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Comparison of Exotic Peach Varieties at Two Different Altitudes in the Upper and Lower Swat

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Abstract: Five exotic varieties of peach were cultivated at two different altitudes in Swat, Pakistan and their performance was evaluated. Variety Coronet at Agricutlural Research Station, Mingora (lower Swat) and Florida gold at Germplasm Unit, Biakan (upper Swat) were leading in yield and quality. Variety Spring Crest at both places where as Elberta at Germplasm Unit, Biakan also showed superiority in different fruit characteristics.

Key words: Peach, varieties, comparison, altitude, Swat

Introduction

Peach (*Prunus persica*) is an important fruit among the stones. Originated in China, it was cultivated in the Middle East long before being introduced to Europe. According to FAO statistics world production of peaches stands at about 11 Mt. China is by for the largest producer of the world with annual production approaching 3 Mt, Italy is second at 1.4 Mt and the USA third with 1.3 Mt annual production. After China; Japan and Korea are major Asian producers. After Italy; Spain, France and Greece are major European producers. Chilly, South Africa and Australia are important southern hemisphere producers (Jackson and Looney, 1999). In Pakistan, it is commercially grown in the plain and hilly areas of NWFP.

Ishtiaq *et al.* (1987) tested eight cultivars of nectarine and recommended Early King as early, while Durbin and Sun glow as late maturing cultivars for Peshawar, Pakistan. Topp *et al.* (1989) stated that a total of 408 varieties of stone fruits were introduced in Queensland from 15 countries during, 1980-88. Material from USA accounted for 80% of the peach and nectarine introduction. Californian peach and nectarine varieties rated highly for quality are grown commercially. Peach and nectarine from Florida have extended the range of early ripening varieties while those from north Carolina such as Correll is resistant to bacterial spot with good quality fruit. Popov (1990) studied 11 peach varieties of different maturity groups during 1981-87 in the North West of the Crimean steppe zone in the Ukraine, the best for a combination of trials, such as resistance to diseases and low temperature, fruit quality and yield, were Pushistyi Rannii of the early, Vystavochnyi of mid season, Gliveriya of the mid late and Novaya Era of the late group. The late was suitable for canning, while the rest were table varieties.

Morales Varela and Nieto Angel (1992) did phenological evaluation of peach cultivars and selection in Chapingo, Mexico. Floral and leaf bud burst and fruit yield were evaluated in 11 cultivars and two 4 years old selections during 1989-90. Date of flowering of all the material studied was earlier than that of local varieties. All except Rio Grande and Omm Sarel flowered for a longer period. Most genotypes began leaf bud burst in January, although selection Jardiness and cultivars Omm Sarel were later while Carlos and Bonita were earlier. Cultivars D1-7 gave the highest fruit yield.

Ahad *et al.* (1999) studied 13 peach varieties under the climatic condition of Malakand division of Pakistan. Variety Indian Blood (8-A) was found best regarding yield and quality and it is late maturing among all the varieites tested.

Peach growing has now been the prime choice of Swat's orchardists followed by apple. Here the climatic conditions are different from place to place due to altitudes changes and growers are facing problems in the selection of suitable varieties for specific areas. Few varieties are commercially grown most of which are problematic, e.g., susceptibility to various pest and diseases and market timings etc. For this purpose five new imported peach varieties were studied with the objectives to identify suitable peach varieties for different time periods by comparing them at two different altitudes zones in Swat valley, thus to replace old problematic varieties or gave multiple choices to the growers of the area in selection of varieties.

Materials and Methods

Five varieties of peach plants were imported from Australia with the help of Project for Horticulture Promotion, NWFP and were put under trial in 1996 at two places for their performance and comparison. One at Research Station (North), Mingora, Swat at an altitude of about 900 meters where as other was at Germplasm Unit of fruits at Biakan, Tehsil Matta (upper Swat) at an altitude of about 1500 meters. Fifteen plants (3 plants of each variety) were planted at both sites in March 1996 in square system. Management and cultural practices were regularly carried out in the experiment. Data regarding various parameters were recorded for three consecutive years (1998-2000). Five varieties tested/compared on Elberta rootstock were Elberta, Coronet, Florida Gold, Flam Crest and Spring Crest.

Results and Discussion

Flowering, fruit set, picking dates and days to maturity: Flowering and fruit set in variety Florida Gold is earlier than the rest of varieties where as Elberta was late in flowering and fruit set at both locations (Table 1). Morales Varela and Nieto Angel (1992) also concluded similar results. Variety Spring Crest was earliest in maturity followed by Florida Gold. Elberta was identified as mid-late variety. Spring Crest took minimum days to maturity at ARS, Mingora and GPU, Biakan, where as Elberta took maximum days to maturity (Table 1). Ishtiaq *et al* (1997) also evaluated similar results.

Number of Fruits/Kg, Single Fruit Weight and Single Fruit Volume: Variety Coronet was best in these characters at ARS, Mingora, Swat where as variety Elberta was best among others at GPU, Biakan (Table 2). Topp *et al* (1989) and Popov (1990) also carried out similar study.

Fruit Yield: Coronet was highest in yield at ARS, Mingora, Swat followed by Spring Crest. At GPU, Biakan, Florida Gold was highest in yield. Flam Crest was lowest in yield at both places. Data were recorded for the first three years (1998-2000). All these varieties will start commercial bearing from 2000 onward (Table 2). Ahad *et al.* (1999) also concluded similar study.

Table 1: Flowering, Fruit set, Picking dates & days to maturity of Peach varieties at ARS, Mingora, Swat and GPU, Biakan, Swat (Av. of 1st three years data)

Name of variety	1st Flowering date		Fruit set date		Picking date		Days to maturity	
	ARS	GPU	ARS	GPU	ARS	GPU	ARS	GPU
Elberta/Elberta	12.3	23.3	4.4	14.4	30.7	8.8	138	135
Coronet/Elberta	8.3	22.3	1.4	11.4	29.6	10.7	111	105
Flam Crest/Elberta	7.3	18.3	3.4	10.4	15.7	26.7	121	128
Spring Crest/Elberta	9.3	25.3	3.4	10.4	30.5	26.6	82	90
Florida Gold/Elberta	16.2	28.2	1.3	25.3	2.6	29.6	107	121

Table 2: Fruits/kg, Fruit weight, Volume & Yield Ton/Acre of Peach varieties at ARS, Mingora, Swat and GPU, Biakan, Swat (Av. of 1st three years data).

Name of variety	No. of fruits/kg		Single fruit wt. gm		Single fruit volume. ml		Yield ton/acre	
	ARS	GPU	ARS	GPU	ARS	GPU	ARS	GPU
Elberta	13	6	93.00	185.00	98	182	1.10	1.69
Coronet	9	13	132.00	80.50	160	88	2.43	1.94
Flam Crest	17	11	61.60	95.40	80	100	0.97	0.76
Spring Crest	12	12	84.70	77.40	105	80	1.36	1.21
Florida Gold	11	12	72.50	80.00	74	86	1.05	2.52

Table 3: Weight of Flesh, Weight of stone, Taste & Colour of Peach varieties at ARS, Mingora, Swat and GPU, Biakan, Swat (Av. of 1st three years data)

Name of variety	Weight of flesh.gm		Weight of stone.gm		Taste		Colour	
	ARS	GPU	ARS	GPU	ARS	GPU	ARS	GPU
Elberta	67.5	180.0	6.5	5.0	Sweet	Sweet	Y.Red	Y. Red
Coronet	126.0	74.5	6.0	3.0	Sweet	Sweet	Red	Y. Red
Flam Crest	56.40	91.4	5.0	4.0	Less. S	Less. S	Y. Red	Y. Red
Spring Crest	78.70	74.4	6.0	3.0	Sweet	Sweet	Y. Red	Y. Red
Florida Gold	68.50	76.0	4.0	4.0	Sweet	Sweet	Y. Red	D. Red

Weight of Flesh, Stone, Taste and Colour: Coronet has maximum flesh weight and minimum stone weight at ARS, Mingora, Swat where as Elberta has maximum flesh and stone weight at GPU, Biakan, Swat.

All the varieties tested were sweet at both locations except Flam Crest. Coronet at Mingora, Swat where as Florida Gold at Biakan Swat produce dark red colour over yellow ground where as rest of the varieties were mostly red on yellow ground (Table 3).

Significance/novelty of the manuscript (comparison of exotic peach varieties at two different altitudes in the upper and lower Swat): Peach is the main fruit of Swat area of Pakistan followed by apple. For the last few years, area under peach orchards have tremendously increased. Growers though getting good income are facing numerous problems, e.g., low quality fruits, pest/diseases and market glutting due to supply of few varieties from the area. In this area the climatic conditions are diverse and changes from place to place. Growers are always in demand of new varieties especially early ones to provide produces when there are no or less peaches in the markets of Pakistan.

Few years ago, Horticulture scientists at Agricultural Research Station (North), Mingora had selected two late maturing peach varieties (Indian Blood and Maria Delizia) which are now commercially growing in the area. The current research findings of evolving new peach varieties are significant because two early maturing (Spring Crest and Florida Gold) one mid season (Coronet) and one mid late (Elberta) varieties have been selected at two different altitudes in Swat area and the growers of hills and plains will have choices of planting early, mid and late varieties for pitching high prices due to supply of their produces for a longer period of time to the markets. All these varieties are quick bearing, having good fruit qualities and facing no problem of fruit fly attack, which was mostly occured in the late commercial varieties.

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