancient times from China through Tibet or are native to the region. The climate of this part of the country is dry temperate without any rains during fruit development period and most of the areas remain covered with snow from November to April. The fruit ripens in the months of August-September.

Twenty fruits from each tree were randomly selected to record data on fruit and stone characters. The oil percentage was calculated by extracting oil from one Kg of kernel in each seedling tree. The data were analyzed statistically and standard deviation was calculated for population mean.

### Results and Discussion

In the present studies on the variability in various characters, the seedling with 29.3g average fruit weight was observed. The highest average length, diameter and volume was 3.6cm, 3.5cm and 27.5cm<sup>3</sup>, respectively, was recorded in the seedling population taken up for these studies. The

variability for stone weight ranged between 0.5 to 2.9g, kernel weight 0.2 to 0.7g and flesh weight from 3.5 to 21.6g. The highest values for flesh/stone ratio, TSS and acidity were 15.5, 18.0 and 3.4 percent, respectively. The oil content varied between 25.0 to 60.2 per cent and leaf area between 8.2 to 39.9cm<sup>2</sup>. The yield ranged from 10 to 175kg per tree. The fruit colour at the time of harvesting was from cream-white to orange. Generally most of the seedlings produced orange coloured fruits.

The cultivars which are commercially grown under dry temperate climate of Kinnaur are 'Charmagz', 'Nari', 'Shakarpara Afganistan' and 'Sufaida Parachinar'. These cultivars produce fruits with high soluble solids and are suitable for drying. The average fruit weight in these cultivars varied between 12.8 to 18.6g, average length 2.8 to 3.5cm, average fruit diameter 2.6 to 3.3cm, volume from 13.0 to 17.5cm<sup>3</sup>. The average stone weight varied between 1.9 to 2.5g, kernel weight 0.6 to 1.2g, flesh weight from 11.2 to 15.5g, flesh/stone ratio from 5.5 to 7.0, TSS

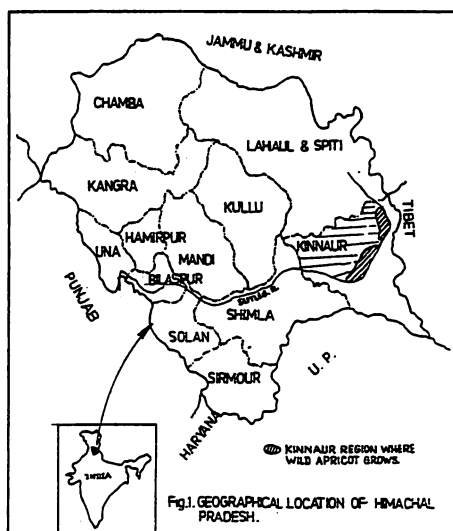


Figure 1. Geographical location of Himachal Pradesh.

**Table 1. Variation in some characters in wild apricot and commercial cultivars in the Kinnaur District of Himachal Pradesh India.**

Characters	Wild seedlings			Commercial cultivars			
	Mean	Range	Standard deviation	Charmagz	Nari	Shakarpara Afganistan	Sufaida Parachiar
Fruit weight (g)	11.3	4.0-29.3	3.22	18.6	16.7	12.8	13.2
Fruit length (cm)	2.7	1.9-3.6	0.36	3.5	4.1	2.8	2.9
Fruit diameter (cm)	2.7	1.9-3.5	0.29	3.3	2.7	2.6	2.6
Fruit volume (cm <sup>3</sup> )	10.9	2.1-27.5	2.92	17.5	16.0	13.0	13.1
Stone weight (g)	1.5	0.5-2.9	0.34	2.4	2.5	1.9	2.0
Kernel weight (g)	0.4	0.2-0.7	0.07	1.1	1.2	0.6	0.7
Flesh weight (g)	9.8	3.5-21.6	2.95	15.5	13.8	11.2	11.2
Flesh/Stone ratio	6.8	2.7-15.2	1.61	6.4	5.5	7.0	5.6
TSS (%)	10.6	6.5-18.0	1.91	23.5	18.2	20.9	20.4
Acidity (%)	1.6	0.4-3.4	0.55	0.34	0.56	0.42	0.72
Oil (%)	40.0	25.0-60.2	7.62	-	-	-	-
Leaf area (cm <sup>2</sup> )	20.5	8.2-39.9	6.24	43.9	35.4	38.4	36.6
Yielding (Kg)	67.44	10.1-175.0	28.12	106	105	25	50

0.33 to 0.46 per cent. Average leaf area in these cultivars varied from 35.4 to 43.9cm<sup>2</sup> and yield varied from 25.0 to 106kg per tree (10).

A marked variation was observed for different physical characters in these wild apricot seedlings. In similar studies, the variation for physical characters was also obtained by various workers (3, 7, 10, 11). In the present studies TSS varied from 5.7 to 18.0 per cent and acidity from 0.4 to 3.4 per cent. However, studies conducted by Kolvalev (6), indicated that apricots from Soviet Central Asia has 20% sugar and were suitable for drying. The sugar content between 11 to 30 per cent was obtained in cultivars of the near East (3) whereas for Japanese apricot (*Prunus mume*) it was between 9.8 to 17.1 Brix and in the Japanese-European group between 9.5 to 15.7° Brix (13).

The oil percentage in the kernels of different seedlings in the present studies varied between 25.0 to 60.2 per cent whereas it was reported that wild apricot of Kumaon region in India contained 33.3 per cent oil in their kernels (3).

Yields in the present studies were between 10 to 175.0Kg per tree. In similar studies on 45 varieties of central Asia, the variation in yield was from 35.1 to 89.4Kg per tree (5) and the commercial cultivars grown in Kinnaur the variation is between 25 to 106Kg (10). Similarly leaf area varied in these wild seedlings from 8.2 to 39.0cm<sup>2</sup> whereas commercial cultivars which are grown in the same region had 35.4 to 43.9cm<sup>2</sup> leaf area (10).

The variability in these apricot seedlings may be attributed to their seedling origin which results in genetic variation greater than the donors. Besides this, climate also plays an important role in influencing the quality particularly total soluble solids and oil content which is higher under cooler and dry climatic conditions. TSS content of low chilling cultivars viz. 'Alfred', 'Blenheim', 'New Castle' grown under mid hill conditions varied from 12.0 to 15.7 per cent (9) whereas those cultivars grown under dry temperate region had 18.2 to 23.5 per cent total soluble solids (10). The oil content ranged from 47.0% in 'Kaishi' to 56.6% in local Pangi apricot kernels

(1). The climatic conditions of Pangi are similar to that of the Kinnaur region.

It can be concluded from these studies that five seedling trees appear to be promising in respect of fruit quality to that of the existing cultivars and may be even superior in respect of winter hardiness and drought resistance because they are growing under harsh soil and climatic conditions. These seedling trees have been marked to multiply vegetatively for further testing in a well planned experiment.

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Fruit Varieties Journal 48(4):228-229 1994

## A New Tropical Grape Cultivar: 'Valplatinta'

FRANCISCO WATLINGTON<sup>1</sup>

The first patent ever for a tropical grapevine cultivar was recently granted to 'Valplatinta',<sup>2</sup> a new and distinct variety which combines desirable attributes from European (*Vitis vinifera* L.) and American (*V. labrusca* L.) grapes for red juice and wine with the adaptation of *V. caribaea* D.C., a species native to the Caribbean basin. 'Valplatinta' was bred by the author in his private research vineyard at Aibo-

nito, Puerto Rico (lat. 18°05'N elevation 600 m.) and was designated W73D-6.

The seed parent, IAC 823-47, is a female vine selected by J. A. Santos-Neto at the Instituto Agronomico de Campinas (IAC) in Sao Paulo, Brazil. Its parentage was recorded as IAC 405-6 ('Moscotel Rosado' x *V. smalliana* staminate) x IAC 570-2

(*V. tiliifolia* x 'Golden Queen'). Inspection of the above mentioned spe-

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<sup>2</sup>U. S. Patent No. Plant 8,434. October 26, 1993.

<sup>3</sup>Watlington, F. 1990. Adaptive viticulture in the Caribbean basin. Doctoral Dissertation. University of Florida, Gainesville.