

OLD AND REGIONAL VARIETIES OF PEAR TREES IN THE TERRITORY OF CZECH SILESIA

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Abstract

This article is aimed to present the some old and regional varieties of pear in the territory of Czech part of Silesia; it means the north-eastern part of the Czech Republic. It is a border area (larger part of Silesia region stretches in the territory of Poland) which is characterized by slightly wavy and lowland part of the territory which belongs to areas with mild climate and then also by the mountains of "Nizký Jeseník" and "Hrubý Jeseník" which belongs to cold areas. The average annual temperature in Silesia is about 7.6°C of the long-term usual level.

The following pages will be aimed to emphasize the some aspects of specific pomological information based on research carried out in various parts of the region during recent years, to preservation of biodiversity of natural associations occurring on its area.

Key words: conservation, biodiversity, old pear varieties, traditional cultivation.

INTRODUCTION

The genus *Pyrus*, which contains 21-26 species, is highly diverse (Bell and Hough, 1986). The species differ in morphological and phenological traits (Shen, 1980; Westwood, 1982). For characterization and identification of plant species, polygenic morphological traits serve as markers (Simmonds, 1979). Widely distributed and extensively grown pear genotypes show variability in leaves and fruits traits, partially due to hybridization, sexual propagation, bud mutation and diverse agro-ecological conditions. Therefore, characterization for all existing variation within genotypes is needed (Zagaja, 1970; Terpo, 1985). However, characterizations of wild genotypes will provide base for further evaluation, conservation and to bridge information 25 differences for the genus *Pyrus*. Both types of study i.e. qualitative and quantitative are necessary to evaluate variability in pear genotypes in relation to polygenetic and environmental factors.

The pears are important both for the wildlife supported by traditionally managed orchards and for the many varieties of fruit which exist,

often with traditional local, culinary and seasonal uses. At the same time as the destruction of orchards, there has also been a concentration on production of fewer varieties of pears.

The pear tree has higher climate and soil requirements than the apple tree. It is cultivated in countries with a warm climate, such as Italy, Spain, China, Argentina, and Chile (Mohan Jain et al., 2009).

According to the Central Institute for Supervising and Testing in Agriculture, Czech growers harvested 3,758 MT of pears in year of 2015. This year commercial production reached 9,372 MT of pears.

On the other hand, traditional orchards are valuable habitats for wildlife and their loss has an important negative impact on nature conservation. These orchards are a vital and characteristic feature of our rural landscape and heritage. A more varied orchard floor in terms of structure and plant communities will support a greater diversity of insects, small mammals and birds.

MATERIALS AND METHODS

In order to characterize the particularities of old varieties of pear from Silesia region, it was considered the cultivars' determination and description in the different regions of the Czech Republic.

The list shows the varieties whose cultivation was recorded by pomologists in exhibitions and during the process of mapping from the second half of the 20th century to the present times.

The variety composition which was recorded during the process of mapping and pomological determination in the period of 2010-2015 is significantly more modest while compared to the list specified.

RESULTS AND DISCUSSIONS

Statistical data. A total 21,347 ha of fruit orchards were registered in the Czech Republic, in 2015. By comparison with year of 2012 (17,568 ha), area increased with 3,779 ha.

The age structure of pear orchards is 26% for old orchards and 24% of new out planting (Figure 1).

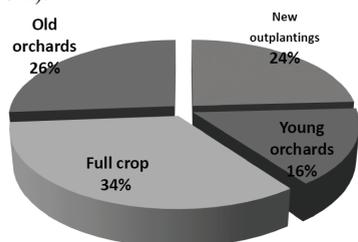


Figure 1. Age structure of pear orchards (after Roman Chaloupka, 2013)

The most frequently planted varieties of pear trees belonged to groups Conference (21.8% of the total pear orchard area) and William (7.1%). The age structure of pear orchards was found to be favourable. There were 37.1% of pear trees in young plantations up to 4 years (by 6.8% more than in 2007) and old plantations over 25 years shared 23.7% (by 11.1% less than in 2007). Pear orchards were planted with their average density of 891 trees per hectare; their prevailing share (83.3%) belonged to the density class of 1 600 trees/ha. Density up to 400 trees/ha prevailed among orchards up to 4 years newly planted in 2012 while in 2007 orchards of the same age class

belonged mainly in the density class of 400–1 599 trees per hectare. The main varieties of pears in Czech Republic are present in figure 2.

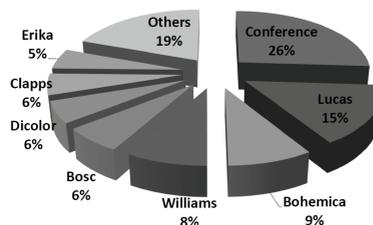


Figure 2. Pear varieties in Czech Republic (after Roman Chaloupka, 2013)

Historical context. In the Czech part of Silesia, pear trees belong to traditional cultivated fruit types, together with apple trees, plum trees and cherry trees. The group of pear trees is not present in the region in such numbers or in such varietal diversity like it is in case of apple trees. However, we can still find very interesting varieties in the local orchards, gardens and alleys.

It is caused by the approach of our ancestors to fruit farming. To provide supply of fruit throughout a year, farmers were growing a wide variety of fruit types and varieties - the first cherries ripened in June; then came the summer pears that ripened already around the feast of St. James and then the first varieties of apples ripened at the times of harvesting. The first plums also ripened at that time. And the harvest works in the orchards were busiest in autumn. In addition to processing the autumn varieties of apples, pears and plums, farmers had to harvest the winter varieties of apples and pears at the right time in order to keep them until spring months.

Growing pear trees has currently been associated almost exclusively with providing the fruits for table use. In some cases, surpluses are used to make compotes or prepare yeast which is then used for making pear drinks ("Hruškovice"). However, we have to realize that in the past the pear trees were grown much more for other methods of processing. They were used for food (soups, porridge, meat sauces, ingredient in fasting and festive meals); they were used for plum jams or dried. Powdered dried pears, called "*pracharanda*" in Silesia, were replacing sugar until the times of boom related to growing sugar beet.

There is no wonder that growing pears had a very important role in economies in the countryside and in towns of Silesia, as well as in other regions. The fact that the importance of pears used to be much greater in the past is obvious in some old gardens where number of pear trees exceeds number of apple trees. Reducing numbers of pear trees is partly connected with new sweeter apple varieties as well as worse usability of fruits which get mostly mellow in bulk amounts during short period of time and they are often not easy for current consumers due to information of adequate storage methods of winter varieties.

We could see the pear trees in any types of planting, in the past. This fruit type was traditionally planted in farmers' orchards where it often played significant role in type composition; it could not miss in the field orchards and gardens of smaller farms where at least one or two pear trees were present. More or less preserved field orchards can be found in many local villages; some orchards of this type are maintained and planted in traditional ways; others were grassed; we often find only the last remnants of the plantations once involved. Some of these orchards had to give the way to construction of family houses; the entire new streets emerged in the *peripheries*.

In many cases, pear trees were planted in the yards of peasant farms where they can be found even nowadays. In some municipalities, when allowed by the urban area layout, they were planted on the village green or other public place. Due to their powerful and majestic tree-tops, many age-old pear trees have become real dominants and they enriched the countryside of our villages with a significant landscape element. However, such examples are very rare now in this area.

We can still find several varieties of pear trees in the alleys around main and rural roads; they have been planted in thousands of kilometres since the 50s years. Unfortunately, due to old age, permanent lack of care or due to the care inappropriately performed, a major part of plantings are in very bad condition, endangered by gradual disappearance.

Diversity of Old Varieties. Although the pear trees are nowadays, and have been from a historical perspective, less numerous than the apple trees, this type is viewed as very

important in the fruit orchards in Silesia from pomological perspective.

Unlike the apple trees in which the economically most significant old and regional varieties are among the winter varieties, we can find large part of pear varieties and most representatives of them among summer and autumn varieties. In addition to the already mentioned methods of use, this fact is closely linked with greater demands of pear trees in relation with heat. Within the regions of Opava, Hlučín or Osoblaha there are suitable conditions for fruit farming (classified in the second degree in the Czech Republic). However, the earlier varieties of pear trees usually surpass the later ones in terms of flesh quality and aroma. In the higher regions of Krnov, Bruntál and Těšín, some late varieties have problems with ripening. Relatively trouble-free fruit type in the past is now suffering from heavy pear rust attacks, which is associated with the current fashion trend of planting ornamental conifers some varieties of which are its hosts.

Regarding the old varieties, especially the varieties with high fertility, broad utility of fruits, good health, resistance to freezing temperatures and diseases have been preserved. Or also the varieties which remained in the product range of fruit nurseries or those spread among gardeners and small growers. Due to nostalgia, clinging to tradition and family assets, we managed to preserve many old and regional varieties which are deemed as rare in terms of occurrence and significance. We have to note that we have not yet managed to save a major part of the varieties related to the list.

The process of mapping conducted in recent years indicates that the skeletal old varieties of pear trees grown in our area include the old widespread varieties: summer varieties: *Clappova máslovka*, *Williamsova čáslavka*, *Špinka*, *Solanka*; autumn varieties *Charneuská*, *Hardyho máslovka*, *Boscova lahvice*, *Konference*, *Merodova*, *Salisburyho*; winter varieties: *Pařížanka*, *Pastornice*, *Madam Verté*. Furthermore, we have also found a few old pear tree varieties which are not frequent in terms of the existence in the wider region or republic. In this group, the following summer varieties are quite interesting: *Nagevicova*, *Kozačka štuttgartská*, *Muškatelka letní*, etc.; then the

autumn varieties: *Amanliská*, *Avranšská*, *Kongresovka*, *Lucasova*, *Thirriotova*, *Ministr doktor Lucius*, *Hájenka*, *Pitmastonská*, *Děkanka Robertova*, *Marrilatova*, *Esperenova máslovka*, etc.; and the winter varieties: *General Le Clerc*, *Fulvie* and *Mechelenská* which is more usual in the region of Hlučín - it is very rare in other regions.

Only a single piece of that variety has often been found. Also for this reason, the varieties deserve great attention and particularly the consistent and timely rescue.

Now we can have some presentation of the most interesting discoveries of recent years:

-Nagevicova. Interesting old summer variety; probably French or Italian variety has been grown since the 16th century. It was particularly grown in the region of Českomoravská Vrchovina (Czech-Moravian Highlands) under the names *Piksla*, *Piksálka*, *Blanketka*. In the region of Slezsko (Silesia) there were the names *Šidélko* and *Vínovka*, which is associated to very pleasant taste. The trees are lush and healthy. They are suitable for worse, colder and higher altitudes.

The fruit is small; it has a bulbous oblong shape; fruits grow in clusters. The crust is straw-yellow; the stem is long and curved. The flesh has butter colour, medium-firm consistency; it is juicy and very sweet, with muscat aroma. It shall be harvested from the beginning of August; the shelf life is very short. It is suitable for direct consumption but also for drying and preservation.



Figure 1. Nagevicova variety (Silesia region, 2015)

-Mechelenská. Old winter variety originated in Belgium. We can also see the name 'Malinská Zimní'. The variety got here probably thanks to handy farmers and merchants who met it in Prussia where they have often travelled. The local farmers find it popular due to good

quality. The tree grows in medium-lush tempo; it has a spherical and less structured habitus. The densely growing flagelliform thin twigs are very typical. It is not very demanding in terms of soil or conditions; it tolerates windy positions. Fruits have medium size and roundish bulbous shape. The cup is open, located in shallow and bowl-shaped hole; the stem is strong, woody, pressed into the small hole, often bent aside. The skin is smooth, green, then yellow, reddish on the sunny side, covered with rusty dots, sometimes rusty. It has a high-quality buttery and very soft, juicy and sweet flesh with muscat flavour. It is harvested in mid-October, ages around Christmas; it can last until March when stored in a good cellar.



Figure 2. Mechelenská variety (Silesia region, 2015)

Regional and Local Varieties. Situation related to the regional and local varieties of pear trees is equally interesting. It is also similar in such the way that the varietal diversity significantly fades down. And only a fraction of regional and local varieties has been preserved, those grown by our ancestors. The situation was complicated by historical development; part of the territory called Sudetenland was expatriated. Compared to the denizens, the new residents and newcomers could not pass information about the names and use of these varieties. They were often cutting the trees down, since they often had no idea about suitability of their fruits. Another problem of regional and local varieties is also that they have not been described in the pomological literature. We can take the only information from a few local publications, particularly the oral history, which means the memory of the local people. However, the lists with brief descriptions are exceptional. Priest František Myslivec included them in his book called "*Starý způsob hospodářství na Opavsku*"

(old ways of farming in Opava region). Large part of these varieties is included in the summer and autumn varieties; these are often the farming pears which were not directly consumed. Instead, they were used for drying, production of plum jams, cooking or making brandy. Now we can have some presentation of the most interesting discoveries of recent years:

- *Žňuvka*. Summer local variety. It is apparently named after the harvest period. 'Žňuvka' located in the yard of a farmhouse in Markvartovice is associated with a story. The harvesters were having a rest by it when they returned from the field, taking some fruits for their further journey. The majestic trees, which belong to the largest fruit trees in Silesia region, have broad pyramidal tree-tops reaching the height of 15 m. A medium to large fruit (9 cm) has egg, bergamot shape; it is pointed at the stem. The stem is long, moderately strong, curved. It remains green. The cup is ajar, with their free parts angled to each other; it is set in a flat and slightly rounded hole. The skin is greenish and yellow; it is straw yellow with numerous soft light brown lenticels when ripened. The flesh is yellowish, drier and almost loose; it is fine-grained, sweet and slightly spicy. It matures at harvest time - in the second half of July and early August; it decays at maturity times.



Figure 3. *Žňuvka* variety (Silesia region, 2015)

- *Cebula*. Early local winter variety of interesting onion shape, named after that. It is resistant to diseases. The trees have widely pyramidal habitus; the leaves are larger and more elongated. The fruit is medium-sized, spherical, resembling an onion with its shape. The stem is long, thick, brown. The cup is open, embedded in a shallow hole. The skin is rough and green. It has often numerous dots

and also rust around the cup and stem. The taste is characteristic, very pleasantly sweet. It ripens in October.



Figure 4. *Cebula* variety (Silesia region, 2016)

- *Plaskarka*. The summer local variety which was named after the condition in which it was after falling down from a high tree-top on the ground. It has a high and spread tree top. The fruit is smaller to medium sized, bulbous to spherical. The stem is moderately thick, long and straight; the cup is ajar, continuous underneath; it has an erected crown. The skin is green before maturity, later partly yellow. On the surface there are fine and little noticeable green-brown dots and rust dispersed. Light yellow flesh has a coarser grain; it is sweet - without spiciness. It decays after mellowing. It matures in early August. Fruits were traditionally used for drying and production of plum jams.

- *Ovesninka*. This is the summer regional variety, also named as *Ovšinka*. Previously, the trees with this name were well-known in the regions of Hlučín, Opava and Poodří. The fruits of 'Ovesninka' found in obroslavice village can be used for the pomological description. It creates massive trees; the tree top is broad in the height; the branches are overhanging. The fruit is small to medium sized; it has a bulbous shape, the widest in the middle; it is slightly bulged at the place of cup. The stem is moderately thick, long and straight; it is usually set aside. The cup is open and continuous at the bottom. It is shaped as broad crown. The skin is green; it is brownish when ripened, covered with brown lenticels, especially at the place of cup and stem; having dots of rust. The flesh is yellowish, drier; the flavour is slightly aromatic and sweetish. These fruits ripen in the summer harvest season - hence the name (according to harvest of oats). It was also used for drying.



Figure 5. Ovesninka variety
(Silesia region, 2015)

- *Jakubinka*. Regional variety which once belonged to the most grown and popular varieties in the Opava region. It is one of the earliest varieties; even the name is derived from the maturation period, around the feast of St. James (July 25); it matures gradually within the period of 3 weeks. We do not know anything about its origin. It is very fertile and resistant to diseases. It is also suitable for compotes. Big and vital trees have broadly pyramidal tree-top with plenty of fruit bearers. There were two different types of fruits widely used in the past.

- *Type I*. The fruit is small, oval, and widest in the middle; it is slightly elongated towards the stem, having dull end. The stem is fairly long and thin; the cup is ajar; it is positioned on a slightly protruding peak. The skin has lemon-yellow colour; it turns to yellow-brown after ripening; barely noticeable tiny light brown lenticels are on the surface. The flesh is whitish, juicy and sweet with typical mild aroma. It gets floury very quickly after over-maturing.



Figure 6. Type I variety
(Silesia region, 2015)

- *Type II*. The fruits are small; they are pear-shaped or ovoid-shaped, slightly elongated towards the stem. The stem is long and thin; the cup is open, having long and pointed free parts (lobes) spread around the peak. The skin is straw yellow to brown-yellow. Flesh of buttery

colour is juicy and sweet, having typical aroma. It nearly does not decay; taste is quite good.



Figure 7. Type II variety,
(Silesia region, 2015)

-*Margetinka*. Regional variety of Opava region, also called *Margetky*, *Svatojánské*. After 'Jakubinka', it is the second local earliest variety of which the last exhibit has been found. The tree is moderately vigorous; it lives long and is very vital. Habitus is spherical, similar to the variety 'Solanka'. The fruit is small, oblong; the green skin turns yellow after maturing. At the stage of decay, taste is sweet, quite good. It matures at the end of July; the ripened fruits decay.



Figure 8. Margetinka variety,
(Silesia region, 2015)

-*Cukřůvka*. The autumn regional variety of Opava region; very popular in the past. There are also synonymous names *Medůvka*, *Cukerinka*. Trees are medium in height; they are vital. They form pyramidal tops. Fruits are small to medium, more elongated and pear-shaped. The skin is green-yellow, more or less rusty. The fruits mature in September, the fruits turn yellow when fully ripened - and they decay. The flesh is soft, very sweet and juicy; it has delicious slightly spicy taste. The fruits have traditionally been used for drying; their infusions were used for feeding bees.



Figure 9. Cukurůvka variety
(Silesia region, 2015)

Unspecified Varieties. There are some pear trees whose names, however, have not been preserved. They are worth attention for their varietal diversity and also for very interesting fruits and also the appearance of the trees. We are mentioning some of them. In the past, they certainly had some nicknames. However, we did not find them out during the process of mapping.

-*Autumn Pear from Darkovice.* This is apparently a local variety of autumn. The tree grows up to the medium size; it has narrow pyramidal habitus. The fruit is small-to-medium sized; it is bulbous and ovoid, slightly asymmetric. The stem is moderately thick, having longer length; it is embedded in a small hole; the cup is open with long lobes (free parts), spread and terminated with a tip. The skin is light green to light yellow; it has numerous tiny brown lenticels; it is partially covered with rust, mostly near the cup. White-yellow flesh is crunchy, reeled, very tasty. It ripens in September.



Figure 10. Autumn Pear from Darkovice variety,
(Silesia region, 2015)

-*Autumn Brownish Fruit from Píšť.* Unspecified autumn, probably local, variety of an interesting tree called Hnilička (Brownish Fruit). The last tree grows up in Píšť village. The tree is huge; the top has high and broad

structure; leaves are smaller; it contains thin annual shoots. Fruits are somewhat unbalanced, they are small to medium in size; they are pear-shaped, somewhat bulbous at the bottom, flatter by the cup. The stem is long and thinner; it is curved; the cup is smaller and ajar, located in the wider and flat hole. The skin is yellow-green, having numerous small brown spots; it is rusty by the cup. The flesh is fine-grained, very juicy; it decays when ripening; the taste is very good and reeling sweet. It ripens in September; it is not able to last long. Fruits suffer from scabbing; yet the crops are huge.

-*Summer Brownish Fruit from Strahovice.* Unspecified, late summer Hnilička (Brownish Fruit) which grows in Strahovice village. The big tree has habitus similar to poplar. The tree is huge and has a broad pyramidal top. The fruit is medium-sized; it has elongated pear-like shape. The stem is very long and thin; the cup is smaller and ajar; it has unfolded top with pointed lobes. The skin is yellow-green; it is yellow when maturing; the area around the cup is lightly covered with rust. Soft and medium juicy flesh has sweet taste. The fruit ripens at the turn of August and September; the fruits decay after ripening.

-*Autumn Krvavka from Lhota.* It is a very valuable and unique local autumn pear tree variety, having reddish flesh. It is the only Krvavka found with green skin. The tree is huge and has a broad spread habitus. The fruit has medium size and pear-like shape; the skin is rough and green; it is yellow-green when ripened - having a fine reddish blush. The flesh is soft and has butter colour; it is red-streaked from the central point. The taste is very good and sweet reeled. It decays after mellowing.



Figure 11. Autumn Krvavka from Lhota variety,
(Silesia region, 2015)

-*Summer Pear from Krasov.* Local late-

summer variety; it belongs to so-called drier hnilička trees (brownish trees). The tree is huge; the top is high and wide. Very large and beautifully bright green leaves are typical. The fruit has medium size and pear-like elongated and bulbous shape; the skin is yellow, similar to lemon. The flesh has a yellowish colour; it is drier and has pleasant rum-like aroma.

- *Autumn Pear from Burkvíz*. Autumn local variety; interesting farming pear. Medium-sized fruits have oval shape. They are relatively low. The flesh is drier; it is surprisingly juicy after decaying. Trees are small to medium sized. The local variety; taste is typical for Hnilička (brownish fruit); it is sweet, having no special aroma.

CONCLUSIONS

The pears are important both for the wildlife supported by traditionally managed orchards and for the many varieties of fruit which exist, often with traditional local, culinary and seasonal uses.

Czech growers harvested 3,758 MT of pears in year of 2015, and commercial production reached 9,372 MT of pears.

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Also for this reason, the varieties deserve great attention and particularly the consistent and timely rescue.

In conclusion, traditional orchards are valuable habitats for wildlife and their loss has an important negative impact on nature conservation. These orchards are a vital and characteristic feature of our rural landscape and heritage.

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