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Variability in Morphological and Phenological Characters of Apricot (*Prunus armeniaca* L.) Genotypes from Wild Population in Shimla District of Himachal Pradesh

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Abstract

Apricot (*Prunus armeniaca* L.) is one of the most important stone fruits, basically due to its good taste and multiple uses. Commercial growing of apricots is marred by monoculture owing to predominance of very few cultivars like New Castle, Royal etc. However, there is a wide array of germplasm of apricot growing wild in north-western Himalayas. The ever-changing environment and consumer preferences demand apricots with wider adaptation and better yield and fruit quality. This is necessitated more from crop diversification point of view, and also in view of the widespread use of apricot in processing, thus enhancing farmer's income. So, efforts were made to select superior genotypes from wild apricots in Shimla district of Himachal Pradesh during 2015–16. Observations on flowering, tree and leaf characters were recorded in 42 genotypes. Late and extended flowering was observed among the selected genotypes. Maximum trunk girth (78.84 cm) was recorded in SCK5 under Chirgaon location. Opening of flower stated from 4th week of February (SRB1, SRB3, SRB4, SR2, STB1, STB2 and STB3) and extended upto 1st week of April (SCK1, SCK3, SCK4, SCK5 and SCK6). These characters can be used for further breeding improvement of apricots like late flowering trait to protect it from spring frost.

Keywords: Genotypes, flowering, selection, Shimla, wild apricot

1. Introduction

Apricot (*Prunus armeniaca* L.) is a deciduous tree species belonging to family Rosaceae and grown worldwide in mild temperate to extreme cold regions. In India, it is cultivated in hilly regions of Himachal Pradesh, Jammu and Kashmir, Uttarakhand (Parmar and Kaushal, 1982). Some varieties of apricot can be grown in slightly warmer regions of Punjab, Haryana and plains of Himachal Pradesh. Total area under apricot cultivation in Himachal Pradesh is 3680 hectares with production 4635 MT during 2017–2018 (Department of Horticulture, 2019). This delicious stone fruit is commercially used both for dessert and processing purpose and it is rich in vitamin A and contains more carbohydrates, protein, phosphorous and niacin than majority of other common fruits (Teskey and Shoemaker, 1972).

Besides the existing commercial plantations of cultivated forms, there is prevalence of large populations of seedling apricot trees growing wild commonly known as 'Zardalu', 'Chulli', 'Chir' or 'Sara' found naturalized in the north-western Himalayas particularly in Kinnaur, Lahaul and Spiti, Chamba, Kullu, Shimla, Solan and Mandi districts of Himachal Pradesh. The natural population of wild seedling apricot found growing as scattered trees in the interiors of dry temperate region of Himachal Pradesh are particularly important for high sugar content (drying type). The kernels of wild apricots are both sweet and bitter and the bitter kernels are used for oil extraction. In the temperate regions of Himachal Pradesh, large quantities of these wild apricots are collected for oil extraction.

It is well known that there is a wide array of germplasm of wild apricot growing in north-western Himalayas. The wild apricot has also been collected in past but that has been used mainly as rootstock for cultivated types. Hitherto, a very meager effort has been made by the horticulturists for the selection of superior apricot genotypes with desirable traits from these natural populations present abundantly in Himachal Pradesh. There may be some seedling trees growing wild which may have very good dessert quality, high sugar content and sweet kernels and suitable for drying. Dry apricot has tremendous export potential provided international standards are maintained in production and marketing technology and this only can be achieved through the planting of quality material commercially having desirable traits. So keeping in view the present investigations were carried out in Shimla district of Himachal Pradesh to select superior genotypes with late flowering characters from wild population.

2. Materials and Methods

The study was conducted covering existing seedling apricot tree population in Shimla district of Himachal Pradesh. The region opted for research particularly falls under high hills wet temperate zone which stretched from N 31°07.779' to N 31°44.338' and E 077°15.810' to E 077°61.363' with elevation ranging from 1411–2535 meters above mean sea level. The selection was based on fruit size and TSS as well as feedback collected (estimated age of the tree, sweet kernel, high oil content and attractive fruit colour with red blush) from local people and farmers in the form of questionnaire. On the basis of pre-selection survey about 250 genotypes were selected, out of which 42 genotypes were taken for further analysis and their tree, flowering, and foliage characters were observed (Table 1).

The experimental data of all the metric characters studied were subjected to the statistical analysis. Test of significance suggested by Panse and Sukhatme (1985) was used. The statistical analysis was carried out for each observed character by using MS-Excel.

Table 1: Location details of apricot accessions selected from Shimla district

Location	Village	Code
Rampur -R	Bajetli -B	SRB (1-6)
Rampur -R	Rampur	SR (1-4)
Jubbal -J	Mandhol-M	SJM (1-4)
Rohru -RO	Baggi -B	SROB (1)
Chirgaon-C	Jhainari-J	SCJ (1-3)
	Denwari -D	SCD (1)
	Dhamwari- DH	SCDH (1-2)
	Khaniyara -K	SCK (1-7)
Mashobra -M	Mashobra	SM (1-3)
Kotkhai -K	Kyari-K	SKK (1-4)
Kumarsain -KU	Madhwani -M	SKUM (1-4)
Theog-T	Balag -B	STB (1-3)

3. Results and Discussion

Tree vigour and growth habit are important horticultural trait which determines the bearing age and potential in fruit crops. The apricot trees under study varied in age ranging from 15 years to more than 45 years.

Among the genotypes studied from Shimla district 28 genotypes had shown upright growth habit, while 14 genotypes were found to be spreading type. Trunk girth ranged from 18.72 to 78.84 cm in the genotypes of Shimla district. Maximum trunk girth (78.84 cm) was observed in SCK5 and minimum (18.72 cm) in SKK3. Average trunk girth was reported to be 47.53 cm and their coefficient of variation was 33.77 %. The shoot colour of current growth was observed to be Green-Group (143 A) in 8 genotypes; (143 B) in 4 genotypes; (143 C) in 6 genotypes; (142 A) in 11 genotypes, (142 B) in 5 genotypes and (141 B) in 8 genotypes. In case of one year old shoot, genotypes were found to be Grey Orange Group (166 A) in 8 genotypes; (166 B) in 4 genotypes; (165 A) in 19 genotypes and (165 B) in 11 genotypes among the genotypes studied from Shimla district (Table 2).

Table 2: Tree characters of seedling apricot genotypes selected from Shimla district

Geno-type	Growth habit	Trunk girth (cm)	Shoot colour	
			Current growth	One year old shoot
SRB1	Upright	64.85	*GG-143 C	**GO-165 A
SRB2	Upright	51.96	GG-143 C	GO-166 B
SRB3	Upright	45.45	GG-143 B	GO-165 A
SRB4	Spreading	53.86	GG-142 A	GO-165 A
SRB5	Spreading	56.09	GG-141 B	GO-165 A
SRB6	Upright	60.47	GG-141 B	GO-165 B
SR1	Upright	64.97	GG-143 C	GO-165 B
SR2	Upright	32.14	GG-142 B	GO-165 A
SR3	Upright	48.66	GG-143 C	GO-165 A
SR4	Upright	34.55	GG-143 A	GO-165 A
SJM1	Spreading	26.58	GG-142 B	GO-165 A
SJM2	Spreading	30.73	GG-143 C	GO-166 B
SJM3	Upright	47.29	GG-142 B	GO-165 A
SJM4	Spreading	31.54	GG-142 A	GO-165 A
SROB1	Upright	18.86	GG-141 B	GO-165 A
SCJ1	Upright	31.46	GG-143 A	GO-165 A
SCJ2	Upright	54.50	GG-143 A	GO-165 A
SCJ3	Upright	64.60	GG-143 A	GO-165 B
SCD1	Spreading	70.68	GG-142 A	GO-165 B
SCDH1	Upright	33.75	GG-141 B	GO-165 A
SCDH2	Upright	43.86	GG-142 A	GO-166 A
SCK1	Upright	32.30	GG-142 A	GO-165 B
SCK2	Spreading	27.74	GG-143 B	GO-165 B
SCK3	Spreading	30.90	GG-143 A	GO-165 B
SCK4	Upright	78.00	GG-142 A	GO-165 B
SCK5	Upright	78.84	GG- 141 B	GO-166 B
SCK6	Upright	64.36	GG-142 A	GO-166 A
SCK7	Upright	61.47	GG-142 A	GO-165 A
SM1	Upright	43.54	GG-143 A	GO-165 B
SM2	Spreading	50.36	GG-141 B	GO-166 A
SM3	Upright	36.34	GG-141 B	GO-166 A
SKK1	Upright	77.46	GG-143 B	GO-165 B

Table 2: Continue...

Geno-type	Growth habit	Trunk girth (cm)	Shoot colour	
			Current growth	One year old shoot
SKK2	Upright	26.02	GG-143 A	GO-166 A
SKK3	Upright	18.72	GG-143 A	GO-165 A
SKK4	Upright	50.13	GG-142 B	GO-165 A
SKUM1	Spreading	35.81	GG-142 B	GO-166 A
SKUM2	Upright	61.77	GG-141 B	GO-166 B
SKUM3	Spreading	55.24	GG-142 A	GO-165 B
SKUM4	Spreading	44.95	GG-143 B	GO-166 A
STB1	Upright	52.55	GG-142 A	GO-166 A
STB2	Spreading	48.57	GG-143 C	GO-165 A
STB3	Spreading	54.26	GG-142 A	GO-165 A
Range		18.72-78.84		
Mean		47.53		
SE±		2.48		
SD		16.05		
CV (%)		33.77		

*: Green group; **: Gray Orange group

Similar kind of variations in tree characters is in confirmation with the previous studies on apricot (Parmar and Sharma, 1992; Wani and Mughal, 2017) considerable variation so observed in growth parameters can mainly be attributed to differences in age and that their trees have not been subjected to any training and pruning practices.

3.1. Foliage characters

Leaf length of genotypes studied from Shimla district varied from 2.05 cm (STB3) to 5.56 cm (SRB6). The overall mean for leaf length was recorded as 3.53 cm. Coefficient of variation was 19.27%. Leaf width was observed to be ranged from 0.98 cm (STB1) to 4.46 cm (SKK1) with an average leaf width of 2.64 cm. Coefficient of variation was recorded as 31.48% in genotypes of Shimla district. Minimum leaf area was observed as 26.52 cm^2 in SR3 whereas; maximum was 39.09 cm^2 in SRB6. The average leaf area of genotypes of Shimla district recorded as 32.47 cm^2 and their coefficient of variation was observed as 8.13%. Petiole length of genotypes studied under Shimla district varied from 20.98 mm (SCK7) to 45.70 mm (SRB5) with an average petiole length of 32.45 mm. Coefficient of variation was observed as 17.77%. Glands were absent in SR1, SJM1, SCJ3 and SCDh2. Number of glands in remaining genotypes ranged from 1.00 (SRB6, SCK4 and SM2) to 5.33 (STB3) with an average number of glands 2.94 in the genotypes studied in Shimla district. Coefficient of variation was recorded as 53.73% (Table 3).

Colour of emerging leaves in the genotypes studied from Shimla district was observed to be Yellow Green Group

Table 3: Foliage characters of apricot accessions selected from Shimla district

Genotype	Leaf length (cm)	Leaf width (cm)	Leaf area (cm^2)	Petiole length (mm)	No. of glands
SRB1	4.14	2.61	36.94	38.13	2.33
SRB2	4.06	2.52	33.55	40.11	3.33
SRB3	4.74	2.63	32.26	37.40	1.67
SRB4	4.74	2.61	33.13	38.11	2.00
SRB5	4.43	1.88	33.88	45.70	3.00
SRB6	5.56	3.95	39.09	36.85	1.00
SR1	2.98	1.96	29.17	39.05	0.00
SR2	4.86	3.51	31.71	30.13	4.00
SR3	2.54	3.72	26.52	36.65	2.67
SR4	4.02	2.16	32.55	29.05	1.67
SJM1	3.86	2.68	33.51	22.56	0.00
SJM2	3.57	2.11	33.96	26.82	4.00
SJM3	3.32	1.74	32.31	30.33	3.33
SJM4	3.65	2.86	29.01	27.75	2.33
SROB1	3.16	1.18	28.67	32.50	1.67
SCJ1	3.48	3.26	31.02	40.05	2.33
SCJ2	3.96	2.80	31.07	39.88	2.00
SCJ3	3.15	3.25	35.00	25.56	0.00
SCD1	3.46	2.81	32.04	30.04	3.00
SCDH1	3.06	2.04	33.10	36.85	0.00
SCDH2	3.93	2.72	32.63	34.42	4.67
SCK1	3.15	1.87	29.54	27.74	3.33
SCK2	3.37	1.73	29.78	21.33	4.00
SCK3	3.64	3.16	31.71	31.42	2.67
SCK4	2.94	3.78	35.62	29.71	1.00
SCK5	2.93	3.43	34.22	25.48	2.00
SCK6	3.05	3.14	34.15	27.33	2.67
SCK7	3.75	2.86	32.16	20.98	3.00
SM1	3.64	4.01	35.24	33.74	3.00
SM2	3.93	3.53	34.24	38.51	1.00
SM3	3.35	2.96	33.82	40.02	4.67
SKK1	3.12	4.46	36.15	36.75	5.00
SKK2	3.64	1.58	29.89	37.64	3.00
SKK3	3.53	2.15	30.05	30.92	4.67
SKK4	3.62	2.48	30.87	36.38	5.00
SKUM1	2.89	2.63	31.88	30.40	4.67
SKUM2	2.84	2.97	32.63	31.54	5.33
SKUM3	3.32	3.06	36.15	30.71	3.33

Table 3: Continue...

Genotype	Leaf length (cm)	Leaf width (cm)	Leaf area (cm^2)	Petiole length (mm)	No. of glands
SKUM4	3.51	3.01	36.11	29.83	4.67
STB1	2.47	0.98	28.47	26.38	5.00
STB2	2.93	1.25	30.17	28.45	5.00
STB3	2.05	1.04	29.59	29.52	5.33
Range	2.05-5.56	0.98-4.46	26.52-39.09	20.98-45.7	0.00-5.33
Mean	3.53	2.64	32.47	32.45	2.94
SEm±	0.11	0.13	0.41	0.89	0.24
SD	0.68	0.83	2.64	5.76	1.58
CV (%)	19.27	31.48	8.13	17.77	53.73

(147 A) in 13 genotypes; (147 B) in 16 genotypes; (146 A) in five genotypes and (146 C) in eight genotypes. Colour of matured leaves was recorded to be Green Group (138 A) in three genotypes; (138 B) in six genotypes; (138 C) in three genotypes; (137 A) in seven genotypes; (137 B) in 14 genotypes and (137 C) in nine genotypes. Among the genotypes studied under Shimla district leaf margin was observed to be serrate in 33 genotypes and biserrate in nine genotypes. Leaf surface of all the genotypes studied under Shimla and Kinnaur district was found to be smooth (Table 4).

The variation in leaf characters are considered as distinguishing features for description and identification of fruit species and cultivars (Upshall, 1924). However, in the present study no marked variation was observed in leaf shape, surface, margins as well as colour except for some in leaf length, width and area (Table 3 and 4). The leaf area varied from 25.74 to 39.36 cm^2 under genotypes of Kinnaur district whereas; in Shimla district it ranged from 26.52 to 39.09 cm^2. The colour of mature leaves was green and yellow green in all the genotypes. Similar results pertaining to foliage characters were reported by various workers (Rana and Verma, 2011; Kamrani and Bouzari, 2013; Krichen et al., 2014; Ullah et al., 2017) in the past.

3.2. Flower characters

Initiation of flowering indicated by time of flower emergence was observed in 4th week of February and it was extended upto 1st week of March. Full bloom was observed from 2nd week of March and it was extended upto 3rd week of April in genotypes studied under Shimla district. Length of flowers in the genotypes selected for studies under Shimla district ranged from 22.89-34.43 mm. Average length of flower was observed to be 28.30 mm and their coefficient of variation was recorded as 9.93%. Breadth of flowers in the genotypes selected for studies under Shimla district ranged from 12.21–19.12 mm. Average breadth of flower was observed to be 16.31 mm and their coefficient of variation 9.72%. Bearing habit in the genotypes of Shimla district was observed to be on spur (23 genotypes), on one year old shoot (11 genotypes)

Table 4: Foliage characters (non-metric) of wild apricot genotypes selected from Shimla district

Tree code	Leaf colour		Leaf margin	Leaf surface
	Emerging leaves	Matured leaves		
SRB1	*YG-G 147 B	**GG-137 C	Serrate	Smooth
SRB2	YG-G 147 A	GG-137 C	Biserrate	Smooth
SRB3	YG-G 147 A	GG-137 B	Serrate	Smooth
SRB4	YG-G 146 C	GG-137 C	Serrate	Smooth
SRB5	YG-G 147 B	GG-137 C	Serrate	Smooth
SRB6	YG-G 147 B	GG-138 C	Serrate	Smooth
SR1	YG-G 147 A	GG-138 C	Serrate	Smooth
SR2	YG-G 147 A	GG-137 C	Serrate	Smooth
SR3	YG-G 147 B	GG-137 B	Biserrate	Smooth
SR4	YG-G 147 B	GG-137 B	Serrate	Smooth
SJM1	YG-G 147 B	GG-137 B	Serrate	Smooth
SJM2	YG-G 147 B	GG-137 B	Serrate	Smooth
SJM3	YG-G 147 B	GG-137 B	Serrate	Smooth
SJM4	YG-G 147 B	GG-137 C	Serrate	Smooth
SRoB1	YG-G 147 B	GG-137 A	Serrate	Smooth
SCJ1	YG-G 146 C	GG-137 A	Serrate	Smooth
SCJ2	YG-G 146 C	GG-138 B	Serrate	Smooth
SCJ3	YG-G 147 A	GG-138 B	Biserrate	Smooth
SCD1	YG-G 147 A	GG-137 B	Biserrate	Smooth
SCDh1	YG-G 147 A	GG-138 A	Serrate	Smooth
SCDh2	YG-G 147 B	GG-138 B	Serrate	Smooth
SCK1	YG-G 147 B	GG-138 A	Serrate	Smooth
SCK2	YG-G 147 A	GG-137 B	Serrate	Smooth
SCK3	YG-G 147 B	GG-137 B	Serrate	Smooth
SCK4	YG-G 147 A	GG-137 A	Serrate	Smooth
SCK5	YG-G 146 C	GG-138 B	Serrate	Smooth
SCK6	YG-G 146 C	GG-137 A	Biserrate	Smooth
SCK7	YG-G 146 C	GG-137 C	Serrate	Smooth
SM1	YG-G 147 B	GG- 137 C	Serrate	Smooth
SM2	YG-G 147 B	GG-137 B	Serrate	Smooth
SM3	YG-G 146 A	GG-138 A	Serrate	Smooth
SKK1	YG-G 146 C	GG-138 B	Serrate	Smooth
SKK2	YG-G 146 C	GG-137 C	Biserrate	Smooth
SKK3	YG-G 146 A	GG-137 A	Biserrate	Smooth
SKK4	YG-G 147 A	GG-138 B	Biserrate	Smooth
SKuM1	YG-G 146 A	GG-137 B	Serrate	Smooth
SKuM2	YG-G 147 A	GG-137 A	Serrate	Smooth

Table 4: Continue...

Tree code	Leaf colour		Leaf margin	Leaf surface
	Emerging leaves	Matured leaves		
SKuM3	YG-G 147 A	GG-137 A	Biserrate	Smooth
SKuM4	YG-G 147 A	GG-138 C	Serrate	Smooth
STB1	YG-G 147 A	GG-137 B	Serrate	Smooth
STB2	YG-G 147 A	GG-137 B	Serrate	Smooth
STB3	YG-G 147 B	GG-137 B	Serrate	Smooth

*: Yellow green group; **: Green group

and on both (8 genotypes). Colour of flowers was observed to be pinkish white in 31 genotypes and white in 11 genotypes among the genotypes of Shimla district (Table 5).

The variation in time of flowering may be due to the differences in the chilling hour requirement to break bud dormancy in the selected genotypes. The onset of apricot flowering is dependent on the temperature increase after dormancy and is correlated with air temperature (Blasse and Hofmann, 1993). Vachun (2003) reported that the temperature ranging from 7-9 °C determined the start of the beginning of flowering. Late blossoming is an important factor to protect any damage caused by spring frost (Unal et al., 1999), as it is one of the main objectives in the first phase of the apricot breeding programme. Such variation in flower characters have also been reported by several workers (Gulcan et al., 2006; Maria et al., 2010; Polat and Caliskan, 2013; Kumar et al., 2016).

Table 5: Flower characters of wild apricot genotypes selected from Shimla district

Genotype	Flowering time		Size of flower		Bearing habit	Colour of flower
	Time of opening of flower	Time of full bloom	Length (mm)	Breadth (mm)		
SRB1	4th week of February	2nd week of March	33.65	18.65	One year old shoot	Pinkish white
SRB2	1st week of March	4th week of March	32.87	17.14	Spur	Pinkish white
SRB3	4th week of February	2nd week of March	30.73	17.83	Spur	Pinkish white
SRB4	4th week of February	3rd week of March	29.78	16.56	One year old shoot	Pinkish white
SRB5	1st week of March	3rd week of March	34.43	19.12	Spur	Pinkish white
SRB6	1st week of March	3rd week of March	28.55	15.74	Both	Pinkish white
SR1	1st week of March	4th week of March	29.69	18.31	Spur	while
SR2	4th week of February	2nd week of March	30.11	17.68	One year old shoot	Pinkish white
SR3	1st week of March	4th week of March	30.19	16.53	Spur	White
SR4	1st week of March	3rd week of March	29.83	16.86	Spur	Pinkish white
SJM1	3rd week of March	1st week of April	26.57	14.85	Spur	Pinkish white
SJM2	2nd week of March	1st week of April	24.38	14.38	Spur	Pinkish white
SJM3	3rd week of March	1st week of April	28.64	15.17	Spur	Pinkish white
SJM4	3rd week of March	1st week of April	25.26	15.83	Both	Pinkish white
SRoB1	1st week of March	4th Week of March	24.85	14.92	One year old shoot	White
SCJ1	3rd week of March	2nd week of April	30.16	16.41	One year old shoot	Pinkish white
SCJ2	3rd week of March	1st week of April	31.09	16.05	One year old shoot	Pinkish white
SCJ3	4th week of March	2nd week of April	32.21	18.61	Both	Pinkish white
SCD1	3rd week of March	1st week of April	32.32	19.01	Spur	Pinkish white
SCDh1	3rd week of March	1st week of April	31.16	17.59	Both	White
SCDh2	3rd week of March	2nd week of April	30.45	16.83	One year old shoot	White
SCK1	1st week of April	3rd week of April	27.66	15.44	Spur	Pinkish white
SCK2	3rd week of March	1st week of April	28.84	15.07	Spur	Pinkish white
SCK3	1st week of April	3rd week of April	26.47	14.16	Spur	White
SCK4	1st week of April	3rd week of April	28.39	15.45	Spur	White
SCK5	1st week of April	3rd week of April	26.51	14.84	Spur	Pinkish white

Table 5: Continue...

Genotype	Flowering time		Size of flower		Bearing habit	Colour of flower
	Time of opening of flower	Time of full bloom	Length (mm)	Breadth (mm)		
SCK6	1st week of April	3rd week of April	28.06	16.31	Both	Pinkish white
SCK7	3rd week of March	1st week of April	29.45	15.19	Both	Pinkish white
SM1	3rd week of March	1st week of April	27.61	17.82	One year old shoot	Pinkish white
SM2	3rd week of March	1st week of April	25.55	16.29	Spur	White
SM3	3rd week of March	1st week of April	24.86	14.95	Spur	Pinkish white
SKK1	2nd week of March	4th Week of March	25.73	15.76	Spur	Pinkish white
SKK2	2nd week of March	4th Week of March	26.49	16.63	Spur	White
SKK3	2nd week of March	1st week of April	30.02	17.31	Both	Pinkish white
SKK4	3rd week of March	4th Week of March	25.86	18.05	Spur	Pinkish white
SKuM1	2nd week of March	4th Week of March	24.37	17.63	One year old shoot	Pinkish white
SKuM2	2nd week of March	4th Week of March	27.35	18.11	One year old shoot	White
SKuM3	2nd week of March	3rd week of March	28.94	17.03	Spur	Pinkish white
SKuM4	2nd week of March	4th Week of March	24.44	13.89	Spur	Pinkish white
STB1	4th week of February	3rd week of March	22.89	12.21	Both	Pinkish white
STB2	4th week of February	2nd week of March	24.56	13.53	One year old shoot	Pinkish white
STB3	4th week of February	2nd week of March	27.84	15.48	Spur	White
Range			22.89-34.43	12.21-19.12		
Mean			28.30	16.31		
SEm±			0.43	0.24		
SD			2.81	1.59		
CV (%)			9.93	9.72		

4. Conclusion

The present studies were undertaken to determine some phonological, tree and leaf characters of wild apricot genotypes selected from Shimla district on the basis of fruit size and TSS. The 42 wild apricot genotypes were selected in the Shimla district for further studies. It has been determined that selected genotypes from this region showed a wide variation in most of the traits. These characters can be used for further breeding improvement of apricots like late flowering trait to protect it from spring frost.

5. References

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