The Biological Properties and Economic Importance of Some Seedy Fruit Plants That Grow in Azerbaijan’s Forests

Karam S. Asadov¹, Elmira P. Safarova¹, and Nilufer B. Huseynova¹

¹Central Botanical Garden of ANAS, Baku, Azerbaijan.
E-Mail: e_safarova@hotmail.com

Abstract:

5 genera that naturally grow among the seedy fruit plants of Azerbaijan’s forests (1 quince species, 18 hawthorn species, 21 pear species, 1 medlar species) is determined in the article. Although there are more species composition of wild seedy fruits (42 species), the harvest fruits and plenty species of resources in the wider area such as Crataegus pentagyna Wald.et Kit. and C. curvisepala Lindm., Pyrus caucasica, Mespilus germanica ᵀ Malus orientalis were studied. At the same time, the resources of wild fruits, areas of distribution of the species studied, and their participation in phytosenos, dendrometric sizes, using opportunities of fruits are reflected in the submitted work. The same food products such as lavash, dried fruit, compote, juice, etc. are made from wild fruits. They are widely used as rootstock to increase the varieties of cultured fruit plants. 3 categories - general, accessible and the operating stocks (available for usage) are taken into account in the calculation of the reserves of fruit. Mespilus germanica have been spread in 133,450 hectares in forest and shrubs. It has been determined accessible fruit reserves of medlar are about 2450±290 tons and operating stocks are 1840±220 tons. Malus are come across in 18782 hectares in natural forest. It has been indicated that there are 6070±728 tons of fruit in fruting season. Pear species have been spread in 19735 hectares in forest and shrubs. It has been calculated that general fruit reserves of pears is about 14170 ± 1700 tons. 6610 ± 660 tons of this reserves are available for usage. Fruits of Pyrus caucasica are used for various purposes by the population. The seedlings of this species plays important role as a rootstock in increasing varieties of pears.

Key Terms: Seedy plants, population, biological properties, fruits, germination percentage, vegetation period

Introduction:

In the forests of Azerbaijan grow various kinds of wild fruit and berry plants that serve as raw materials for the food industry and vitamin production. Collection of forest fruits, berries and nuts prominently in supplying the population with additional organic food.

Wild fruit is one of the main components of forest communities play a significant role in the formation of ecological community, which is an important food source for many forest animals.

The first priority in a more rational use of wild fruit resources is to identify and study their places of concentration in the forests, the definition of yield and stock. So far, many questions of geography, biological and ecological characteristics, yield and fruit of wild stocks are not well understood, which is an obstacle to planning billets and more efficient use of their resources.

Material and Method:

The objects of the study were five species of wild pome fruit trees and shrubs of Azerbaijan: quince (Cudonia L.), hawthorn (Crataegus L.), pear (Pyrus L.), medlar (Mespilus germanica L) and apple (Malus Uglitzkich) Phenological observations were carried out by conventional methods, ed. G.E. Schultz (Schultz 1966). To determine the yield and the stock of small and low-growing wild fruit bushes used techniques I.L. Krylov, A.I. Schroeter (Krylov and Schroeter 1971); for identifying yield and stock of the short trees or tall shrubs were used methods of the Y.S. Tolchelnikov (Tolchelnikov 1972), S. Kozyakov (Kozyakov 1975), D.A. Telishevsky (Telishevsky1976).

Results and Discussion

Quince is from the Rosaceae family. Naturally there was growing one - ordinary quince specie in the Azerbaijan forests. Quince specie were investigated by the A.A. Grossheim, R.Y. Kordon, P.I. Qorin, E.G. Regebli, S.N. Edikova.

In the world quince naturally were spread out in the South Europe, Central Asia, Iran, and Asia Minor and in the Caucasus were spread out in the Kolxida, Abkhazia, and East Georgia. In Azerbaijan quince naturally were spread out in the Karabakh, Terterchay valley, around of the Ganja, Lenkeran-Astara region, Samur-Shabran, Kur-Araz plain, Alazan-Eyrichay valley in the composition of the trees and shrubs. Quince mainly is well developed in 3 place-Talish, in the west of the Kopetdagh and south part of the Dagestan.

In Azerbaijan conditions quince often begin flowering 18-20 april if the mean heat reach to the 18 C. Depending ecological condition it lasts 13-15 days. From flowering to ripening it takes 120-150 days. Depending on the ecological condition and quince species diversity, fruit ripen in september-october. Seeds which was taken out from fruit in december and were sowed were grown in april after 92 days. Germination percentage was 80%. Naturally quince is growing from seed and shoot. Birds, animals and humans help to propagation with the seeds.

In Azerbaijan quince were spread out in the 1896 ha area. There was calculated that in this area was 3 ton fruit. It means 1,6 kg fruit from 1 ha. Gathering and store up of the fruit is not profitable from economic point of view. But quince could be used for getting more productive sorts.

Recent times there were growing Cardum, Gara heyva, Fexmi, Armudu, Sarı Recebi, Shıran, Shabran, Agdash, Penser, Atbashi, Zerdab, Ordubad sorts in the Azerbaijan private gardens. Quince was used for getting this sorts. Quince is currently protecting in the National parks, State Nature Reserves and Reserves

**Hawthorn** is from the *Rosaceae* family. There is different information about amount of the species which is includ ed to genius. There are Known 96 hawthorn species in Europe and Asia and 800 species in the America (Krussman 1951).

There are known 1250 hawthorn species in the temperate subtopic zone of the north hemisphere (Tsinovskii 1971). There are more than 1000 species in the whole world. A. Asgarov showed 17 and T.Gasimova 18 hawthorn species in the Azerbaijan (Asgarov 2006, Gasimov 2008). There was noted following hawthorn species in Azerbaijan. In spite of that there are many hawthorn species, only two *Kytrostyla* Finger and *Pentagyna* Waldst et. Kit. species fruit were store up.

*Crataegus kytrostyla* Fingre- is a tree which height is under 6 m. umbrella is thorny. Leaves are hollow shaped form and grayish. Flowering in May-june and it lasts 15-17 days. Yield in september-october, its fruit is reddish and have 4-5 seeds. 1000 fruits are weighting 360 g. Vegetation period are 180-190 days. They are wide spread out countries of the Minor Asia, Caucasus and Baltic regions. In Azerbaijan it is growing in Samux-Shabran plain, Thalish, Great and Little Caucasus, Nakhchivan. It was gathered 21 kg nectar from 1 ha.

*Crataegus pentagyna* Waldis et. Kit - is a tree and shrub which height is under 12 m and diametre 20 sm. Leaves are thin hairy or fully bare. Flowers is belonging to the thyroid flower group. There are 5-15 flowers in the each group, petals is white. Ripped flowers are black or black-violet color. Flowering in May. Yield in september-october. 1000 fruits are weighting 680 g. 1000 seeds are weighting 158 g. Vegetation period are 180-195 days. In the world they are wide spread out in the Central Europe (Bulgaria, Hungary, Romania, Greece, France, and Turkey) countries.

In Azerbaijan it is growing among trees and shrubs in Samux-Shabran plain, Kur-Araz plain, Alazan-Eyrichay valley, Lenkoran, Great and Little Caucasus. Hawthorn species are used for different purposes. It is used for planting of greenery. It has 28,5 g nectar in 1 plant (Guliyev 1979). It is wide used for medical purposes. According to the F.L. Bachtayev hawthorn fruit composed of the 4-11 % sugar,
0.48-0.66 % malic acid, 33.07-39.82 % vitamin C (Bakhteyev 1970). There is 30-38 % oil in it. *Crataegeus pentagyna* Waldis et. Kit dominated phytocenosis described in the following: It was carried out in the Little Caucasus, Ganja forestry Hacikend forests, 1200 m from sea level.

Grove are mainly consist from Georgian Oak and Caucasian hornbeam. There are also birch, ash-tree, and Caucasian linden trees. Forest type- reach oak-hornbeam forests, grass cover is consist from cockfoot grasses. Forest association - consist from *Quercetum – Carpinetum – dactylosum*. Mean age is 80 year, height 20-25 m, diametre 24-26 sm, stoutness-0.5, bonitet - II.

In the shrubs under forest are mainly *Crataegeus pentagyna* Waldis et. Kit. In the same time there were noted hazel, cherry-plum, cornel. Grass are mainly mesophytic plants- *Dactylis glomerata*, *Agrononia eupatoria*, *Bromus japonicus*, *Carex silvatica*, *Fragaria vesca*, *Geum urbanum*, *Hypericum perforatum* and ect.

According to the forest documents hawthorn species are growing 172730 ha area composition of the forest and shrubs. There was calculated 17000 ton fruit reserve. The hawthorn species are dominated in the 50240 ha. It was defined that useful amount of the hawthorn fruit is 8140±970 ton. The 2442±290 ton is acceptable part. Acceptable area of medlar is 77400 ha. It was defined that significant fruit reserve are 1840±220 ton. There are growing Khan medlar, saucer medlar, white medlar cultural sorts in the Azerbaijan private gardens.

**Apple** is one of the *Malus* genus which growing in Azerbaijan forests- *M. orientalis* Uglitzkich was spread out in wide area. East apple flowering in may and lasts 10 days. Investigators notes that East apple is an only species in Caucasus (Ibrahimov 2007, Syubarov 1968, Ulyanischev 1968, Forte et al. 2001). But V.A. Xetakurov according to the fruit color and other features showed East apple 21 forms in the South Ossetia (Chetakurov 1958).

N.l.Vavilov during his investigation of the natural apple in the Caucasus, Turkmenistan, the Tien Shan and Abkhazia he divided the variety of forms into 3 group (Vavilov 1931):

1. With white and yellow fruits
2. With pink and red fruits
3. With green fruits

There were separated 200 apple forms. In azerbaijan According fruits ripening time east apple was divided into 3 group- early, middle and late ripening forms. In Azerbaijan east apple were spread out in Great and Little Caucasus, Thalish, Samur-Shabran plain, Alazan-Eyrichay valley, Tugay forests and Nakhchivan. According to the forest documents was defined that east apple was
spread out in 19000 ha in the composition of the forest and shrubs in Azerbaijan.

East apple is less exacting to soil, steady to the drought and less salinity. In fertile and moisture soils it is growing well. East apple is not making full apple forests, rarely or in the group form growing in the composition of the oak- hornbeam, beech- hornbeam, iron tree-oak (Chestnut-leaved Oak) forests and shrubs in Azerbaijan. East apple is growing in the traditional phytocenosis - is moisture oak-hornbeam Carpineta – quercutum – saniclosum.

East apple spread out in the Great Caucasus, Talish's Muchach and Muganli villages, Yardimli district forests areas. Fruit of East apple was used by different forms by people. Cultural sorts. There are 0,028 q nectar in one flower. There is 0,71 g nectar in one old tree which growing in glade (Guliyev 1979). Fruit is composed 36 % vitamin C. East apple spread out in 18782 ha in the composition of the forest and shrubs in Azerbaijan. It was defined that useful amount of the east apple fruit is 12810±1537 ton. The 6540±786 ton is acceptable part. It was defined that significant fruit reserve are 6070±728 ton. Natural apple is valuable base for selection process.

Area of the cultural fruit gardens about 164000 ha in Azerbaijan. There are growing more than 100 sorts of apple. There are more than 10000 apple sorts in the world. In Azerbaijan public and private gardens are growing apple's sorts as Faxmi, Shirvan renet, Meclisi, Shirvan tacı, Sari belf, Zolaqlı shafran, Qızıl ehmedi, Cibr, Shixcan, Eyyubi, Sarı tursh, Cır Hacı, shampan reneti, Red delishes, Yardimli district forests areas.

**Pear** is from – *Pyrus* L. genus - Rosaceae family. Pear genus include 60 species. There were spread out 27 species in Caucasus and 16 species in Azerbaijan (Ibrahimov 2007, Talibov et al. 2011, Voronov 1925, Gladkova 1990, Chetakurov 1958). Recent investigations showed that there growing pear's 16 species in Azerbaijan (Talibov et al. 2011).

In spite of there are many pear species, Caucasus pear more valuable from economic point of view Caucasus pear- *Pyrus caucasica* Fed. It is a tree which height is under 25 m and diameter 60 sm. Umbrella is conical or ball-shaped form. Flowers located in the thyroid group, petals white. Flowering in may. Fruits ripen in september-october. Fruit stalk is long and surface is smooth. Depending on ecological condition flowering lasts 8-10 days. Pear is more spread and famous fruit after apple. In Caucasus it is spread from sea level till 2000 m elevation.

In Azerbaijan it was spread out in Great and Little Caucasus. Sometimes there is spreading as full pear forests in 10-15 ha area and man called it “pear grove ”, "pear forest garden". Caucasus pear is shade-resistant and long-lived species. Sometimes it is leaving 350 year and more. In rich and moist soils it is growing well and yield abundant fruit.

Caucasus pear mainly is breeding with seed and sometimes in dry conditions it is breeding with shoots. Natural recovery is weak. Because fruits of the pear is collecting by people and rest of the fruit is eating by wild animals and birds. Generally by interspecific hybridization pear genus there are known 5000 sorts (Gladkova 1990).

Pear spread out in 19735 ha area in the composition of the forests. 12000 ha of its are growing in favorable conditions. On average is possible to pick 10,26±4,08 kg fruits from one tree. Total fruit reserve are 14170±1700 t. The 6750±793 t of fruits are approachable and 6610±660 t are suitable for production. After ripening Caucasus apple becomes eatable. Juveniles are used for breeding of the main apple sorts. In Azerbaijan public and private gardens are growing pear's sorts as Cirnadiri, Kar armud, Sini armud, Ehmed qazi, Shekeri, Entiqe, Zumrudu, Mixeyi, Abasbeyi and ect. (Racabli 1966, Hasanov and Aliyev 2007).

**Conclusion:**

Seedy plant important decoration and economic point of view. Because during flowering period it is food source for bee. At the same time these plants produce fruits which important from food and medical point
According to this their protection and breeding are very important.

References

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