RESEARCH ARTICLE **(Open Access)**

# The study of ten old local cultivars of pear by mean of pomological traits analyses

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**Abstract**

During the years 2015-2017 were carried out the assessments of pomological characters of ten old local cultivars of pear with the aim to assistance for gene bank analyses and to achieve better knowledge of cultivar traits which could be useful both for scientists and growers. The pear cultivars Rotllare, Bishtje, Faqekuqe, Dimërore, Elbore, Tiranka, Sherbetlie, Vjeshtore, Gorare, Bozongalli, object of this study were characterized using UPOV code [5] and Pear Descriptors, 1983 [4] During the vegetation period were evaluated the quantity and the quality traits of the fruit such as mean global size, shape, maximum diameter towards the middle, grown color and over color, amount of global russet, stalk length, stalk cavity, juiciness, sugar content, stone cells, astringency, aroma and the phenological features. Based on the results of phenotypic analyses performed for the purposes of cultivar identifications was established the database with phenological and fruit quality data. Statistical analysis were performed and the cultivars Bozongalli, Elbore were evaluated with the best characteristics of the fruit quality, such as juiciness, low stone cells and aroma. They represent an important reference. The most discriminant morphological characters studied revealed no homonyms or synonyms among these old local cultivars of pear. As results of observation of flowering phonological traits there are classified into flowering time groups on the basis of both beginning of flowering and of the peak flowering period. As a conclusion the present research provide the existing genetic diversity of these ten local cultivars of pears and shows that they are unique cultivars. This contribution is the preliminary step in order to plan sustainable use, safeguard and their use in breeding programs.

**Keywords:** pomological, pear, genetic resources.

## 1. Introduction

Autochthonous pear cultivars represent important plant genetic resources. They are cultivars that have been related to our country for centuries [1]. Over the past thirty years, attention has been devoted to the collection, conservation and evaluation of pear diversity, with the aim to conserve a wide genetic variability. The current climate changes, as well as the possibility of appearance of new pests, represent a real threat to the survival and it is necessary to extend the exploitation of old cultivars in organic or integrated fruit production [3]. Characterization of old, local and rare varieties of pear it's an important duty not only for establishment of collections and gene banks but also for consumers to understand the kind of properties that distinguish them from standard cultivars on the market [2]. This is why it is extremely important for these cultivars to be evaluated. The old local pear cultivars with high-quality characteristics of the fruits are very important for the breeding and for re-introduction of them into production and sustainable usage. In this context were carried out the evaluation and the analyses of pomological traits of ten old local cultivars of pear with the aim to assistance for gen bank analyses and to achieve better knowledge of cultivar traits which could be useful both for scientists and growers.

## 2. Material and Methods

During the years 2015-2017 were carried out the characterization of ten old local cultivars of pear at Sul country of Devoll region such as Rotllare, Bishtje, Faqekuqe, Dimërore, Elbore, Tiranka, Sherbetlie, Vjeshtore, Gorare, Bozongalli, using UPOV code and Pyrus descriptors, 1983 [1]. They are old trees, conserved *on farm* at the

gardens of Sul. They were evaluated for the quantity traits and the quality traits of the fruit, such as mean global size, shape, maximum diameter towards the middle, grown colour and over colour, amount of global russet, stalk length, stalk cavity, juiciness, sugar content, stone cells, astringency, aroma and for the phenological features. A sample with 30 fruits was observed, measured and evaluated for each cultivar.

## 3. Results and Discussion

The evaluation of old, local pear cultivars of Sul gardens shows that these cultivars are unique by their phonological and pomological characteristics. These cultivars flourish at Sul country climatic conditions from 15 April to 10 May. The cultivars Bishtje, Elbore, Sherbetlie have earliest flowering. Few days later flourish the cultivars Dimerore and Bozongalli, while the cultivars Rotllare, Gorare, Tiranka, Vjeshtore and Faqekuqe flourish the latest. Regarding the harvest maturity, the cultivars Elbore and Sherbetlie ripen exstremely early, followed by the cultivars Bozongalli, Faqekuqe and Gorare while the cultivars Vjeshtore and Gorare resulted as a group of medium harvest maturity. The cultivars Tiranka and Dimerore ripen the latest. Keeping ability in cellar conditions is two to three weeks for the cultivars Rotllare, Bishtje and two to seven months for the cultivars Dimerore, Gorare, Tiranka, while the cultivars Faqekuqja, Elbore, Sherbetlie, Vjeshtore, Bozongalli must be consumed at the harvest period (Table1).

**Table 1.** Phenological characteristics of old local pear cultivars by Pear Descriptors.

| Name of cultivar | Flowering period | Harvest period | Keeping ability in cellar |
|---|---|---|---|
| Bishtje | 3 | 1 | 1 |
| Bozongalli | 4 | 4 | 1 |
| Dimërore | 4 | 6 | 7 |
| Elbore | 3 | 1 | 1 |
| Faqekuqe | 8 | 4 | 1 |
| Gorare | 7 | 5 | 7 |
| Rotllare | 7 | 4 | 4 |
| Sherbetlie | 3 | 1 | 1 |
| Tiranka | 7 | 6 | 7 |
| Vjeshtore | 7 | 5 | 5 |

The largest size of fruits is characteristic of the cultivars Bozongalli, Elbore and Faqekuqe, while the cultivars Bishtje and Gorare have medium size of fruit and with smallest fruits are the cultivars Rotllare, Sherbetlie and Vjeshtore.

The ground colour of fruit varies from yellow on the cultivars Rotllare, Bishtje, Bozongalli, Elbore, Vjeshtore to green on the cultivars Dimerore, Tiranka, Sherbetlie, Gorare and red on the cultivar Faqekuqja.

Regarding the juiciness results the cultivars Faqekuqe, Dimerore, Elbore, Tiranka, Sherbetlie, Vjeshtore, Bozongalli and Bishtje are the most juicy while as cultivar with medium juiciness results are cultivar Rotllare and Gorare (Table 2).

It's classified with medium stone cells and astringency the cultivars Rotllare, Dimerore, Tiranka, Sherbetlie, Vjeshtore, Gorare and with low stone cells and low or none astringent the cultivars Bishtje, Faqekuqe, Elbore, Bozongalli. (Table 2).

The ratio acid/sugar has a good balance on the cultivars Rotllare, Faqekuqe, Tiranka, more sweet than acid are the cultivars Bishtje, Elbore, Sherbetlie, Vjeshtore, Bozongalli, while more acid than sweet are the cultivars Dimerore and Gorare.

From the results of global fruit quality (Table 2) we can appreciate as very good the cultivars Bozongalli and

| Cultivar name | Shape | Size | Colour ground | Colour over amount | Skin thickness | Sweetness | Acidity | Juiciness | Global fruit quality |
|---|---|---|---|---|---|---|---|---|---|
| Bishtje | 3.1 | 5 | 3 | 2 | 4 | 7 | 2 | 7 | 5 |
| Bozongalli | 1.1 | 7 | 3 | 5 | 5 | 7 | 3 | 8 | 7 |
| Dimërore | 1.5 | 4 | 5 | 5 | 7 | 5 | 7 | 7 | 5 |
| Elbore | 7.4 | 7 | 3 | 7 | 3 | 7 | 3 | 8 | 7 |
| Faqekuqe | 3.6 | 7 | 4 | 7 | 3 | 5 | 3 | 8 | 5 |
| Gorare | 1.5 | 5 | 5 | 6 | 5 | 5 | 6 | 5 | 4 |
| Rotllare | 3.3 | 3 | 1 | 3 | 6 | 5 | 3 | 5 | 5 |
| Sherbetlie | 1.3 | 3 | 5 | 6 | 4 | 8 | 3 | 7 | 5 |
| Tiranka | 1.5 | 4 | 5 | 7 | 6 | 6 | 5 | 8 | 5 |
| Vjeshtore | 1.5 | 3 | 3 | 5 | 5 | 7 | 3 | 7 | 5 |

Elbore, as good the cultivars Rotllare, Bishtje, Faqekuqe, Dimerore, Tiranka, Sherbetlie, Vjeshtore, while poor to good the cultivar Gorare.

**Table 2** The evaluation of morphological characteristics of old local pear cultivars by Pear Descriptors, 2015

## 4. Conclusion

- The study of the old local pear cultivars Rotllare, Bishtje, Faqekuqe, Dimërore, Elbore, Tiranka, Sherbetlie, Vjeshtore, Gorare, Bozongalli, by means of pomological traits shows that they are unique cultivars.
- The study is the preliminary step in order to plan sustainable use, safeguard and their use in breeding programs.

## 5. References


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