
Quality indicators and commodity of apple varieties

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Abstract: The article was informed about research results related to the commodity and quality indicators to Azerbaijan introduced varieties of apples. The analysis carried out in the north-east of the country- in the conditions of Guba, Gusar, Shabran regions on the cultivated apple varieties. This time were analyzed in the following varieties:

- The sorts as Qala, Conaored, Qrani Smit, Fuji, Simirenko reneti, Qolden Delişe x 972, Conaold grown on the grafted of the wild forest apple in the area 5x4 m in 2005 in the village Timiryazev of the Quba region;

- The sorts as Conaored, Golden Reinders, Grani Smith, Aydared, Red Vinter, Fuji grown on the grafted of M-9 in the area 4x1,25m in 2008-2009 in the village Teni hayat of the region Gusar;

- The sorts as Qala, Conaored, Qrani Smit, Fuji, Simirenko reneti, Qolden Delişe x 972, Conaold grown on the grafted of M-9 in the area 5x3 in 2008-2009 in the village Dashliyataq of the region Shabran.

The research was carried out on the generally accepted methods on basics of gardening. This time, the average weight of the fruit was on the basis of the average weight of 100 fruit: many large - weighing more than 175 g; large - weighing 175-126 g; average - mass 125-101g; small - weighing 100-76 g; very small - weighing less than 76 grams.

The study chemical composition of apple varieties was carried out in the technology, biochemistry and fruit processing laboratory of SRIFT. This time, basically has been identified total and soluble dry substance, sugar, coloring ingredients, ascorbic acid. The soluble dry matter by refractometric method, vitamin C with the help of Tilsman reagent, sugars according to Bertrand, coloring items according to Leventhal and Neybayep has been identified.

It was determined that grafted onto the cultivated varieties wild apple woods product intended for processing industry in comparison, in varieties grown on grafted clone more storage and for use in case of fresh fruit. The analysis determined that Cır Haji from local varieties indicators lag behind a lot introduced new apple varieties despite the fact that dominating according to the chemical composition the apple varieties introduced earlier.

Keywords: apples, sort, introduction, quality indicators, commodity product, chemical composition.

INTRADUCTION

In the 20 years of the twentieth century, fruit gardens in our republic were developed basically in the mountainous and foothill areas as retain and mainly private sectors for the expense of local varieties and forms. In the Soviet period in our country industrial gardening has entered to the first develop ways and at the expense of existing varieties on the strapping grafted, were given expanded food areas (8x6m; 8x10m; 10x10m), started reduction of extensive type gardens. From 1975-1980 fruit gardens were expanded in the our country, has been achieved the introduction of new fruit plant varieties from abroad. Since then, gardening area were developed in the regions are engaged with fruit-growing mainly locals, partially introduced and also Scientific-Research Institute of fruits and tea (SRIFT) using the new formed varieties of selection. Since then started establishment of intensive-type gardens in our republic (6x4m; 5x4m; 5x3m in plantation schemes) [9].

After Azerbaijan has independence, in the country appeared important problems such as created economy again according to the period of requirement. The row these problems includes important issues such as ensure sustainable development of fruit in the country and implantation new super intensive gardens in accordance with the requirements of the market economy. In the direction of their solution, in the whole country improvement the gardening and especially in the culture gardening Quba Regional Agricultural Science and Information Counseling Center (GRASICC) and SRIFT played great role. The considerable work has been done in the direction of acquisition of high product from the common land area of peasant (farmer) agriculture, to apply the results of scientific research of innovation, bringing the progressive gardening technology in the country, introduction fruit varieties and grafted forms release at virus which was acquitted in the European countries.

Our republic chose the market economy way and in such conditions the sorts are more important. Because, the sort is main elements in intensifying gardening in addition to the qualities of the market so it have a direct impact to the increasing density of plantation and to increase the period of their marketable product[3].

The height and other conditions of grafting effects to the productivity of apple. The amino acid and other factors has high effects to the chemical composition of fruits at the same time [1,5,6,7].

Although many varieties of apples are growing in our country it is not accepted by many owners because the sorts did not respond to the requirements of a market economy. Therefore, one of the actual problems of the day is establishment new sorts which superior according to the quality instead of sorts now cultivated in gardens and to enrich our country with introduced sorts justified itself by high productivity and quality indicators around the world countries.

As known the fate of the fruit gardens of intensive type firstly depends on economic and biological value of sort. Sort should to quickly start give high-quality marketable product, have resistant to pests and disease, and be comply with the region's soil- climate conditions, also be highly profitable [4].

Economic and biological characteristics, marketable and quality indicators of locally apple varieties which have been introduced our republic until 1980 were studied by employees of SRIFT, selection apple sort with the high quality and productivity were advised to the fruit-growing regions of Azerbaijan[2].

Around the world are cultivated the varies of apple as Fuji apple, Conaold, Breburn, Gala, Grani Smith Golden reinder and others but in our country are cultivated the sorts as Qolden Delişes, Starkrimson, Simirenko Renet and others which are not satisfying the demands of the market. However, our neighbors Turkey also has refused from them and by applying modern cultivation system has become widespread cultivation the sorts as Fuje, Conaold, Breburn, Qala, Qrani Smit, Qolden reinder[2,12].

In view of this, since 2003 by GRASICC and SRIFT in our country have been introduced the apple sorts as Grani Smith, Fuji, Conaqored, Conaold, Golden Delises x 972, White Renet, Reine des Renettes, Breburn, Gala, Celencer, Mariri red, Brookfield, Aydared, Supercif, Baugene Red Jonaprin. At the same time except these sorts by owners were brought and established new orchards new varieties of fruit [3,10].

The study of economic and biological characteristics of new apple varieties which were introduced in our country one of the urgent problems. Considering this in the presented research was suggested as a goal to study quality and marketable indicators of new introduced apples varieties during the cultivation in local conditions.

THE RESULTS AND DISCUSSION

Soil -climatic conditions and applied technology are the suitable factors for quality of fruits. Properly selected soil-climatic conditions and technology direct impact both quantitative and qualitative indicators of the fruit production. But this time, quality indicators does not coincide with the quantitative indicators. From our research was determined that grafting direct impacts the marketable quality of apple fruit (Table 1). As seen the average weight of apple cultivated on the wild forest apple is 138,2 g, but on the cultivated MM-106 sorts is 153,5 g (increased 15,3g), on cultivated on the M-9 a bit increase and was observed in 187.3 g.(average 33.8 g).

It is known, the weight of the product and marketable indicators of fruits are key quality indicator. Grafting seriously impacts to this indicators. As seen from the table, I assortment product is ranked on the sorts which cultivated on the grafting of M-9(11,6%), the second places takes the sort cultivated on the MM-106 (9.57%), the third place takes which was cultivated on the wild forest apple(7, 09%). Fresh marketable products intended for sale, which grown on grafted clone sorts in this case II and III assortments of products also had prevailed. But, IV and V sorts of products designed for the industry processing and grown on the grafting of wild forest apple was more prevail(varieties on average 42.3%). In this regard, the assortment varieties of fruits grown on grafted MM-106 is decreased 18.5% and has become 23.8%, the sorts cultivated on the grafted M-9 decreased 14.61% and has become 9.19%. In this situation quality indicators of fruit should be regarded important. For this purpose, the chemical composition of the new introduced apple sotrs have been comparative analyzed with the sorts before introduced as Simirenko reneti and local sort of apple Cirhacı (Table 2).

As seen from table No. 2 one of the main quality indicators of fruit is collect dry matter and it directly impacts to storage the product and resistance to the transport. From the results of the analyzes determined that, dry matter soluble in the composition of new introduced apple sorts was more than (Varieties of the 13,0-16,4%) that the in sorts of previously introduced as Simirenko reneti (13.0%), only sort Aydared was the same as this sort. According to this indicator the sort of Cirhaci(15.7%) stayed back from the sort of Fuji (16.4%). The sort of apple Cirhaci takes 1 places for the total suger in the fruit -13,98%. The sort Simirenko collected less sugar(9,8%) among the other varieties. The most acidity is registered in the Simirenko reneti. Vitamin C is one of the main quality indicators of apple sorts and it was recorded higher (3.17 mg%) levels in the apple sorts of Cirhacı than in the other soert of apple. This indicator in the new introduced sorts by varies was respected 1,41-2,64 mg%. Vitamin C in sort of Simerinko was 1,41%, it was very similar to other varieties as Conaqored and Aydared.

Table 1: Commodity quality of varieties of apple fruit cultivated on the various of grafting

Grafting	Sort	The average weight of the fruit, q	Commodity quality, %				
			I assortment (very large - weighing more than 175 g)	II assortment (large - weighing 175 ... 126 g)	III assortment (medium - large - weighing 125 ... 101g)	IV assortment (small - weighing 100 ... 76 g)	V assortment (very small - weighing less than 76 g)
1	2	3	4	5	6	7	8
wild forest apple	Qala	135,0	7,7	27,6	18,7	36,4	9,6
	Conaqored	126,7	7,9	30,9	19,6	30,1	11,5
	Qrani Smit	142,8	8,2	26,8	25,3	32,7	7,0
	Fuje	167,0	7,7	25,7	20,4	34,3	11,9
	Simirenko reneti	120,4	4,2	34,6	26,0	28,1	7,1
	Qolden delişes x972	154,2	6,8	30,4	23,7	33,1	6,0
	Conaqold middle	121,3 138,2	7,1 7,09	28,3 29,19	16,3 21,43	30,5 32,17	17,8 10,13
M - 9	Qala	178,6	13,2	56,0	23,2	5,2	2,4
	Conaqored	146,4	10,4	53,3	24,8	7,0	4,5
	Qolden reinders	189,0	12,1	48,7	29,4	6,4	3,4
	Qrani Smit	180,8	14,0	55,6	20,6	4,8	5,0
	Aydared	187,5	11,6	49,2	32,1	4,7	2,4
	Red Vinter	193,31	9,1	52,0	27,5	7,3	4,1
	Fuje	235,5	10,8	53,8	28,3	4,2	2,9
	middle	187,3	11,6	52,66	26,56	5,66	3,53
MM-106	Qala	148,5	7,9	45,3	24,0	17,0	5,8
	Conaqored	132,0	9,3	46,4	23,2	16,5	4,6
	Qrani Smit	163,0	11,7	42,4	22,7	18,7	4,5
	Fuje	202,0	10,9	38,2	20,1	22,0	8,8
	Simirenko reneti	135,3	8,6	35,8	32,1	18,7	4,8
	Qolden delişes x 972	163,0	6,6	42,4	24,9	21,6	4,5
	Conaqold middle	130,5 153,5	12,0 9,57	43,6 42,01	25,3 24,61	11,5 18,0	7,6 5,8

Table 2: The chemical composition of apple fruits

Sort	Soluble dry matter	humi dity, %	sugars, %			acidity, %	vitami n C, mq%	Dabbagh and coloring items, %
			sucro se	Monosacc hari-des	total			
1	2	3	4	5	6	7	8	9
Cırhacı (kontrol)	15,7	83,1	4,42	9,56	13,98	0,50	3,17	0,10
Simirenko reneti (kontrol)	13,0	83,5	2,97	6,83	9,80	0,77	1,41	0,049
Qolden reinders	15,0	82,4	3,46	8,87	12,33	0,53	1,76	0,15
Qrani Smit	13,2	84,1	3,6	7,56	11,16	0,67	1,58	0,10
Aydared	13,0	86,1	4,09	6,48	10,57	0,25	1,41	0,15
Red Vinter	13,5	85,4	2,4	8,53	10,93	0,73	1,58	0,15
Fuji	16,4	83,4	2,50	9,05	11,55	0,33	1,94	0,20
Conaqored	15,6	82,5	3,18	6,96	10,14	0,45	1,41	0,10
Qolden Delishes x 972	15,2	83,6	5,43	6,88	12,31	0,17	1,76	0,10
Conaqold	15,0	81,1	3,15	9,15	12,3	0,38	2,64	0,049
Qala	13,6	82,7	2,58	8,53	11,11	0,22	2,11	0,2

In this respect, varieties of clone apples grown on the grafting types, tend to have a higher quantity indicators. The new introduced apple varieties are prevalence on earlier introduced apple varieties according to the

chemical composition but lag behind on the sort of Cırhacı. For thos valuable characteristic among people it called "oven apple" and after drying it use instead a suger.

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