

Grapes Characterization of Different Varieties in the Central Zone of Peshawar Kpk



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Abstract

An investigation "Grapes characterization in central zone of kp" was conducted at Agriculture Research Institute Tarnab under the Annual Developmental Program (ADP) of KP. There were seven grape varieties under the characterization study, i.e. Kings Ruby, Abasin-2000, Fazil Shah, NARC, Babar House, Attock Collection, Cardinal Italia. I was involved as internship student in this study. The data concerning the berry morphology of grape varieties indicated that oval shape berries were observed in kings Ruby, round shape in Babar House, NARC, and Abasin-2000, elongate shape in Cardinal Italia, while oblong shape in Fazil Shah. Fruit skin color was observed red in kings Ruby, Babar, NARC, and Abasin-2000, golden in Italia, whitish green in Fazil Shah. Whitish flesh color was observed in Kings Ruby, cardinal. Soft flesh was observed in Kings Ruby while firm flesh was noted in Italia, Fazil Shah. Kings Ruby and Fazil Shah had very sweet taste, Babar, NARC, Attock, and Abasin-2000 had sweet taste, whereas Italia had less sweet taste. Kings Ruby had excellent eating quality followed by Fazil Shah. Loose bunch were observed in Italia, Fazil Shah. Semi compact bunch were observed in Kings Ruby, attock, Abasin-2000. Very compact bunch were observed in Babar. Kings Ruby, Abasin-2000, Fazil Shah, Attock are seedless. NARC was lees seedy. Babar and Italia are seeded. Red fruit colors were observed in Kings Ruby, NARC, and Attock. Kings Ruby and Abasin are early maturity. Maximum bunch weight (1329 gm) was recorded in Abasin-2000. Minimum bunch weight (165gm) was noted in Italia.

Keywords: Grapes; Zones of kp

Introduction

The European grapes (*vitis vinifera*) are the most important species of the family *vitaceae*. Two other commercial species are *vitis labrusca* (American grapes) and *vitis rotundifolia* (Muscadine grape). Worldwide grapes are grown for eating, wine, juice, and raisins. European grapes grown in mild subtropical conditions, while both of the other species do well under temperate conditions. *Vinifera* grapes have a thick skin which firmly adheres to the sweet pulp. American and Muscadine grapes have a thin skin which separates easily from the relatively acid pulp. Muscadine grapes have small bunches, and large seeds. Their berries have a strong musky flavor and shedding is frequent [1]. The cultivation of the domesticated grape began 6,000-8,000 years ago in the near east [2].

Grapes are a type of fruit that grow in clusters of 15 to 300, and can be crimson, black, dark blue, yellow, green, orange and pink. "White" grapes are actually green in color, and are evolutionarily derived from the purple grape. Mutations in two regulatory genes of white grapes turn off production of anthocyanins, which are responsible for the color of purple grapes [3]. In Pakistan, grapes were grown mostly in Baluchistan and some districts of

Khyber pakhtunkhwa with annual production of 122 thousand tons having average yield of 19 tons ha⁻¹ against the potential of 25 tons ha⁻¹ [4]. In Khyber pakhtunkhwa, the total area was 200 hectare with production of 1200 tons.

Grapes seed extract and seed oil is also use full for health. For example, laboratory tests indicated a potential anticancer effect from grape seed extract [5] Commercial juice products from concord grapes have been applied in medical research studies, showing potential benefits against the onset stage of cancer [6] Grapes vines are adapted to a wide range of soil types. However, heavy clay soil, shallow, sodic or poorly drained soils should be avoided. Grapes require ample soil moisture during the growing season either from rainfall or irrigation [7]. The climatic variation in grape growing region accounts for the diversity of grapes germ plasm berry quality and other viticulture products. In general, the influence of climatic condition on the chemical characteristics and nutritional quality of grapes is more pronounced as compared to any other factor [8]. Environmental components such as temperature, sunshine, rain, soil, and combinations of these affect chemical composition

of grapes juice [9]. During berry growth and development the climatic plays an important role for berry maturity, ripening, development of physical, as well as chemical characteristics of the berry quality such as size, color, aroma, accumulation of anthocyanins [10]. The maturity, ripening and harvesting time of grapes depends upon cultivar, geo-graphic location and agro climatic condition. Different table grapes cultivars have been found to have varying tolerance to temperature, heat stress, rainfall and their distribution through the season [11]. Keep in view the characteristics of grapes the research was conducted with the following objectives.

Objectives

- a) To find out different characteristics of different grape varieties.
- b) To find out the best svariety of grape in central zone of kpk.

Materials and Methods

The present study Grapes Characterization was conducted during the year 2017 at Agriculture Research Institute (ARI) Tarnab Peshawar.

Experimental Protocol

Grapes varieties (7 numbers) were collected from different parts of KP and were propagated through cutting to study their adoptability under the agro climatic condition of Peshawar [12-16]. There were seven grape varieties under the characterization study, i.e.

- a) Kings Ruby
- b) Abasin-2000
- c) Fazil Shah
- d) NARC
- e) Babar
- f) Attock
- g) Italia

Vineyard was laid out with 15 feet row to row distance and 9-10 feet vine to vine distance. Vines were trained on Double Kniffen system. Pole had 5 feet length above ground and 20 feet distance from pole to pole. All management practices like irrigation, hoeing, pesticide spray etc, were managed accordingly as routine manner. Fertilizer dose at the rate of 0.25 kg N, 0.13 kg P₂O₅, and 0.13 kg k₂o per vine was applied with two split doses: first at the start of spring before leaf initiation and 2nd after berry set [17-22]. Data was collected for following variables:

- a) Seed Character: Seed of grape variety was determined on visual look

- b) Fruit Skin Color: Fruit skin color of grape variety was determined on visual look
- c) Flesh Color: Flesh color of grape variety was determined on visual look
- d) Taste and Eating Quality of Fruit: Taste checked by tongue
- e) Shape: Shape of grape variety was determined on visual look.
- f) Size: Size of grape variety was determined with the help of vernier caliper.
- g) Weight per Bunch: Weight of grapes was determined with digital balance.
- h) Bunch Characteristics: Data were recorded on bunch compactness and bunch shoulders.

Results and Discussion

Seed Character: Italia and Babar are seeded varieties. NARC is less seedy while all other varieties under the characterization study were observed seedless.

Fruit Skin Color: Fruit skin color was observed in king's Ruby, Babar, NARC, and Abasin-2000, golden in Italia, whitish green in Fazil Shah.

Flesh Color: Whitish flesh color was observed in Kings Ruby, while yellowish color fleshes in the rest of varieties.

Firmness of Flesh: Soft flesh was observed in King's Ruby, while firm flesh was noted in Italia, Fazil Shah.

Eating Quality: King's Ruby has excellent eating quality followed by Fazil Shah and Babar. Taste (phenoleptic property): King's Ruby and Fazil Shah had very sweet taste, Babar, NARC and Abasin-2000 had sweet taste, whereas Italia had less sweet taste.

Fruit Shape: Oval shape berries were observed in king's Ruby, round shape in Babar, NARC, and Abasin-2000, elongate shape in Italia, while oblong shape in Fazil Shah.

Bunch Weight: Maximum bunch weight (1329 gm) was recorded in Abasin-2000, (165 gm) in Italia, Babar (792 gm).

Bunch Shoulders: Bunch shoulder was recorded in Abasin-2000. All varieties under investigation have shouldered bunches.

Bunch Length: King ruby was long bunch length variety and italia, Babar has short bunch length variety.

Bunch Compactness: Loose bunches were observed in Fazil shah, NARC, Italia. Very compact bunches was observed in Babar.

Maturity: King ruby was early mature variety and italia was late variety (Tables 1-5).

Table 1: Berry Morphology.

Varieties	Seed Character	Fruit Shape	Fruit Skin Color	Flesh Color	Firmness of flesh
Kings Ruby	Seed less	Oval to Round	Red	Whitish	Soft
Abasin-2000	Seedless	Oblong	Reddish	Yellowish Green	Medium
Fazil Shah	Seedless	Oblong	Whitish Green	Yellow	Firm
Narc	Less Seedy	Round	Red	Yellow	Medium
Babar House	Seeded	Round	Reddish	Yellow	Medium
Attock Collection	Seedless	Round	Red	Yellow	Soft

Table 2: Berry morphology of seven grape varieties at ARI Tarnab Peshawar.

S.no	Varieties	Taste	Eating Quality	Fruit Size
1	Kings Ruby	Very sweet	Excellent	Medium
2	Abasin-2000	Sweet	Good	Large
3	Fazil Shah	Very sweet	Very good	Very large
4	NARC	Sweet	Good	Large
5	Babar House	Sweet	Very good	Very large
6	Attock Collection	Sweet	Very good	Large
7	Cardinal Italia	Lees sweet	Fair	Large

Table 3: Bunch weight of seven grape varieties at ARI Tarnab Peshawar.

Varieties	Plant-1	Plant-2	Plant-3	Plant-4	Mean
Kings Ruby	924	680	511	853	742
Abasin-2000	930	1580	815	1993	1329
Fazil Shah	600	510	571	460	535
Narc	700	736	620	605	665
Babar House	866	820	780	703	792
Attock Collection	860	570	786	610	706
Cardinal Italia	198	126	157	179	165

Table 4: Bunch characteristics of seven grape varieties at ARI Tarnab Peshawar.

S. no	Varieties	Bunch compactness	Bunch Length	Bunch shoulders
1	Kings Ruby	Semi compact	Long conical	Yes
2	Abasin-2000	Semi compact	Short	No
3	Fazil Shah	Loose	Long	Yes
4	NARC	Loose	Long	Yes
5	Babar House	Very compact	Short	Yes
6	Attock Collection	Semi compact	Short	No
7	Cardinal Italia	Loose	Short	Yes

Table 5: Date of Maturity/ Harvesting.

Varieties	Date of Maturity
Kings Ruby	1-06-2017 to 13-06-2017
Abasin-2000	1-06-2017 to 13-06-2017
Fazil Shah	10-06-2017
Narc	10-06-2017
Babar House	10-06-2017
Attock Collection	13-06-2017
Cardinal Italia	13-06-2017

Conclusion

It is concluded on the basis of recorded data that: Among the all grape germ plasm “ Kings Ruby ” was the most suitable because it was an early maturing seedless variety having excellent taste, attractive red color, large size berries, followed by Fazil Shah but it had berry splitting at maturity.

Recommendation

“Kings Ruby” is an early maturing variety with excellent berry quality can be successfully cultivated under the agro-climatic condition of Peshawar.

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