Balkan Pomology

Apples
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Foreword

The Balkan Peninsula is by long tradition a fruit growing region due to ideal climatic conditions, social and economic situation and horticultural knowledge and experience. A wide diversity of wild fruit species can be found all over the region and cultivars have been developed locally during centuries. Many treasured local cultivars are found in farms and gardens all over the region and the fruits are used for consumption, industrial processing and especially plum, for production of a traditional type of brandy called Rakia.

SEEDNet (South East European Development Network on Plant Genetic Resources) was established in 2004 and one of it’s working groups the WG for Fruit and Vitis held it’s first meeting in Banja Luka, Republic of Srpska soon after. Immediately it became clear to the working group members that apple and plum were two very important crops of the region and therefore the group decided to focus there joint activities of these. During the years to follow the working group members dedicated a lot of time to make inventory of local cultivars still growing in their respective country. A lot of material was identified and documented and much of the material will eventually be collected and conserved in gene banks and be accessible for future utilisation in research and breeding.

In order to make the valuable Balkan fruit treasure visible for the outer world and to contribute to a better knowledge on the biodiversity of the region the working group members decided to compile information about the most important local cultivars from each country into a Balkan pomology.

The group members devoted a lot of time and efforts to select, take pictures, document and describe their cultivars. The end result, this beautiful book, will hopefully contribute to a better knowledge on fruit growing in the Balkan, become a reference book for scientists, interest the public to cultivate and use local cultivars and finally give the reader of the book many hours of pleasure and delight.

It is with great delight I can establish that with minor external support the members of this working group have been able not only to produce a beautiful pomology but also establish a collaboration and friendship which will last and continue to have impact far beyond the time of this project.

Alnarp, May 2012

Eva Thörn
SEEDNet coordinator
Words from the Editors

This pomology is the result of a joint effort by Balkan pomologists engaged in SEEDNet's Working Group for Fruit and Vitis. While descriptions are standardised across countries and cultivars, it should be noted that all descriptions were carried out locally by local pomologists, and that they may therefore occasionally reflect local conditions and the style of individual contributors.

To emphasise that the Balkan Pomology, Apples is a joint work and that the Balkans has a common pomological heritage cultivars are presented in alphabetic order rather than by country. Some cultivars with identical names were collected and described in more than one country. According to a decision made by the working group they are all included herein, which explains why there are multiple descriptions of some varieties.

For us as editors it has been a pleasure to read and compile the important work made by our colleagues. In doing so, we received substantial support from the SEEDNet coordinator Dr. Eva Thörn to whom we owe our gratitude. We would also like to thank Ingrid Henell for the layout and Ross Dennis who oversaw the English language in the descriptions.

Finally, this volume could not have been printed without the help of a generous grant from the Swedish International Development Cooperation Agency (Sida). On behalf of the working group we give our sincere thanks to SEEDNet and Sida.

Alnarp and Banjaluka, May 2012

Inger Hjalmarsson and Lidija Tomić
Review of the Monograph

Dr Eva THORN
SEEDNet Coordination

By the decision of the SEEDNet Working group for the Fruits and Vitis we have been denominated as reviewers of the monograph Balkan Plum Pomology prepared by the group of authors: CVETKOVIĆ Miljan; TOMIĆ, Lidija; BOTU, Mihai; GJAMOVSKI Viktor; JEMRIĆ Tomislav; LAZOVİĆ Biljana; OGNJANOV Vladislav; PINTEA Maria; SEVO Raimonda; ACHIM Gheorghe; BOZOVİC Djina; BUCARCIUK, Victor; CARKA, Frida; CIÇEK Danijel; FRUK Goran; JACIMOVIC Vaceta; KIPRIJANOVSKI Marjan and HJALMARSSON Inger. The monograph has been revised upon which we are appointing to you next review:

REVIEW OF THE MONOGRAPH

APPLE BALKANS POMOLOGY

by the authors
CVETKOVIĆ Miljan; TOMIĆ, Lidija; BOTU, Mihai; GJAMOVSKI Viktor; JEMRIĆ Tomislav; LAZOVİĆ Biljana; OGNJANOV Vladislav; PINTEA Maria; SEVO Raimonda; ACHIM Gheorghe; BOZOVİC Djina; BUCARCIUK, Victor; CARKA, Frida; CIÇEK Danijel; FRUK Goran; JACIMOVIC Vaceta; KIPRIJANOVSKI Marjan and HJALMARSSON Inger.

Apple world annual production as counted for 63 million of tones gained from more than 10 000 cultivars is clearly pointing out importance of this species in a whole either fruit and word production. Intensification of fruit production through the dynamic change of apple training systems was mainly conditioned by specific market demands and needs for economic production. Introduction of new and protected cultivars is to enabling accessing of the extra profit within liberal and open market. Apple production in Balkans being a stem of the fruit production has differentiated level of intensification between countries.

Regarding what has been told manuscript APPLE BALKANS POMOLOGY is presenting remarkable publication systemizing genetic diversity of old apple cultivars collected within Balkans. There have been collected and analyzed 186 cultivars within 8 countries representing rich materials that could be found in Balkan countries.

Manuscript is clear and revised overview of morphological and pomological determination of cultivars rich in systematic and standardized photo documentation. Majority of diverse methodological details is to enable fast adoption of knowledge about pomology from Balkans. Diversities represented in anthesis time, ripening time, vigor, basic and over colour of the fruits or matter of final use evidencing differences richness of presented materials. Seemly same names of the cultivars collected in different countries were nicely depicting common intertwined past of the region. Morphological and pomological determination eliminated some synonymy and homonymy issues still opening area for future researches of the hypothesis as such.

Manuscript APPLE BALKANS POMOLOGY is meaningful for fruit growing in general. It is the first significant and systematical description of a number of old cultivars in the Balkans being a solid basis for continuation of the activities in the future for determining the genetic relatedness of the collected material or evaluation of resistance to the pests and diseases. The vastest importance of this manuscript is laying in establishing the possibilities for assessing of hybridization compatibilities of the material aiming at use of newly identified traits in breeding for future unknown needs.

We are considering that predicted manuscript is relevant overview of the published original results being showed for the first time in this format and having characteristics of a monograph. We are truly believe that it will be useful for the scientific experts same as for many others. This masterpiece is indicating that the care for genetic resources is a common task and that joint work of experts is resulting in good strategies for the future development.

Ljubljana – Skoplje – Alnarp, May 2012

Reviewer:

Prof. Dr. Franci Štampar
Biotechnical Faculty University of Ljubljana

Prof. Dr. Boris Ristevski
Faculty of Agriculture University of Skopje

Prof. Emeritus Dr. Viktor Trajkovski
Swedish University of Agricultural Sciences
Introduction

The domesticated apple is one of the most important fruit crops, grown extensively in colder and temperate climate. Many consider apple as the fruit above all fruits. Although modern apple varieties and autochthonous cultivars are an essential part of the inheritance of the region, knowledge about the former is becoming rarer. An autochthonous cultivar is a variety with a high capacity to tolerate biotic and abiotic stress, resulting in high yield stability under a low input agricultural system. Agricultural industrialization, Green Revolution technologies and environmental changes have all been cited as factors contributing to the erosion of crop biodiversity, including apple. Changing characteristics of markets – including distance to market, means of transportation, fruit appearance and storage requirements – are also contributing towards the old varieties becoming less popular.

The Balkan Peninsula is known as one of the most important genetic, species and ecosystem diversity centres in Europe. It is an extremely rich source of genetic variation in apple, which may contribute greatly to the improvement of economically important traits of this valuable fruit. Because of the existing variability in the region, differing ecological conditions and human activities, the Balkan Peninsula can be regarded as one of the most important secondary centres of genetic diversity in apple. The monograph “Apple” is the tribute to the fruit species that is deeply interwoven into the life, culture, fruit growing and broad multidisciplinary fields of research work of the Balkan region.

The process of wild apple domestication can be traced to the primary centre of origin of Malus sp. within the region of Asia Minor, the Caucasus, central Asia, Himalayan India, Pakistan and western China, in which at least 25 native species of Malus occur. The Old Silk Road from the Black Sea to western China played an important role in the evolution of the cultivated apple. Travellers – whether on foot, riding a camel, or boarding packhorse trains – must have traversed it since Neolithic times. Consequently, possibilities for hybridisation between previously isolated species would have been abundant. Thus, it seems that M. sieversii, the fruit of which ranges from small to large, played a seminal role in the origin of the cultivated apple. To the east, it could have hybridised with M. prunifolia, M. baccata, and M. sieboldii, or with M. turkmenorum and M. sylvestris to the west. Selected genotypes, from random hybridisations and disseminated through grafting, were well-established in the civilisations of the near east by 4,000 BC and were later documented by Roman authors. On the Balkan Peninsula, the defining characteristics of domestication are the introduction and selection by humans aimed at meeting their nutritional and cultural needs. Evolutionary process has been influenced by man’s preference to propagate fruit characters that remain distinctive, definite and constant under regional environments. This resulted in numerous local varieties that differ in size, form, colour and taste, with infinite number of variations, according to the soil and climate.

SEEDNet project, South East European Development Network on Plant Genetic Resources, strengthened the national efforts in the Balkan region to ensure long-term conservation of valuable autochthonous apple varieties and promote their sustainable utilization both at the national and regional levels. Collected biodiversity, presented in this monograph, is another confirmation that the Balkan Peninsula is one of the most valuable secondary centres of genetic diversity in apple and an inexhaustible gene pool for breeding work.

Vladislav Ognjanov
University of Novi Sad Faculty of Agriculture
Adžamovka

SYNONYMS: Adamovka.

ORIGIN: Croatia. Adžamovci (near Nova Gradiška, eastern Croatia).

USE OF FRUITS: Fruits ripen by the middle of November and can be used immediately. Good for fresh consumption, juices, cider or brandy. Not suitable for drying, compote and jam. Keeps well with conventional storage or in basements.

• Morphological traits

STEM: Juvenile stem has upright growth and later becomes thicker.

TREETOP: Spreading round crown.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with spreading lateral branches and slivers. Branches are smooth. One and two year shoots are brown with pronounced, round lenticels.

BUDS: Vegetative buds are large. Flower buds are short and wide.

LEAVES: Small and egg shaped.

FLOWER: Medium to small with white to pink colour. Petals are partially overlapping or overlapping. Pistil and stamens are equal length.

• Physiological traits

VIGOUR: Strong.

FLOWERING: Late and long lasting.

FERTILIZATION: Probably triploid cultivar. Easily pollinated by cultivar Šampanjka and Bobovec.

PRODUCTIVITY: Late and variable. Tends to bear in alternate years.

• Fruit characteristics

FRUIT SIZE: Medium large, 60 to 70 mm wide, 50 to 60 mm tall and weighs 110 to 150 g.

FRUIT SHAPE: Conical.

STALK AND STALK CAVITY: Stalk is short, thick and greenish. Stalk cavity is moderately deep and narrow.

CALYX: Calyx is deep, small and closed.

CALYX CAVITY: Moderately deep and narrow with small, short, sharp, bent and greenish sepals.

FRUIT SKIN: Moderately thick and tough. Light green to yellow with covering of pinky red stripes. Medium large, white lenticles with moderately dense distribution.

SEED BOX: Flattened and located in centre of fruit.

FRUIT FLESH: Firm, greenish white, juicy with sour to sweet taste.

• Resistance

PESTS AND DISEASES: Resistant to pests and diseases, but sensitive to Codling Moth (Cydia pomonella L.).
Alamanka

**SYNONYMS:** Ohridska alamanka, Alamanka ohridska, Alamanka prespanska, Alamanka resenska, Alamanka so kusa siska.

**ORIGIN:** Macedonia. Old, domestic cultivar of the Ohrid and Prespa region (South western Macedonia).

- **Morphological traits**
  Tree vigour is intermediate. Branches have spreading habit. Shoots are long, dark brownish and moderately thin. Bearing branches are short.
  Leaves are medium large, dark green with elongated oval shape and resistant to Apple Scab.
  Flower is medium large and white. Flowering is moderately early. Diploid cultivar, with very fertile pollen.

- **Physiological traits**
  Vigorous variety with good productivity. On suitable soil this cultivar bears each year.

- **Fruit characteristics**
  Fruit is small to medium large. Average weight is 100 g.
  Fruit has round to conical shape.
  Stalk is medium long. Stalk cavity is deep.
  Calyx is closed. Calyx cavity is small and shallow.
  Fruit skin is smooth and has a green colour with well developed, dark red stripes covering the sunny side of the fruit.
  Seed box is oval shaped, unequally developed and open. Fruit flesh is white, coarse, juicy and sweet. Weakly acidic with weak aroma. The eating quality is poor.
  Ripens in October and can be eaten in November.
Aleksandrija

SYNONYMS: Unknown.

ORIGIN: Domesticated variety, probably originated from Russia. Several trees were found in the area around Cetinje town.

USE OF THE FRUITS: Ripens in October, and fruits keep until April. Used for fresh consumption but also good for processing. Fruits are highly sensitive to transport. Keep until spring if picked properly.

- Morphological traits
  TREE: Trunk is very strong. Branches have narrow crotchets and bend under weight of fruit. Crown is widespread.
  LEAVES: Round shape with a pronounced peak, green. Leaf petiole is short.
  FLOWER: White with a pink hue, large. Pistil stalks are slightly longer or equal length to stamens.

- Physiological traits
  VIGOUR: Very vigorous.
  LENGTH OF LIFE: Long lived.
  FLOWERING: Medium late.
  PRODUCTIVITY: Good and regular crops every year.

- Fruit characteristics
  SIZE AND SHAPE: Medium large, round to flattened shape. On average is 55.7 mm long, 71 mm wide and weighs 130 g.
  STALK AND STALK CAVITY: Medium length and thickness. Medium to deep funnel shaped cavity.
  CALYX: Calyx is medium sized, open.
  CALYX CAVITY: Medium deep to shallow.
  FRUIT SKIN: Thick, yellow green becoming intense yellow when ripe, with pale red stripes on sunny side of fruit. Rusty areas occur on fruit, especially on the stalk cavity.
  SEED BOX: Bulb shape, located in centre of fruit, very often not clearly visible.
  SEEDS: Seeds are medium large to large, elongated to oval shape with a very pronounced peak. Light chestnut colour.
  FRUIT FLESH: Cream colour, juicy, sour taste, pleasant aroma, fine texture and excellent quality.

- Relationship to environmental factors
  SOIL: No specific soil requirements.
  CLIMATE: Adapted to continental climate.

- Resistance
  PESTS AND DISEASES: Very low sensitivity to Venturia inaequalis Aderh.

- Recommendation
  Variety is of particular interest due to its yield, resistance to pathogens and delicious sour fruit. May be useful as a table fruit or for industrial processing.
Alvanija

SYNONYMS: Elvanija, Ilvanija.

ORIGIN: Gunjavci (near Nova Gradiška, eastern Croatia).

USE OF FRUITS: Fruits ripen end of October and can be used immediately. Good for fresh consumption, compote, jam, juice, cider, brandy and drying. Transports and keeps very well.

• Morphological traits
  STEM: Juvenile stem has upright growth and later becomes moderately thick.
  TREETOP: Round to pyramidal crown.
  BRANCHES AND SLIVERS: Primary branches are very strong, long and covered with evenly spaced hanging lateral branches and slivers. Branches are very smooth. One and two year shoots are brown and have pronounced, round lenticels.
  BUDS: Vegetative buds are large. Flower buds are short and wide.
  LEAVES: Elongated and small.
  FLOWER: Flower is small to medium sized with light pink colour. Petals are free. Pistil is equal to or taller than stamens.

• Physiological traits
  VIGOUR: Vigorous.
  FLOWERING: Early and medium lasting.
  FERTILIZATION: Easily pollinated by cultivar Božičnica, Mašanka and Zelenika.
  PRODUCTIVITY: Very good. Tends to bear in alternate years.

• Fruit characteristics
  FRUIT SIZE: Medium large, on average 60 to 75 mm wide, 65 to 80 mm tall and weighs 110 to 140 g.
  FRUIT SHAPE: Oblong.
  STALK AND STALK CAVITY: Short, thick and lignified stalk. Deep and narrow stalk cavity.
  CALYX: Calyx is small, closed and deep. Large, long, sharp, bent and greenish sepals.
  CALYX CAVITY: Deep and narrow.
  FRUIT SKIN: Rough and moderately thick. Greenish yellow covered with an intense pink. Medium large, round, green and white lenticels are moderately distributed with greater density towards calyx.
  SEED BOX: Bulb shape located at base of fruit.
  FRUIT FLESH: Moderately firm, moderately juicy and sour to sweet taste.

• Resistance
  PESTS AND DISEASES: Resistant to pests and diseases, but branches are sensitive to Canker (Nectria galligena Bres. in Strass.).
Arapka

SYNONYMS: Bugarka.

ORIGIN: Old, local variety from Montenegro. Widespread in the area around Bijelo Polje.

USE OF THE FRUITS: Fruits ripen in October and keep until May. Very suitable for processing.

• Morphological traits
  TREE: Upright branches with wide crotchets. One-year-old branches are reddish white pubescent and long.
  LEAVES: Elliptic to elongated elliptic shape, small to medium large, green, pubescent on reverse side. Leaf petiole is medium thick, medium long to long, green at base and reddish on reverse.
  FLOWER: Medium large, white. Pistil stalks are similar length to stamens.

• Physiological traits
  VIGOUR: Medium vigorous variety.
  LENGTH OF LIFE: Long lived.
  FLOWERING: Early and lasts for 18 days.
  PRODUCTIVITY: Regular crops although less on alternate years.

• Fruit characteristics
  SIZE AND SHAPE: Small to medium large, oblong conical, often irregular and asymmetric, on average 66 mm long, 61 mm wide and weighs about 118 g.
  STALK AND STALK CAVITY: Medium length or long. Stalk cavity funnel hollow and deep same coloured as fruit.
  CALYX: Small, closed with very long sepals.
  CALYX CAVITY: Shallow closely ribbed with irregular edges.
  FRUIT SKIN: Ground colour of fruit is yellowish green, but is almost entirely covered in red colour, initially pale but later becoming dark.
  SEED BOX: Large oval and irregular. Sub calyx cavity is medium size.
  SEEDS: Seeds are elongated oval, pointed at the top and of chestnut colour.
  FRUIT FLESH: White, soft, juicy, sweet and sour and has a pronounced flavour. Underneath epidermis has rose colour in some areas.
  TRANSPORTABILITY: Fruits have moderate sensitivity to transport and handling.

• Resistance
  PESTS AND DISEASES: Good resistance to pests and diseases, except occasional problems with Scab (Venturia inaequalis Aderh.).
Avajlija

SYNONYMS: Vajlija.

ORIGIN: Turkey, probably introduced in Balkan region during the Ottoman empire.

The name of this variety comes from a Turkish word “ayva”, which means quince.

• Morphological traits
The tree is vigorous. Branches have extremely upright habit. Shoots are very long, upright, thin and light brown.
Leaves are small, oval shaped and dark green.
Flower is medium large, white coloured with pink tinge. Flowering is moderately early.

• Physiological traits
Vigorous variety with very good productivity.

• Fruit characteristics
Fruit is large, oblong to conical. Green coloured skin with red flushes.
Stalk is thin and moderately long.
Calyx is very small and closed. Calyx cavity is moderately wide and moderately deep.
Fruit flesh is white with green tinge, soft, sweet sour taste, moderately juicy and weak aroma. Flesh has intermediate texture with poor to intermediate eating quality.

• Recommendations
Variety is tolerant to common apple diseases and pests.
Babovača

SYNONYMS: Unknown.

ORIGIN: Old, local variety from Montenegro. Distributed throughout Polimlje, mostly in the area of Bijelo Polje and Berane.

USE OF THE FRUITS: Fruits ripen in October and keep until end of April.

- **Morphological traits**
  - TREE: Primary branches have downward slope. Secondary and tertiary branches tend to weep. Twigs are brown.
  - LEAVES: Elliptic shape, large, light green and densely pubescent on reverse side. Leaf stem is medium thick, medium to long.
  - FLOWER: Medium large, white with a hint of pink. Pistil stalks are markedly longer than the stamens.

- **Physiological traits**
  - VIGOUR: Medium to vigorous.
  - LENGTH OF LIFE: Long lived.
  - FLOWERING: Mid-season and lasts 20 days.
  - PRODUCTIVITY: Regularly and good crops.

- **Fruit characteristics**
  - SIZE AND SHAPE: Large round flat shape, widest in third closest to stalk, sharply narrows toward calyx, average 79 mm long, 96 mm wide, and weighs up to 250 g.
  - STALK AND STALK CAVITY: Very short and thick stalk, more thickened at the distal end. Stalk cavity is deep and wide with funnel and irregular shape.
  - CALYX: Medium sized and closed.
  - CALYX CAVITY: Small, narrow and moderately deep and always ribbed.
  - FRUIT SKIN: Initially yellowish green and later straw yellow with a weak blush on sunny side of fruit with sparse spread of whitish lenticels.
  - SEED BOX: Large, round shape.
  - SUB CALYX CAVITY: Narrow and reaches seed box.
  - SEEDS: Large, light brown with elongated oval shape.
  - FRUIT FLESH: Greenish white, soft, sweet and sour, moderately juicy without special odour.
  - TRANSPORTABILITY: Fruits are not very sensitive to transport.

- **Relationship to environmental factors**
  - SOIL: Trees have no particular soil requirements.
  - CLIMATE: Adapted to continental climate. Winter and spring frosts are well tolerated.

- **Resistance**
  - PESTS AND DISEASES: High resistance to pests and diseases.
Batulenka

SYNONYMS: Batul, Batulka.

ORIGIN: Widely spread in Romania, Hungary, Serbia, Bosnia and Hercegovina.

USE OF FRUITS: Fruits ripen extremely late in season. Dessert apple. Keeps very well with long storage life. Apple suitable for home gardens.

- Morphological traits
  
  STEM: Juvenile stem has upright growth and later becomes moderately thick.
  
  TREETOP: Round crown.
  
  BRANCHES AND SLIVERS: Dormant one-year-old shoots are thin with medium internode length. Tends to have frequent branching. Bears on 1 to 3 year old shoots. Fruiting zone tends to move rapidly away from the trunk resulting in a round crown.
  
  BUDS: Leaf and flower buds are small, grey. Bears primarily on spurs.
  
  LEAVES: Dark coloured leaves, small, oval very elongated shape, edges evenly serrate.
  
  FLOWER: Large with pale pink petals once fully open.

- Physiological traits
  
  VIGOUR: Moderately vigorous.
  
  FLOWERING: Blooms mid-season.
  
  FERTILIZATION: Diploid cultivar.
  
  PRODUCTIVITY: Low precocity with very good crops after juvenile stage.

- Fruit characteristics
  
  FRUIT SIZE: Small, on average 50.0 mm long, 50.1 mm wide and weighs 80.3 g.
  
  FRUIT SHAPE: Round, uniform shape.
  
  STALK AND STALK CAVITY: Stalk cavity is wide and shallow. Stalk is thin, small.
  
  CALYX: Sepals are small, semi closed.
  
  CALYX CAVITY: Wide, shallow and uneven shape.
  
  FRUIT SKIN: Green to yellow, slight blush on sunny side. Russeted lenticels are prominent.
  
  SEED BOX: Small, obovate.
  
  FRUIT FLESH: Crisp, white, firm, acidic in taste with poor aroma.

- Resistance
  
  PESTS AND DISEASES: Tolerant to Scab, Venturia inaequalis (Cke) Wint., and resistant to Powdery Mildew, Podosphaera leucotricha (Ell. & Everh.) Salm.
**Bedrika**

**SYNONYMS:** Prisatka.

**ORIGIN:** Formerly wide spread in Šumadija, Gornje Podrinje and western parts of Serbia.

**USE OF FRUITS:** Fruits ripen late in season. Keeps well with a long storage life. Dessert apple with attractive appearance.

- **Morphological traits**
  - **STEM:** Stem has upright growth and later becomes moderately thick.
  - **TREETOP:** Crown is upright and dense.
  - **BRANCHES AND SLIVERS:** Dormant one-year-old shoots are slender, short, numerous, brown with lenticels.
  - **BUDS:** Leaf and flower buds are small and grey.
  - **LEAVES:** Oval, elongated, pointed tip, with blunt, rounded and shallow serrations.
  - **FLOWER:** Large with pale pink petals.

- **Physiological traits**
  - **VIGOUR:** Tree is medium sized.
  - **FLOWERING:** Intermediate to late season of flowering.
  - **FERTILIZATION:** Diploid cultivar.
  - **PRODUCTIVITY:** Low precocity but with very good crops after juvenile stage.

- **Fruit characteristics**
  - **FRUIT SIZE:** Medium to large, on average 65 mm long, 77 mm wide and weighs 184.3 g.
  - **FRUIT SHAPE:** Round to conical, ribbed.
  - **STALK AND STALK CAVITY:** Stalk cavity is medium wide and deep. Stalk is medium thick, short.
  - **CALYX:** Sepals are small, semi closed.
  - **CALYX CAVITY:** Deep and medium wide, ribbed.
  - **FRUIT SKIN:** Cream white to yellow when ripe, slight blush on sunny side. Medium sized, white lenticels.
  - **SEED BOX:** Medium sized, ovate.
  - **FRUIT FLESH:** Crisp, white, moderately firm, sweet in taste with pleasant aroma.

- **Resistance**
  - **PESTS AND DISEASES:** Susceptible to Scab, *Venturia inaequalis* (Cke) Wint., and Powdery Mildew, *Podosphaera leucotricha* (Ell. & Everh.) Salm.
**Beljuha**

**SYNONYMS:** Unknown.

**ORIGIN:** Domestic variety from Montenegro. Individual trees found near Bijelo Polje.

**USE OF THE FRUITS:** Fruits ripen mid-August. Summer variety that does not keep for long. Most commonly used for fresh consumption. Can also be processed for brandy.

**Morphological traits**

**TREE:** Pyramidal crown. Branches grow upright to slightly oblique, but later bend under burden of crop.

**LEAVES:** Medium coarse to coarse, green, elliptic. Leaf petiole is medium thick, medium to long, green.

**FLOWER:** Medium large, white to pink colour. Petals are elongated. Pistil stalks are longer than stamens.

**Physiological traits**

**VIGOUR:** Medium vigorous variety.

**LENGTH OF LIFE:** Long lived.

**FLOWERING:** Early blooming, lasts for 20 days.

**PRODUCTIVITY:** Bearing crops each year with alternating productivity.

**Fruit characteristics**

**SIZE AND SHAPE:** Small, round conical, with slight ribbing, 60.2 mm long, 64.1 mm wide and weighs about 98 g.

**STALK AND STALK CAVITY:** Stalk is long, medium thick. Stalk cavity is medium deep and slightly rusty.

**CALYX:** Small, closed.

**CALYX CAVITY:** Shallow, regular.

**FRUIT SKIN:** Green white without any blushing.

**SEED BOX:** Medium size, round shape, located in the middle of the fruit.

**SEEDS:** Small, egg shaped, brown.

**FRUIT FLESH:** White, moderately firm, moderately juicy, sweet, moderate quality.

**TRANSPORTABILITY:** Fruits are moderately sensitive to transport and do not keep for long.

**Relationship to environmental factors**

**SOIL:** No specific soil requirements.

**CLIMATE:** Adapted to continental climate. Tolerates late frosts despite early bloom.

**Resistance**

**PESTS AND DISEASES:** Sensitive to *Venturia inaequalis* Aderh., but resistant to other diseases and pests.

**Recommendation**

Productive variety, fruit ripens early. Appropriate for cultivation in backyards.
**Bihorka**

**SYNONYMS:** Unknown.

**ORIGIN:** Serbia. Old, domestic cultivar from central Serbia.
Found on farms at Mount Rudnik.

**USE OF FRUITS:** Fruits ripen late, second week of September, keeps for up to three months.

- **Morphological traits**

  **STEM:** Trunk bark is smooth and grey.
  **TREETOP:** Spreading crown.
  **BRANCHES AND SLIVERS:** Dormant one-year-old shoots are thin with long internode length.
  **BUDS:** Leaf and flower buds are extremely large.
  **LEAVES:** Large, leathery, thick and light green. Leaf blade length: width ratio is large with serrate margins.
  **FLOWER:** Flowers tend to be large with pale pink petals at bud burst which become white with a tinge of pink once fully opened.

- **Physiological traits**

  **VIGOUR:** Adult trees have intermediate vigour.
  **FLOWERING:** Late onset of flowering.
  **FERTILIZATION:** Diploid cultivar. Flowers produce viable pollen, suitable for pollinating other cultivars that bloom during the same period.
  **PRODUCTIVITY:** Very good crops. Thinning is necessary for trees to set heavy annual crops and avoid alternate bearing.

- **Fruit characteristics**

  **FRUIT SIZE:** Medium size, averaging 74 mm wide.
  **FRUIT SHAPE:** Round to conical shape and slightly asymmetric.
  **STALK AND STALK CAVITY:** Stem cavity is wide, even. Stalk is medium length averaging 18.6 mm.
  **CALYX:** Sepals are medium sized. Calyx tube tends to be closed.
  **CALYX CAVITY:** Wide and shallow.
  **FRUIT SKIN:** Green to yellow with orange or red to pink blush across 40 to 50% of surface, without stripes. Lenticels are white and conspicuous. Fruit do not exhibit russet or bitter pit.
  **SEED BOX:** Ovate.
  **FRUIT FLESH:** Firm, crisp, cream in colour, crumbly and sweet.

- **Resistance**

**Bijela Djedovača**

**SYNONYMS:** Djedovača.

**ORIGIN:** Old, cultivar from Novi Grad and Prijedor (northern Republika Srpska).

**USE OF FRUITS:** Fruits ripen late August to early September. Fruits are used for fresh consumption or processing.

• **Morphological traits**

  **STEM:** Stem has upright growth and later becomes thicker.
  
  **TREETOP:** Short pyramidal crown. Branches have narrow crotchets.
  
  **BRANCHES AND SLIVERS:** Primary branches are very strong, long and covered with spreading lateral branches and slivers. One and two year shoots are light brown.
  
  **BUDS:** Vegetative buds are small.
  
  **LEAVES:** Medium to large and round.
  
  **FLOWER:** Medium sized with white colour.

• **Physiological traits**

  **VIGOUR:** Strong vigour.
  
  **FLOWERING:** Medium early to mid-season.
  
  **FERTILIZATION:** Probably diploid cultivar.
  
  **PRODUCTIVITY:** Produces moderate crop each year in good climatic conditions and suitable soil.

• **Fruit characteristics**

  **FRUIT SIZE:** Medium large, on average 60 to 70 mm long, 50 to 60 mm wide and weighs 100 to 140 g.
  
  **FRUIT SHAPE:** Flat round, symmetrical.
  
  **STALK AND STALK CAVITY:** Stalk is very short, straight and fat. Fruit falls before picking in windy areas. Stalk cavity is narrow and deep.
  
  **CALYX:** Deep and narrow with closed, dark green sepals.
  
  **CALYX CAVITY:** Deep with conical shape.
  
  **SEED BOX:** Elliptic to heart shape located close to calyx.
  
  **FRUIT SKIN:** Fruit skin is smooth, shiny, soft and bruising easily. Moderately thick and firm. Dark green becoming light green or yellow during ripening. Additional diffuse, reddish areas on sunny side.
  
  **FRUIT FLESH:** Pale yellow colour, soft, moderately juicy and has sweet taste.

• **Resistance**

  **PESTS AND DISEASES:** Moderate resistance to pests and diseases.
Bijelica

SYNONYMS: Domaća Bijela, Bijelača.

ORIGIN: Old, cultivar recorded and collected in Prnjavor, village called Gornja Mravica (northern Republika Srpska).

USE OF FRUITS: Fruits ripen during second half of August. Suitable for fresh consumption or processing into cookies, juices and brandy.

- **Morphological traits**
  - STEM: Stem has upright growth and later becomes thicker.
  - TREETOP: Spreading crown. Primary branches have narrow crotchets.
  - BRANCHES AND SLIVERS: Branches are smooth. One and two year shoots are of dark grey to light brown colour with sparse, round lenticels. Short bearing branches.
  - BUDS: Vegetative buds are very small. Flower buds are larger and wide.
  - LEAVES: Medium to large sized, elongated and uneven elliptic shape.
  - FLOWER: Flower is medium sized and white.

- **Physiological traits**
  - VIGOUR: Medium vigour.
  - FLOWERING: Mid-season and relatively short.
  - PRODUCTIVITY: Produces each year in good climatic conditions and suitable soil. No evidence of alternate bearing.

- **Fruit characteristics**
  - FRUIT SIZE: Small to medium sized, on average 55 to 65 mm long, 45 to 55 mm wide and weighs 80 to 110 g.
  - FRUIT SHAPE: Round and symmetrical.
  - STALK AND STALK CAVITY: Stalk is extremely short, straight and very thick. Stalk cavity is semi wide and shallow.
  - CALYX: Calyx is semi deep and narrow, semi opened with short sepals.
  - CALYX CAVITY: Medium depth and very narrow.
  - SEED BOX: Medium wide, unequal elliptic shape and located in centre of fruit.
  - FRUIT SKIN: Fruit skin is thin and moderately firm. Pale green to green without covering colour. Large, round, white, sparse and unequally dispersed lenticels.
  - FRUIT FLESH: White, crunchy, slightly sour and very juicy.

- **Resistance**
  - PESTS AND DISEASES: Tolerant to Apple Scab disease, *Venturia inaequalis* Cooke (Wint.).
Bjelilja

SYNONYMS: Beloja Bejojka, Belojabuka.

ORIGIN: Old, local variety of Montenegro. Originated and distributed within Gornji Bihor.

USE OF FRUITS: Fruits ripen in mid-October and keep until end of February. Fruit is good for processing and fresh consumption.

- Morphological traits

TREE: Weak vigour. Young tree is conical. Old crown is rounded with horizontal primary branches.
LEAVES: Egg shaped to elongated oval, medium sized, green. Leaf petiole is short, medium thick, greenish-reddish colour.
FLOWER: Small to medium large, white with a slight pink tinge. Petals are elongated and narrow. Pistil stalks are slightly longer than the stamens.

- Physiological traits

VIGOUR: Medium vigour.
LENGTH OF LIFE: Long lived.
FLOWERING: Medium early and flowering lasts 18 days.
PRODUCTIVITY: Good, heavy crops in alternate years.

- Fruit characteristics

SIZE AND SHAPE: Medium large, round flat shape, usually irregularly developed, on average 62 mm long, 75 mm wide and weighs about 155 g.
STALK AND STALK CAVITY: Short, thick, rusty green stalk. Stalk cavity is narrow and medium deep and usually irregular in shape.
CALYX: Usually closed, can be semi-open.
CALYX CAVITY: Medium deep, narrow, ribbed and irregular shape.
FRUIT SKIN: Initially yellowish green, later light yellow with many reddish spots. Some fruits have red flush on sunny side, bright to intense in colour.
SEED BOX: Medium size, bulb shaped, located at top of fruit. One seed in each chamber.
SUB CALYX CAVITY: Narrow and deep.
SEEDS: Well developed, medium large, oval shaped with a pointed tip, light brown.
FRUIT FLESH: Light greenish, firm, sweet, very juicy and aromatic.
TRANSPORTABILITY: Fruits transport very well.

- Resistance

PESTS AND DISEASES: Resistant to pests and diseases.
Bojšanka

SYNONYMS: Grdelička jabuka.

ORIGIN: Domesticated cultivar grown in southern Serbia. Name originating from Bojšan village, near Vlađin Han. Widely grown in the region of Grdelička klisura.

USE OF FRUITS: Fruits ripen late in season. Keep well with long storage life. Many trees are over 100 years old.

• Morphological traits

STEM: Trunk bark is smooth and grey.

TREETOP: Spreading, very strong crown with frequent branching.

BRANCHES AND SLIVERS: Dormant one-year-old shoots are thin with medium internode length. Branching habit is upright to spreading.

BUDS: Leaf and flower buds are medium sized, grey. Bears primarily on spurs.

LEAVES: Light coloured leaves, medium length and width, oval shape with medium serrations.

FLOWER: Large with pale pink petals once fully open.

• Physiological traits

VIGOUR: Moderately vigorous.

FLOWERING: Blooms mid-season.

FERTILIZATION: Diploid cultivar.

PRODUCTIVITY: Regular and good crops.

• Fruit characteristics

FRUIT SIZE: Medium size on average 69.1 mm long, 57.1 mm wide and weighs 141.5 g.

FRUIT SHAPE: Oblong to conical, very narrow around calyx cavity and irregular.

STALK AND STALK CAVITY: Stalk cavity is wide and deep. Stalk is thin, small in size.

CALYX: Sepals are small. Calyx tube tends to be closed.

CALYX CAVITY: Small, shallow and uneven.

FRUIT SKIN: Green to yellow becoming yellow when ripe. Slight blush on sunny side.

SEED BOX: Small, obovate.

FRUIT FLESH: Crisp, white, firm, sweet to acidic with excellent aroma.

• Resistance

PESTS AND DISEASES: Sensitive to Scab, Venturia inaequalis (Cke) Wint., and Powdery Mildew, Podosphaera leucotricha (Ell. & Everh.) Salm.
**Bosnika**

**SYNONYMS:** Unknown.

**ORIGIN:** Old, local variety of Montenegro. Single trees found in the area of Bijelo Polje.

**USE OF FRUITS:** Fruits ripen in September and keep until beginning of spring. Delicious fruit for fresh consumption or for juice, brandy and other processing.

- **Morphological characteristics**
  
  **TREE:** Crown is pyramidal. Secondary and tertiary branches have weeping habit.
  
  **LEAVES:** Medium large to large, elliptic to round shape, dark green on upper side, and mild pubescence on reverse. Leaf petiole is medium thick, short.
  
  **FLOWER:** Medium large, pinkish white colour. Sepals are round. Pistil stalks are shorter than the stamens.

- **Physiological traits**
  
  **VIGOUR:** Vigorous variety.
  
  **LENGTH OF LIFE:** Long lived.
  
  **FLOWERING:** Mid-season.
  
  **PRODUCTIVITY:** Regular, good crops each year.

- **Fruit characteristics**
  
  **SIZE AND SHAPE:** Medium large, flat-round shape, on average 55.4 mm long, 72.7 mm wide and weighs 126.7 g.
  
  **STALK AND STALK CAVITY:** Short and thick stalk. Stalk cavity is moderately deep, narrow, with the ribs and rusty colour.
  
  **CALYX:** Large and semi-open.
  
  **CALYX CAVITY:** Large, medium deep to deep.
  
  **FRUIT SKIN:** Ground colour is yellow with a pink blush on the sunny side. Fruit is rusty coloured toward and around stalk cavity.
  
  **SEED BOX:** Medium sized, flat shape, located in middle of fruit.
  
  **SEEDS:** Well developed, medium large, light brown to brown, oval shape, pointed.
  
  **FRUIT FLESH:** Creamy white, firm, moderately juicy, sweet and sour, good taste.
  
  **TRANSPORTABILITY:** Fruits are not very sensitive to transport.

- **Relationship to environmental factors**
  
  **CLIMATE:** Adapted to continental climate. Tolerant to winter and spring frosts.

- **Resistance**
  
  **PESTS AND DISEASES:** Slightly sensitive to *Venturia inaequalis* Aderh., good resistance to other pests and diseases.
Budimka

SYNONYMS: Senahija, Baljevačka Dula, Krupna Dula, Kaba Dula, Ružičarka, Stambolka, Tafetica.

ORIGIN: Serbia. Domestic cultivar grown in a large number of private gardens and a few orchards as an exceptional processing apple.

USE OF FRUITS: For several centuries it was prized as a delicious dessert and culinary apple.

**Morphological traits**

STEM: Trunk bark is smooth and grey.

TREETOP: Spreading, very strong crown with frequent branching.

BRANCHES AND SLIVERS: Dormant one-year-old shoots are thin, grey to brown with long internodes. Branching habit is upright, fruiting zone tends to move away from trunk with tree spreading as a result.

BUDS: Leaf and flower buds are medium sized, grey to brown.

LEAVES: Medium sized, pale, thin, elliptic and very elongated, finely serrate margins.

FLOWER: Large with pale pink petals once fully open.

**Physiological traits**

VIGOUR: Vigorous grower forming a large tree.

FLOWERING: Intermediate season of flowering.

FERTILIZATION: Diploid cultivar. Flowers produce viable pollen, suitable for pollinating other cultivars that bloom during the same period.

PRODUCTIVITY: Good crops.

**Fruit characteristics**

FRUIT SIZE: Medium sized, on average 64 mm long, 79 mm wide and weighs 153.5 g.

FRUIT SHAPE: Oblong, uniform in shape.

STALK AND STALK CAVITY: Stalk cavity is wide, slightly russeted. Stalk is thick, small.

CALYX: Sepals are small. Calyx tube tends to be open.

CALYX CAVITY: Small, shallow and uneven in shape.

FRUIT SKIN: Thin, smooth and tender. Green to yellow becoming yellow when ripe. Slight blush on sunny side. Develops russet over 10 to 30% of surface.

SEED BOX: Small, ovate.

FRUIT FLESH: Crisp, white, firm and sweet to acidic. Storage is essential for development of aroma.

**Resistance**

Carevnjača

SYNONYMS: Carevka.

ORIGIN: Old, cultivar recorded and collected in Čelinac village, Crni Vrh belonging to the Banja Luka area (northern Republika Srpska).

USE OF FRUITS: Fruits ripen second half of September and early October. Fruits tend to drop before picking. Suitable for fresh consumption or processing.

• Morphological traits

STEM: Stem has upright growth and later becomes thicker.

TREETOP: Spreading pyramidal crown with slightly bending branches.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with spreading lateral branches and slivers. Branches are smooth. One and two year shoots are grey to brown and have sparse round lenticels. Short bearing branches.

BUDS: Vegetative buds are small. Flower buds are larger and wide.

LEAVES: Medium sized, elongated elliptic shape.

FLOWER: Flower is medium size and white.

• Physiological traits

VIGOUR: Medium vigour.

FLOWERING: Medium early and short.

PRODUCTIVITY: Producing each year in good climatic conditions and suitable soil. No evidence of alternate bearing.

• Fruit characteristics

FRUIT SIZE: Medium large, on average 65 to 75 mm long, 50 to 60 mm wide and weighs 125 to 165 g.

FRUIT SHAPE: Flat round shape, asymmetrical and irregular.

STALK AND STALK CAVITY: Stalk is extremely short, straight and thick. Stalk cavity is semi wide and shallow.

CALYX: Calyx is shallow, narrow, semi opened.

CALYX CAVITY: Shallow, regular triangle shape.

SEED BOX: Elongated shape and located in middle of fruit.

FRUIT SKIN: Medium thick and light green becoming green yellow during ripening. Large, brown, sparse and unequally dispersed lenticels. Lenticels are most dense around calyx. Brownish colouring is noticeable mainly within calyx.

FRUIT FLESH: White, crunchy, lightly sour and medium juicy.

• Resistance

PESTS AND DISEASES: Tolerant to Apple Scab Disease, Venturia inaequalis Cooke (Wint.).
Cikovača

SYNONYMS: Unknown.

ORIGIN: Domestic variety from Montenegro. Occasional tree is scattered throughout the Polimlje area.

USE OF FRUITS: Fruits ripen in mid-October and keep until May. Good for processing and fresh consumption.

• Morphological traits
  TREE: Spreading crown. Branches have slightly oblique crotches. Twigs are chestnut coloured with rare and round lenticels. Older branches are lighter.
  LEAVES: Ellipsoid, medium size, dark green, with pubescent reverse. Leaf petiole is medium thick, long, green with reddish base.
  FLOWER: Medium large, pinkish white. Petals are wrinkled. Pistil stalks are longer than stamens.

• Physiological traits
  VIGOUR: Vigorous variety.
  LENGTH OF LIFE: Long lived.
  FLOWERING: Mid to late season and lasts 18 days.
  PRODUCTIVITY: Heavy crop each year.

• Fruit characteristics
  SIZE AND SHAPE: Small to medium, flat-round, gradually narrowing toward calyx creating conical shape, uneven and irregular contours, on average 54 mm long, 68 mm wide and weighs about 130 g.
  STALK AND STALK CAVITY: Short and medium thick stalk. Cavity deep and wide, irregular shape with leathery coating.
  CALYX: Medium sized, closed.
  CALYX CAVITY: Deep and moderately broad.
  FRUIT SKIN: Yellowish green and obtains light yellow colour with storage, has blush on sunny side which increases during storage. Small, rusty grey lenticels are scatter over surface which have intense red lining when found on coloured areas.
  SEED BOX: Medium sized sometimes small, bulb shape.
  SEEDS: Medium to large, egg shaped, deep brown colour.
  FRUIT FLESH: Snow white, moderately firm, not very juicy and of medium quality.
  TRANSPORTABILITY: Fruits do not transport well.

• Relationship to environmental factors
  SOIL: Trees have no particular soil requirements.
  CLIMATE: Adapted to continental climate. Tolerant to winter and spring frosts.

• Resistance
  PESTS AND DISEASES: High resistance to pests and diseases.
**Crețesc**

**SYNONYMS:** Crețesc de Vâlcea, Crețesc struguros.

**ORIGIN:** Indigenous cultivar from the Sub Carpathian area of Southern Carpathian Mountains in the Southern part of Romania.

**USE OF FRUITS:** Fruit is primarily suitable for fresh consumption and can be stored for long time. Fruit picked September to October, ripens and keeps from December until May.

- **Morphological traits**
  - **STEM:** Stem is very thick with an irregular surface. Bark is medium thick with olive brownish colour.
  - **TREETOP:** Crown is very large, spreading round shape, with weeping habit.
  - **BRANCHES AND SLIVERS:** Main branches are vigorous and those from crown edge are long, thin and flexible. Fruit is born on long shoots more than spurs.
  - **BUDS:** Leaf and wood buds are small, conical, grey in colour and pubescent. Flower buds have ovate shape and reddish brown colour.
  - **LEAVES:** Medium to large, oval shape, dark green on upper side and light green with medium pubescence on lower side. Leaf margins are serrate and with short, acuminate tips. Petiole is medium to long, straight, thin, of reddish colour at base and with narrow stipules.
  - **FLOWER:** Flower petals have white rose colour. At bud burst flowers have purple colour.

- **Physiological traits**
  - **VIGOUR:** Strong or high vigour.
  - **FLOWERING:** Semi-late and gradual.
  - **FERTILIZATION:** Good fruit set if pollinated with Pârluț, Jonathan or Parmen aurian cultivars in the orchard.
  - **PRODUCTIVITY:** Has good productivity with suitable cross pollination.

- **Fruit characteristics**
  - **FRUIT SIZE:** Fruit is medium to large and weighs between 125 to 180 g.
  - **FRUIT SHAPE:** Flat-round and symmetric shape.
  - **STALK AND STALK CAVITY:** Stalk is short with thin pubescence. Stalk cavity is broad with conical shape and greenish skin.
  - **CALYX:** Calyx is small, semi-opened, with pubescent and small, pointed sepals.
  - **CALYX CAVITY:** Wide and medium to deep.
  - **FRUIT SKIN:** Thick and glossy. Greenish colour covered with orange red flush.
  - **SEED BOX:** Medium to large, bulb shaped with greenish white bundles of fibers.
  - **FRUIT FLESH:** Greenish white, semi-crisp, sour, juicy and slightly aromatic.

- **Resistance**
  - **PESTS AND DISEASES:** Fruit is susceptible to Apple Scab, *Venturia inaequalis* Cooke (Wint.).
Crvena Šiba

SYNONYMS: Šiba, Šibulja.

ORIGIN: Old, cultivar recorded and collected from Doboj village, Velika Bukovica (north eastern Republika Srpska).

USE OF FRUITS: Fruits ripen late August to early September. Suitable for fresh consumption or processing into cakes, pies and brandy.

• Morphological traits

STEM: Stem has upright growth. Pyramidal crown with dense branching.

BRANCHES AND SLIVERS: Primary branches are very strong and long covered with spreading lateral branches and slivers. Branches are smooth.

BUDS: Vegetative buds are small.

LEAVES: Medium sized, very dark green with irregular elliptic shape.

FLOWER: Flower is small to medium sized and has white colour.

• Physiological traits

VIGOUR: Strong vigour.

FLOWERING: Middle early.

PRODUCTIVITY: Produces good crops each year in good climatic conditions and suitable soil.

• Fruit characteristics

FRUIT SIZE: Medium large, on average 65 to 75 mm long, 55 to 65 mm wide and weighs 110 to 160 g.

FRUIT SHAPE: Slightly asymmetrical, irregular round or conical shape.

STALK AND STALK CAVITY: Medium length stalk is straight and semi thick. Stalk cavity is semi wide and deep.

CALYX: Wide, semi deep, half closed short and semi straight sepals.

CALYX CAVITY: Narrow and deep with funnel shape.

SEED BOX: Irregular round flattened shape, located at centre of fruit.

FRUIT SKIN: Medium thick, smooth and shiny. Light green becoming greenish yellow or yellow during ripening. Red color covers most of the surface, either diffusely around calyx or as red stripes. Large, white, sparse and unevenly dispersed lenticels.

FRUIT FLESH: White colour, moderately crunchy, slightly sour and juicy.

• Resistance

PESTS AND DISEASES: Moderately sensitive to Codling Moth, Cydia pomonella.
Crvenika

SYNONYMS: Crveni Kiseljak.

ORIGIN: Old, cultivar recorded and collected from Srbac village, Nožičko (northern Republika Srpska, within Croatian border).

USE OF FRUITS: Fruits ripen second half of September to early October. Keeps well, even in traditional conditions. Suitable for fresh consumption or processing into juice and brandy.

• Morphological traits

STEM: Stem has upright growth and later becomes thicker.

TREETOP: Round crown. Branches have a slightly drooping habit.

BRANCHES AND SLIVERS: Branches are smooth. One and two year shoots are of light to dark brown colour. Short bearing branches.

BUDS: Vegetative buds are small.

LEAVES: Medium sized, elongated elliptic to round shape.

FLOWER: Flower is medium sized and has white colour.

• Physiological traits

VIGOUR: Intermediate to weak vigour.

FLOWERING: Early to mid-season.

PRODUCTIVITY: Produces good crops each year in good climatic conditions and suitable soil.

• Fruit characteristics

FRUIT SIZE: Medium large to large, on average 65 to 75 mm long, 55 to 65 mm wide and weighs 135 to 185 g.

FRUIT SHAPE: Round or conical shape, symmetrical.

STALK AND STALK CAVITY: Stalk is medium long, curved and medium thick. Stalk cavity is semi wide and deep.

CALYX: Calyx is shallow and wide, semi opened with short grey sepals.

CALYX CAVITY: Semi deep with conical shape.

SEED BOX: Elliptic shape, located at centre of fruit.

FRUIT SKIN: Thick, smooth and shiny. Light green colour that becomes greenish yellow during ripening. Diffuse or stripped red colour covers majority of fruit.

FRUIT FLESH: White, crunchy, sour and very juicy.
**Crvenka**

**SYNONYMS:** Crevenka.

**ORIGIN:** Old, cultivar recorded and collected in Banja Luka, Radovača (north western Republika Srpska).

**USE OF FRUITS:** Fruits ripen late August to early September. Tends to drop before picking. Keeps well. Suitable for fresh consumption or processing into jam, compotes, juices and brandy.

**Morphological traits**

**STEM:** Stem has upright growth and later becomes thicker.

**TREETOP:** Irregular, round shape, wider at base.

**BRANCHES AND SLIVERS:** Primary branches are strong, long and covered with spreading lateral branches and slivers. Branches are smooth.

**BUDS:** Vegetative buds are small. Flower buds are larger and wide.

**LEAVES:** Small to medium sized, irregular egg shape.

**FLOWER:** Flower is small and has white to pink colour.

**Physiological traits**

**VIGOUR:** Medium vigour.

**FLOWERING:** Mid-season and relatively short.

**FERTILIZATION:** Probably diploid cultivar.

**PRODUCTIVITY:** Produces good crops each year in good climatic conditions and suitable soil.

**Fruit characteristics**

**FRUIT SIZE:** Fruit is medium large to large, on average 75 to 85 mm long, 60 to 70 mm wide and weighs 175 to 210 g.

**FRUIT SHAPE:** Asymmetrical, round to flattened conical shape.

**STALK AND STALK CAVITY:** Stalk is short, curved and medium thick. Stalk cavity is semi wide and shallow.

**CALYX:** Calyx is wide and shallow, opened with short sepals.

**CALYX CAVITY:** Wide and shallow.

**SEED BOX:** Elongated heart shape, located close to calyx.

**FRUIT SKIN:** Medium thick, light green colour becoming yellow with red cover colour during ripening. Large, sparse, white, unevenly dispersed lenticels.

**FRUIT FLESH:** Pale yellow colour, moderately crunchy, slightly sour and very aromatic.

**Resistance**

**PESTS AND DISEASES:** Sensitive to Apple Scab Disease, *Venturia inaequalis* Cooke (Wint.).
Cvijetača

SYNONYMS: Ljepocvjetka.

ORIGIN: Old cultivar recorded and collected in Dukići, 57 kilometres from Banja Luka (north western Republika Srpska).

USE OF FRUITS: Fruits ripen late September. Suitable for fresh consumption or processing into cakes, compote and juice. Fruits do not keep well becoming mealy.

- Morphological traits
  STEM: Stem has upright growth and later becomes thicker.
  BRANCHES AND SLIVERS: Branches are smooth. One and two year shoots are light to brown and have sparse, round lenticels. Short bearing branches.
  BUDS: Vegetative buds are small.
  LEAVES: Very large, round shape.
  FLOWER: Flower is medium sized, white and pink colour.

- Physiological traits
  VIGOUR: Intermediate or strong vigour.
  FLOWERING: Mid-season.

PRODUCTIVITY: Produces each year in good climatic conditions and suitable soil.

- Fruit characteristics
  FRUIT SIZE: Medium large to large, on average 65 to 75 mm long, 55 to 65 mm wide and weighs 135 to 185 g.
  FRUIT SHAPE: Round, conical and symmetrical.
  STALK AND STALK CAVITY: Stalk is medium sized, straight and medium thick. Stalk cavity is narrow and shallow.
  CALYX: Calyx is shallow, narrow and opened. Sepals are short and greyish.
  CALYX CAVITY: Shallow, narrow with irregular round shape.
  SEED BOX: Elongated heart shape, located toward stalk.
  FRUIT SKIN: Thick, smooth, shiny and bruises easily. Light green becoming greenish yellow or yellow when ripe. Reddish colour on sunny side. Large, brown, sparse and irregularly dispersed lenticels. Strong ribbing around calyx.
  FRUIT FLESH: White, moderately crunchy, sweet and moderately juicy.

- Resistance
  PESTS AND DISEASES: Moderately tolerant to pests and diseases.
**Dapsićanka**

**SYNONYMS:** Krstovača, Malevka.

**ORIGIN:** Domesticated variety that originated from the Middle East and was first grafted onto a wild apple in the village Dapsiće, near Berane, in 1840. Serving as a mother tree this variety is widespread in areas of the Upper Polimlje and mainly in the Municipality of Berane.

**USE OF FRUITS:** Fruits ripen for picking in late September and October. Fruit can be used fresh or processed from November to April. Fruits can be kept until July if properly harvested.

- **Morphological traits**
  - **TRUNK:** Trunk is strong, healthy, and usually upright.
  - **CROWN:** Crown is very strong, with few branches and pyramidal in shape.
  - **LEAVES:** Medium sized, oblong, pointed at tip and intensely green. Reverse side is pubescent, particularly on veins. Leaf petiole is long, medium thick and slightly red at base.
  - **FLOWER:** Flowers are large with wide, pink and white petals.

- **Physiological traits**
  - **VIGOUR:** Tree has strong vigour.
  - **FLOWERING:** Early to mid-season, lasts about 18 days.
  - **PRODUCTIVITY:** Starts producing early with heavy crops, often in alternate years.

- **Fruit characteristics**
  - **SIZE AND SHAPE:** Medium to large, larger on younger trees. Flat-round, usually irregular and sometimes with ribs. On average 75 mm long, 85 mm wide and weigh about 200 g.
  - **STALK AND STALK CAVITY:** Stalk is short, medium thickness and pubescent. Stalk cavity is deep, moderately broad and rusty coloured at base often with irregular edges.
  - **CALYX:** Calyx is small or medium sized, closed sometimes half-closed. Small, pubescent sepals.
  - **CALYX CAVITY:** Calyx cavity is deep, medium wide with uneven ribs.
  - **FRUIT SKIN:** Thin and smooth, yellowish green, purple on sunny side of stem (sometimes surface is completely red) and sprinkled with whitish lenticels.
  - **SEED BOX:** Medium in size located in middle of fruit with closed, smooth chambers.
  - **SEEDS:** Seeds are small, generally elongated, pointed and light coffee in colour.
  - **FRUIT FLESH:** White, sometimes greenish, soft, juicy, sweet to taste with pleasant aroma.
  - **TRANSPORTABILITY:** Fruits do not transport well.

- **Resistance**
  - **PESTS AND DISEASES:** Resistant to various diseases. Occasionally suffers from Apple Scab (*Venturia inaequalis*), on leaves more so than the fruit, and sometimes attacked by Codling Moth (*Carpocapsa pomonella*).
Djulabija

**SYNONYMS:** Senabija, Djula, Kupna djula, Kaba djula, Ruzicarka, Stambolka, Tafetica.

**ORIGIN:** Turkey, Middle East. Old, domestic cultivar from the Balkan Peninsula. The name of this variety comes from a Turkish word “gül”, which means rose.

**Morphological traits**

Strong, vigorous tree. Branches have a spreading habit. Shoots are medium long, dark brown and very thin.

Leaf buds are short, sharp, pointed and brownish grey. Flower buds are medium large, conical and brownish grey. Leaves are medium large, elliptic, very elongated and light green with a weakly acuminate tip.

Flower is large, white coloured with a slight tinge of red. Flowering is moderately late. Diploid cultivar, with very fertile pollen.

**Physiological traits**

Very vigorous and highly productive variety with intermediate season of flowering. Ripens in the first half of October and can be eaten in December.

**Fruit characteristics**

Medium large fruit, flat round shape and usually asymmetric.

Stalk short and strong.

Calyx is open to semi open. Fruit have characteristically small calyx cavity.

Fruit skin is thin, smooth and green to yellowish with additional pink colouration.

Seed box is small.

Fruit flesh is white, very strong, with sweet sour taste, rather dry and without aroma. The eating quality is poor to very poor.
**Domnesti**

SYNONYMS: Dominechti, Herrenapfel, Moldauer Gotterapfel, Moldausicher Fuerterapfel, Moldausicher Herrenapfel, Pomme de Moldavie, Gospodskoe, Domnești Moldavskoe.

ORIGIN: Republic of Moldova. Old domestic cultivar (registered for propagation in Republic of Moldova).

USE OF FRUITS: Fruits ripen mid-September, handle well and keep at +10°C for 120 to 150 days.

- **Morphological traits**

  STEM: Juvenile stem has upright growth, high vigour. Long lived.

  TREETOP: Very tall, weeping and wide, branches rarely stoop when bearing fruit.

  BRANCHES AND SLIVERS: Primary branches are strong, thick, greenish grey. Branches have right angle crotchets, are densely pubescent and medium sized. One and two year shoots are greenish grey with medium sized lenticels.

  BUDS: Vegetative buds are medium sized. Flower buds are large, pubescent, conical, stooped and greatly developed.

  LEAVES: Large, 100 mm long and 63 mm wide and dark green with wide oval shape. Leaf blade is moderately serrate.

  FLOWER: Flower is large, has white rosy colour and rounded petals.

- **Physiological traits**

  VIGOUR: Strong, especially during juvenile stage. Pronounced longevity.

  FLOWERING: Mid-season (third week of April until May).


  PRODUCTIVITY: Produces moderate crops each year in sheltered positions, on suitable soil with irrigation.

- **Fruit characteristics**

  FRUIT SIZE: Large to very large, on average 100 mm wide, 70 to 80 mm long, and weighs 170 to 210 g, sometimes asymmetric.

  FRUIT SHAPE: Flat round.

  STALK AND STALK CAVITY: Stalk is short, thick. Deep cooper cavity.

  CALYX: Calyx is of medium or large size, ribbed, open or semi open with small pubescent greenish sepals.

  CALYX CAVITY: Medium to small, short, with ribs.

  FRUIT SKIN: Thick, firm, greasy with fine aroma. Yellow green becoming yellow with carmine red strips.

  SEED BOX: Medium sized, semi open with 7 to 9 seeds.

  FRUIT FLESH: White to yellow, coarse, juicy, with sweet sour taste and tangy flavor. One of the tastiest domestic autumn apple varieties.

- **Resistance**

  PESTS AND DISEASES: Fairly resistant to common apples diseases and pests. Weak tolerance to drought, high tolerance to low temperatures.
Domnesti Rumene Sulfate

SYNONYMS: Domnechti.
ORIGIN: Republic of Moldova. Old domestic cultivar of Republic of Moldova.
USE OF FRUITS: Fruits ripen late September, handle and transport well. Recommended for fresh use or processing.

• Morphological traits
STEM: Juvenile stem has upright growth, strong vigour. Medium longevity.
TREETOP: Medium sized, weeping, wide crown with branches rarely bending when bearing fruit.
BRANCHES AND SLIVERS: Primary branches are strong, thick, greenish grey. Branches are densely pubescent, medium sized, with wide crotchets. One and two year shoots are grey with medium sized lenticels.
BUDS: Vegetative buds are medium sized. Flower buds are large, pubescent, conical, stooped and moderately developed.
LEAVES: Medium to large, wide oval shape, dark green. Leaf blade is moderately serrate.
FLOWER: Medium sized with white to rosy, rounded petals.

• Physiological traits
VIGOUR: Strong during juvenile stage.
FLOWERING: Mid-season (third week of April until May).
PRODUCTIVITY: Produces moderate crops each year.

• Fruit characteristics
FRUIT SIZE: Medium to large and very large, on average weighs from 110 to 200 g.
FRUIT SHAPE: Flat round, asymmetric.
STALK AND STALK CAVITY: Stalk is very short, thick. Small greenish grey cavity.
CALYX: Calyx is medium or large sized, open or semi open with small, pubescent, greenish sepals.
CALYX CAVITY: Medium to small, short and wide, without obvious ribs.
FRUIT SKIN: Thick, greasy and firm. Yellow green becoming yellow, with carmine red stripes and slightly blushed.
SEED BOX: Medium sized, asymmetric, semi open with 8 to 9 seeds.
FRUIT FLESH: White to yellow, intermediate texture, juicy, with sweet sour taste. Tasty, local, autumn apple variety.

• Resistance
PESTS AND DISEASES: Moderate resistance to common apple diseases and pests. Weak tolerance to drought, but high tolerance to low temperatures.
Đulabija

SYNONYMS: Unknown.

ORIGIN: Old, cultivar recorded and collected from Bijeljina village, Batkovići (north eastern Republika Srpska).

USE OF FRUITS: Fruits ripen late September. Suitable for fresh consumption or processing into cakes, pies and juices.

- **Morphological traits**
  STEM: Stem has upright growth and later becomes thicker.
  TREETOP: Ovate to round crown.
  BRANCHES AND SLIVERS: Primary branches are strong, long and covered with spreading lateral branches and slivers. One and two year shoots are dark grey to brown colour. Short bearing branches.
  BUDS: Vegetative buds are very small. Flower buds are larger and wide.
  LEAVES: Small to medium sized, irregular elliptic shape.
  FLOWER: Flower is small to medium sized and white.

- **Physiological traits**
  VIGOUR: Intermediate vigour.
  FLOWERING: Mid-season.
  FERTILIZATION: Diploid cultivar.
  PRODUCTIVITY: Produces each year in good climatic conditions and suitable soil.

- **Fruit characteristics**
  FRUIT SIZE: Small to medium sized, on average 55 to 65 mm long, 50 to 60 mm wide and weighs 60 to 90 g.
  FRUIT SHAPE: Asymmetrical and rather elongated.
  STALK AND STALK CAVITY: Stalk is extremely long, tick and slightly curved. Stalk cavity is narrow and deep.
  CALYX: Shallow, narrow, semi opened calyx with ribbed centre. Long, outward curved sepals.
  CALYX CAVITY: Narrow and semi deep, irregular shape.
  SEED BOX: Elongated, flattened conical, located toward calyx.
  FRUIT SKIN: Thick, smooth and shiny. Dark green becoming light green during ripening, with noticeable reddish stripes.
  FRUIT FLESH: White, crunchy, slightly sour and medium juicy.

- **Resistance**
  PESTS AND DISEASES: Moderately tolerant to pests and diseases.
**Faqekuqja**

**SYNONYMS:** Faqekuqja Starjes.

**ORIGIN:** Old, domestic cultivar of Erseka area (south eastern Albania).

**USE OF FRUITS:** Fruits ripen late October until early November and can be used immediately. Fruits are very firm when picked. Transport and handle well. An apple for fresh consumption.

- **Morphological traits**
  - **STEM:** Stem has upright growth and later becomes thicker.
  - **TREETOP:** Very round topped.
  - **BRANCHES AND SLIVERS:** Branches are very smooth with excellent branching habit. One and two year shoots are grey with pronounced, round lenticels.
  - **BUDS:** Vegetative are medium, flower buds are short and wide.
  - **LEAVES:** Medium with oval shape, light green and corollaceous.
  - **FLOWER:** Flower is big and has white-cream colour.

- **Physiological traits**
  - **VIGOUR:** Vigorous with a very strong framework.
  - **FLOWERING:** Blossoms semi-late (end of April until beginning of May).
  - **FERTILIZATION:** Diploid cultivar.
  - **PRODUCTIVITY:** Produces crops each year in sheltered positions and suitable soil.

- **Fruit characteristics**
  - **FRUIT SIZE:** Small, on average 60 mm wide, 50 to 60 mm long and weighs 90 to 120 g.
  - **FRUIT SHAPE:** Flat round and usually asymmetric.
  - **STALK AND STALK CAVITY:** Stalk is medium long, thick, green. Deep cavity.
  - **CALYX:** Calyx is medium large and slightly closed.
  - **CALYX CAVITY:** Medium deep.
  - **FRUIT SKIN:** Smooth, firm and slightly greasy. Green to green yellow with red colour covering three quarters of surface.
  - **SEED BOX:** Oval, unevenly developed and open.
  - **FRUIT FLESH:** White to creamy, moderately firm, fine textured, juicy, mild flavour with low acidity.

- **Resistance**
  - **PESTS AND DISEASES:** During wetter years is sensitive to Wooly Apple Aphid, *Eriosoma lanigerum* (Hausmann).
Faqka

SYNONYMS: Faqka e Dardhes.

ORIGIN: Indigenous. Old, domestic cultivar of Korca region (south eastern Albania).

USE OF FRUITS: Fruits ripen early November and can be used immediately. Suitable for fresh consumption or cooking. Keeps very well for at least 20 weeks in natural conditions.

• Morphological traits
STEM: Stem has upright growth and later becomes thicker.
TREETOP: Very wide, round crown.
BRANCHES AND SLIVERS: Branches are covered with hanging lateral branches and slivers. Branches are very smooth and with dark colour and lenticels.
BUDS: Vegetative buds are small and flower buds are wide.
LEAVES: Medium, with oval shape, light green. Margins are toothed.
FLOWER: Large with white to rosy colour.

• Physiological traits
VIGOUR: Moderately vigorous.
FLOWERING: Late (during first half of May).
FERTILIZATION: Diploid cultivar.
PRODUCTIVITY: Productive each year in good climatic conditions and good soil.

• Fruit characteristics
FRUIT SIZE: Medium large, on average 60 to 70 mm wide, 60 to 70mm long and weighs 110 to 140 g.
FRUIT SHAPE: Round and usually symmetric.
Ribbing is most evident near calyx.
STALK AND STALK CAVITY: Stalk is short. Deep and wide stalk cavity.
CALYX: Calyx is medium sized and open. Wide and long sepals.
CALYX CAVITY: Wide and short.
FRUIT SKIN: Medium thick, greenish yellow, blushed and striped with bright red.
SEED BOX: Oval, well developed and open.
FRUIT FLESH: White tinged with green, moderately coarse, juicy, sweet and full flavoured.

• Resistance
PESTS AND DISEASES: Resistant to Apple Scab Disease, Venturia inaequalis Cooke (Wint.), and to Momilia sp. on the fruit.
Ferik

SYNONYMS: Unknown.

ORIGIN: Originates from Near East, Asia Minor. Named after Ferik pasha, famous vizier of Constantinople. Found along Montenegrin coast but mainly in Bar and Ulcinj municipalities.

USE OF FRUITS: Fruits ripen in October and keep until February. Good for processing or fresh consumption.

• Morphological traits
  TREE: Vigorous growth with healthy and strong trunk. Tree crown is strong, wide with strong, curved branches. Twigs are vigorous, lush, smooth, dark grey with many bearing branches.
  LEAVES: Round, strong tip, green, moderately pubescent on reverse side. Leaf petiole is medium size, medium to thick.
  FLOWER: Medium to large, white to pinkish colour, regular shape. Pistil stalks are generally equal length as stamens.

• Physiological traits
  VIGOUR: Vigorous.
  LENGTH OF LIFE: Long lived.
  FLOWERING: Early blooming, flowering lasts about 20 days.
  PRODUCTIVITY: Regular and heavy crops.

• Fruit characteristics
  SIZE AND SHAPE: Small, elongated oblong shape, usually asymmetric and on average 52mm long, 48 mm wide and weighs about 64 g.
  STALK AND STALK CAVITY: Long and thin, dark red colour and slightly bent. Stalk cavity is medium deep, narrow and funnel shaped.
  CALYX: Usually closed, and can be semi open.
  CALYX CAVITY: Shallow to moderately deep, ribbed.
  FRUIT SKIN: Thin, elastic, initially green and later yellow, reddish on the sunny side which becomes more intense with storage.
  SEED BOX: Located in centre of fruit, oval round shape. Often one seed in each chamber.
  SEEDS: Well developed, large elliptic shape with a pointed tip, chestnut colour.
  FRUIT FLESH: Greenish white, crisp, juicy, sweet taste and a very pleasant aroma.
  TRANSPORTABILITY: Fruits transport very well and keep until end of February.

• Relationship to environmental factors
  SOIL: No specific soil requirements.
  CLIMATE: Adapted to Mediterranean climate.

• Resistance
  PESTS AND DISEASES: Resistant to pests and diseases.
Gjece

SYNONYMS: Mollagjec, Gjece Elbasanit.

ORIGIN: Mollagjece village in Elbasan (central Albania).

USE OF FRUITS: Fruits ripen first week of October and keeps until December. High quality apple for fresh consumption or drying. During the winter dried fruits make a delicious compote.

• Morphological traits

STEM: Juvenile stem has medium growth and later becomes thicker.

TREETOP: Round crown. Branches have excellent, wide crotchets.

BRANCHES AND SLIVERS: Branches are strong, long and covered with evenly spaced hanging lateral branches. One and two year shoots are grey with pronounced, round lenticels.

BUDS: Vegetative buds are small. Flower buds are short and wide.

LEAVES: Large, elliptic shape, light green, margins have fine, sharp serrations.

FLOWER: Flower has medium size and white colour.

• Physiological traits

VIGOUR: Moderately vigorous.

FLOWERING: Blossoms intermediate to late.

FERTILIZATION: Diploid cultivar.

PRODUCTIVITY: Produces crops each year in good conditions.

• Fruit characteristics

FRUIT SIZE: Medium sized, on average 65 to 75 mm wide, 55 to 65 mm long and weighs 100 to 130 g.

FRUIT SHAPE: Oblong and usually asymmetric. Fruit narrows towards calyx creating conical shape.

STALK AND STALK CAVITY: Stalk is short or medium long and thick. Deep cavity.

CALYX: Calyx is medium sized.

CALYX CAVITY: Deep and moderately narrow.

FRUIT SKIN: Thick and greenish becoming yellow covered with red colour over majority of surface.

SEED BOX: Oval, unevenly developed and open.

FRUIT FLESH: Firm and sweet, later becomes slightly flowery.

• Resistance

PESTS AND DISEASES: Resistant to Scab, Venturia inaequalis, but sensitive to Codling Moth, Cydia pomonella.
Gjyle

SYNONYMS: Unknown.

ORIGIN: Indigenous. Old, domestic cultivar from Kukes (northern Albania).

USE OF FRUITS: Fruits ripen mid-October. Very firm when picked. Handles and keeps very well. An apple for fresh consumption. Also very suitable for processing, juice, compote, pies etc.

• Morphological traits
STEM: Juvenile stem has upright growth and later becomes thicker.
TREETOP: Very wide crown.
BRANCHES AND SLIVERS: Primary branches are strong, later covered with hanging lateral branches. One and two year shoots are grey with pronounced, round lenticels.
BUDS: Vegetative buds are small. Flower buds are larger.
LEAVES: Medium, with oval shape. Bright to dark green with serrated margins.
FLOWER: Medium sized and white.

• Physiological traits
VIGOUR: Strong, especially during juvenile stage.
FLOWERING: Blossoms semi-late (late April until early May).
FERTILIZATION: Diploid cultivar.
PRODUCTIVITY: Produces each year in sheltered positions and good soil.

• Fruit characteristics
FRUIT SIZE: Small to medium sized, on average 60 to 70 mm wide, 50 to 60 mm long and weighs 100 to 140 g.
FRUIT SHAPE: Flattened round and usually asymmetric.
STALK AND STALK CAVITY: Stalk is short and thick.
CALYX: Calyx is medium size.
CALYX CAVITY: Wide and short.
FRUIT SKIN: Thick skin. Greenish becoming yellow with red colour covering up to 50% of surface on sunny side.
SEED BOX: Oval, well developed and open.
FRUIT FLESH: White tinged with green. Taste is sweet sour.

• Resistance
PESTS AND DISEASES: Sensitive to Apple Scab Disease, Venturia inaequalis Cooke (Wint.), but resistant to Codling Moth, Cydia pomonella.
Golubok Dnestrovskii

SYNONYMS: Tirolka Dnestrovskaja, Tirolka Franceza and Tirolka Frantuzskaia.

ORIGIN: Republic of Moldova. Old, domestic cultivar found on the river Dnestr.

USE OF FRUITS: Fruits ripen from the third week of September to the first week of October. Fruits handle well and keep at +10 C for 200 to 225 days.

• **Morphological traits**

STEM: Juvenile stem has medium vigour.

TREETOP: Medium sized, wide pyramidal, dense crown. Medium sized branches.

BRANCHES AND SLIVERS: Primary branches are strong, forming narrow crotchets. Branches are densely pubescent, medium sized, strong. One and two year shoots are medium or long, dark brown and greenish. Fruit has strong tendency to be located toward ends of branches.

BUDS: Vegetative buds are medium sized. Flower buds are conical, moderately developed with white pubescence.

LEAVES: Medium or small, flattened oval shape, dark green with silver corollaceous (very pubescent) lower side. Leaf blade has small crenate margin.

FLOWER: Flower is medium sized, with white to rosy colour and rounded petals.

• **Physiological traits**

VIGOUR: Strong, especially during juvenile stage. Longevity of 40 to 45 years.

FLOWERING: Late (first week of May).

FERTILIZATION: Diploid cultivar, good for pollinating Jonathan, Banana de Iarna, Renet Simirenko, Sari Sinap, Mantuuner and Napoleon.

PRODUCTIVITY: Late. Produces a good crop each year on a range of soil types.

• **Fruit characteristics**

FRUIT SIZE: Medium sized, on average 58 to 65 mm wide, 58 to 67 mm long and weighs from 80 to 125 g.

FRUIT SHAPE: Round.

STALK AND STALK CAVITY: Stalk is short, moderately thick. Narrow, moderately deep, green cavity.

CALYX: Calyx is medium sized, slightly ribbed, semi open or open with long lanceolate sepals.

CALYX CAVITY: Small and short.

FRUIT SKIN: Thick, moderately tough, half of surface is slightly russetted. Yellow to green becoming yellow when ripe with carmine red flush. Sparse green lenticels especially on sunny side.

SEED BOX: Medium sized, weakly developed, closed or semi open with 8 to 10 large seeds.

FRUIT FLESH: White, dense, coarse, juicy with sweet to sour, vinous taste, like rosemary.

• **Resistance**

PESTS AND DISEASES: Moderately resistant to common diseases and pests. High tolerance to low temperatures, moderately tolerant to drought.
Golubok Moldavskii

SYNONYMS: Tirolka, Karolka, Tirolka Moldavskaja, Golubok Obiknovennii, Tirolka Bessarabbskaia, Pigeon Blank d’Iver, Moldovaner Taubenapfel, Tyroler Pepping and Taubenapfel Moldauisher.

ORIGIN: Republic of Moldova. Old, domestic cultivar found in all apple growing regions of the Republic of Moldova.

USE OF FRUITS: Fruits ripen in the second week of September and can be used immediately. Fruits handle and transport well, and keep at +10 C for 210 to 235 days. Recommended for fresh use or processing, especially for lacto-fermentation.

Morphological traits

STEM: Juvenile stem has medium vigour and later becomes thicker.

TREETOP: Asymmetric round to pyramidal crown, weeping with stooped branches.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with evenly spaced, hanging, lateral branches. Branches are densely pubescent, medium sized, strong.

BUDS: Vegetative buds are medium sized. Flower buds are conical shaped, moderately developed with white pubescence.

LEAVES: Medium or small, flattened oval shape, dark green with silver corollaceous (very pubescent) lower side.

FLOWER: Flower is medium sized, white rosy colour with rounded petals.

Physiological traits

VIGOUR: Strong, especially during juvenile stage. Long lived on suitable soil.

FLOWERING: Late (first week of May).

FERTILIZATION: Diploid cultivar.

PRODUCTIVITY: High precocity. Tends to produce fruit in alternate years. Produces each year if grown on good soil. Thinning is necessary.

Fruit characteristics

FRUIT SIZE: Small, on average 60 mm wide, 52 mm long and weighs 70 to 95 g.

FRUIT SHAPE: Oblong. Fruit narrows toward calyx, lower half is wider than upper.

STALK AND STALK CAVITY: Stalk is short, moderately thick. Narrow, moderately deep, green cavity.

CALYX: Calyx is medium sized, slightly ribbed, open or semi closed with small sepals.

CALYX CAVITY: Small and short.

FRUIT SKIN: Thick, tough and slightly bloomed. Yellow to green becoming flushed with carmine red. Mottled colour on sunny side of fruit.

SEED BOX: Medium sized, closed or semi open with medium sized, brown seeds.

FRUIT FLESH: White, dense, fine, juicy, with sour sweet taste and delicate aroma. One of the most sophisticated local, domestic, winter apple varieties.

Resistance

PESTS AND DISEASES: Moderately resistant to common diseases and pests. High tolerance low temperatures, does not tolerate drought.
**Hajvanie**

**SYNONYMS:** Molla Lupckes.

**ORIGIN:** Indigenous. Old, domestic cultivar from Permeti (south eastern Albania).

**USE OF FRUITS:** Fruits ripen mid-October. Fruits bruise easily and need careful treatment when picked and transported. Used soon after picking and keeps for a short time.

- **Morphological traits**
  - **STEM:** Juvenile stem has upright growth and later becomes thicker.
  - **TREETOP:** Very wide, spreading crown.
  - **BRANCHES AND SLIVERS:** Primary branches are very strong with upright habit. One and two year shoots are grey with round lenticels.
  - **BUDS:** Vegetative buds are thin and long. Flower buds are short and wide.
  - **LEAVES:** Large, oval shape, and light green.
  - **FLOWER:** Flower is large and white.

- **Physiological traits**
  - **VIGOUR:** Intermediate vigour to vigorous.
  - **FLOWERING:** Intermediate to late.
  - **FERTILIZATION:** Diploid cultivar.
  - **PRODUCTIVITY:** Produces regular and good crops each year.

- **Fruit characteristics**
  - **FRUIT SIZE:** Medium sized, on average 60 to 70 mm wide, 70 to 80 mm long and weighs 120 to 150 g.
  - **FRUIT SHAPE:** Oblong conical, usually asymmetric with ribbing most obvious near calyx.
  - **STALK AND STALK CAVITY:** Stalk cavity is narrow to medium wide. Moderately thick, short to medium long stalk.
  - **CALYX:** Calyx is medium large.
  - **CALYX CAVITY:** Deep.
  - **FRUIT SKIN:** Greenish covered with dark red colour.
  - **SEED BOX:** Oval, unevenly developed and open.
  - **FRUIT FLESH:** White, juicy, moderately firm, balanced taste, sweet to sour, with mild but excellent aroma.

- **Resistance**
  - **PESTS AND DISEASES:** Sensitive to Wooly Apple Aphid, *Eriosoma lanigerum*, particularly in wet weather.
**Havajnika**

**SYNONYMS:** Unknown.

**ORIGIN:** Local variety from Montenegro. Individual trees throughout Polimlje area and mainly around Berane town.

**USE OF FRUITS:** Fruits ripen in September. Fruits keep for three months before becoming mealy.

- **Morphological traits**
  - **TREE:** Trunk is very strong. Branches are horizontal, bending towards ground under weight of crop.
  - **LEAVES:** Elliptic shape with dark green colour. Leaf petiole is short and medium length, green and reddish at base.
  - **FLOWER:** White, medium large. Pistil stalks are much longer than stamens.

- **Physiological traits**
  - **VIGOUR:** Medium vigorous.
  - **LENGTH OF LIFE:** Long lived.
  - **FLOWERING:** Early.
  - **PRODUCTIVITY:** Heavy and regular crops.

- **Fruit characteristics**
  - **SIZE AND SHAPE:** Small, round to flattened shape. On average 47.7 mm long, 61.7 mm wide and weighs 76 g. Ribbing around stalk.
  - **STALK AND STALK CAVITY:** Medium length, medium thick stalk. Medium deep, funnel cavity.
  - **CALYX:** Calyx is medium sized, semi open.
  - **CALYX CAVITY:** Medium deep, rusty.
  - **FRUIT SKIN:** Yellow, no other colours.
  - **SEED BOX:** Bulb shape, located in centre of fruit.
  - **SEEDS:** Seeds are medium large egg shaped, chestnut colour.
  - **FRUIT FLESH:** Creamy yellow to cream coloured, juicy, sweet taste, medium quality.
  - **TRANSPORTABILITY:** Fruits are highly sensitive. Becomes mealy with storage.

- **Relationship to environmental factors**
  - **SOIL:** No specific soil requirements.
  - **CLIMATE:** Adapted to continental climate.

- **Resistance**
  - **PESTS AND DISEASES:** Very slight sensitivity to *Venturia inaequalis* Aderh.

- **Recommendation**
  Variety is of no particular interest, although can be cultivated for fresh consumption or processing.
**Montenegro**

**Ilinjača**

**SYNONYMS:** Unknown.

**ORIGIN:** Old local variety from Montenegro of unknown origin. Individual trees found around central Montenegro (Moraca Monastery).

**USE OF FRUITS:** Fruits ripen in late August and keep up to 2 months before becoming mealy. Late summer variety with attractive, tasty fruits. Suitable for fresh consumption.

- **Morphological traits**
  - **TREE:** Straight, upright branches later become horizontal or bent with weight of fruit.
  - **LEAVES:** Small to medium large, green, pubescent on reverse side, egg shaped. Leaf petiole is medium thick, short, reddish green.
  - **FLOWER:** Medium large with pinkish white, round petals. Pistil stalks much longer than stamens.

- **Physiological traits**
  - **VIGOUR:** Medium vigour.
  - **LENGTH OF LIFE:** Long lived.
  - **FLOWERING:** Very early and lasts for 19 days.
  - **PRODUCTIVITY:** Good, regular crops.

- **Fruit characteristics**
  - **SIZE AND SHAPE:** Medium large, flat-round shape, asymmetric with slight rib, on average 66.6 mm long, 80 mm wide and weighs 170 g.
  - **STALK AND STALK CAVITY:** Short, medium thick, green brown. Stalk cavity is deep, narrow, rusty.
  - **CALYX:** Medium size, closed.
  - **CALYX CAVITY:** Medium deep, wide and ribbed.
  - **FRUIT SKIN:** Thick, greenish yellow with slight pink flush on sunny side.
  - **SEED BOX:** Flattened and located in middle of fruit. One seed in each chamber.
  - **SEEDS:** Medium large to large, elongated-oval shape, chestnut brown with pointed tip.
  - **FRUIT FLESH:** Creamy white, sweet, firm, medium juicy, pleasant flavour.
  - **TRANSPORTABILITY:** Fruit transports well, but becomes mealy if kept too long.

- **Resistance**
  - **PESTS AND DISEASES:** Resistant to pests and diseases.
**SYNONYMS:** Ilinjka.

**ORIGIN:** Old, cultivar from Novi Grad and Prijedor (northern Republika Srpska).

**USE OF FRUITS:** Fruits ripen early August. Suitable for fresh consumption or processing into pies, compotes, juices.

### • Morphological traits

**STEM:** Stem has upright growth and later becomes thicker.

**TREETOP:** Flattened round crown with slightly bending branches.

**BRANCHES AND SLIVERS:** Primary branches are medium strong, long and covered with spreading lateral branches and slivers.

**BUDS:** Vegetative buds are small. Flower buds are larger.

**LEAVES:** Large, elongated and round shape.

**FLOWER:** Flower is large and has white to pink colour.

### • Physiological traits

**VIGOUR:** Intermediate vigour.

**FLOWERING:** Moderately early and relatively long.

**FERTILIZATION:** Probably diploid.

**PRODUCTIVITY:** Produces each year in optimal conditions.

### • Fruit characteristics

**FRUIT SIZE:** Small or medium sized on average 60 to 70 mm long, 40 to 50 mm wide and weighs 90 to 100 g.

**FRUIT SHAPE:** Asymmetrical, irregular round to flattened conical shape.

**STALK AND STALK CAVITY:** Stalk is very short, straight and thick. Stalk cavity is wide and very shallow.

**CALYX:** Calyx is shallow and wide, open, with small sepals.

**CALYX CAVITY:** Deep and narrow, regular triangle shape.

**SEED BOX:** Elongated and has shape of heart. It is placed closed to the calyx.

**FRUIT SKIN:** Very thick, light green becoming greenish yellow or yellow during ripening. Covered with very attractive red stripes.

**FRUIT FLESH:** Pale yellow, very soft, sweet and aromatic.

### • Resistance

**PESTS AND DISEASES:** Moderately resistant to pests and diseases.
Kalemčica

SYNONYMS: Unknown.

ORIGIN: Old, local variety from Montenegro. Unknown range, tree was found near Loznica.

USE OF FRUITS: Picked in September, fruits can be kept until spring. Fruits can be used for fresh consumption or processing, especially for cider brandy.

• Morphological traits
  TREE: Branches are erect. Crown has pyramidal shape. Very well developed trunk.
  LEAVES: Egg shaped, light green, pubescent sides. Leaf petiole is medium long.
  FLOWER: Pinkish white, large. Pistil stalks are slightly longer than stamens. Petals are elongated and wrinkled.

• Physiological traits
  VIGOUR: Vigorous.
  LENGTH OF LIFE: Long lived, the tree is about 40 years.
  FLOWERING: Early flowering variety.
  PRODUCTIVITY: Produces heavy crops every year.

• Fruit characteristics
  SIZE AND SHAPE: Small, weighs 76.3 g, 48.1 mm long and 69.7 mm wide, flattened conical shape.
  STALK AND STALK CAVITY: Short or medium length, thin, with a thickened tip. Moderately deep to deep and wide rusty cavity.
  CALYX: Open or semi open.
  CALYX CAVITY: Medium deep to shallow, regular with ribs, same colour as fruit.
  FRUIT SKIN: Initially yellowish, later becoming yellow. Very slight blush on sunny side.
  SEED BOX: Large and poorly visible in some fruits, flat shape, located in centre of fruit. Each chamber contains one to two developed seeds.
  SEEDS: Seeds are small, viable, egg shaped, chestnut colour.
  FRUIT FLESH: Flesh is cream coloured, semi juicy, extremely sweet, of medium quality.
  TRANSPORTABILITY: Fruits transport well. Fruits keep until March.

• Relationship to environmental factors
  SOIL: No available data (not examined).
  CLIMATE: No available data.

• Resistance
  PESTS AND DISEASES: Highly resistant to diseases but moderately sensitive to Apple Codling Moth (Carpocapsa pomonella L).
Karapash

SYNONYMS: Unknown.

ORIGIN: Old domestic cultivar from Korca area (south eastern Albania).

USE OF FRUITS: Fruits ripen late October until early November and can be used immediately. Fruits are very firm when picked. Handles and transport well. Good quality autumn variety, table apple.

• Morphological traits

STEM: Juvenile stem has upright growth and later becomes thicker.

TREETOP: Round crown. Branches have wide crotchets.

BRANCHES AND SLIVERS: Branches are strong, long and covered with evenly spaced lateral branches and slivers. Shoots are grey.

BUDS: Vegetative buds are large. Flower buds are short and wide.

LEAVES: Medium, with oval shape.

FLOWER: Medium sized with white to rosy colour.

• Physiological traits

VIGOUR: Moderate vigour.

FLOWERING: Blossoms semi-late (late April until early May).

FERTILIZATION: Diploid cultivar. Flowers produce viable pollen, suitable for pollinating other cultivars.

PRODUCTIVITY: Produces crops each year in good climatic conditions and soil.

• Fruit characteristics

FRUIT SIZE: Medium large, on average 60 to 70 mm wide, 60 to 70 mm long and weighs 110 to 150 g.

FRUIT SHAPE: Round to flat rounded, usually asymmetric, moderately distinctive ribs. Fruits range in size from medium small to medium large.

STALK AND STALK CAVITY: Stalk is short or medium, thick, brown. Deep cavity.

CALYX: Calyx is medium sized.

CALYX CAVITY: Wide and short.

FRUIT SKIN: Skin is smooth and firm. Yellow to green with orange to red stripes. Surface is covered with netlike pattern of rust.

SEED BOX: Oval, unevenly developed.

FRUIT FLESH: White tinged with green, juicy, moderately firm, sweet and tart with delicate flavor.

• Resistance

PESTS AND DISEASES: Fruits are sensitive to Apple Scab Disease, Venturia inaequalis Cooke (Wint.).
Karapasha

SYNONYMS: Karapasha crvena, Karapasha sarena, Prespanka, Prespanka crvena.

ORIGIN: Macedonia. Old, domestic cultivar of Prespa region (South western Macedonia).

• Morphological traits
Vigorous tree with upright to spreading habit.
Bearing shoots are long and moderately thick.
Vegetative buds are medium large and greatly developed.
Flower buds are large with conical shape.
Leaves are large, dark green, with elongated oval shape.
Flower is large and has white to rosy colour.

• Physiological traits
Flowering is moderately late. Ripens mid-September and keeps until January to February. Diploid cultivar, good for pollinating Jonathan, Rome Beauty, Boskop etc. Heavily productive variety without alternate bearing.

• Fruit characteristics
Fruit is medium large to large. Average weight is 160 g. Fruit is flat round, usually symmetric, but occasionally asymmetric.
Stalk is short (1 cm), medium thick and pubescent. Cavity is moderately deep.
Calyx is medium large, semi open to closed. Calyx cavity is small, moderately deep and moderately wide.
Fruit skin is smooth and waxy and green to yellow, with additional red colouration and characteristic dark red stripes.
Seed box is large and well developed.
Fruit flesh is yellowish, soft, sweet and not acidic with a poor aroma.
Very poor eating quality.

• Resistance
This variety is very sensitive to Apple Scab (Venturia inaequalis). Although fruits are very attractive, this cultivar is not recommended for commercial growing.
**SYNONYMS**: This cultivar is not similar to another cultivar of the same name (Cardinal).

**ORIGIN**: Gunjavci (near Nova Gradiška, eastern Croatia).

**USE OF FRUITS**: Fruits ripen mid-October and can be used immediately. Excellent taste and suitable for fresh consumption. Very good for compote, jam, juice, cider, brandy and drying. Transports and keeps well.

- **Morphological traits**
  - **STEM**: Juvenile stem has upright growth and later becomes thicker.
  - **TREETOP**: Flattened round crown.
  - **BRANCHES AND SLIVERS**: Primary branches are very strong, long and covered with spreading lateral branches and slivers. Branches are very smooth. One and two year shoots are medium brown with pronounced, round lenticels.
  - **BUDS**: Vegetative buds are large. Flower buds are short and wide.
  - **LEAVES**: Large and egg shaped.
  - **FLOWER**: Large and has dark pink colour during budburst. Petals are overlapping. Pistil and stamens equal length.

- **Physiological traits**
  - **VIGOUR**: Vigorous.
  - **FLOWERING**: Medium early and moderately long.
  - **FERTILIZATION**: Easily pollinated by cultivar Gloria Mundi, Zelenika, Alvanija and Bobovec.
  - **PRODUCTIVITY**: Very good. Tends to bear in alternate years.

- **Fruit characteristics**
  - **FRUIT SIZE**: Large, on average 80 to 90 mm wide, 60 to 70 mm tall and weighs 200 to 250 g.
  - **FRUIT SHAPE**: Oblong.
  - **STALK AND STALK CAVITY**: Stalk is short or medium long, thick and lignified. Stalk cavity is medium deep and medium wide.
  - **CALYX**: Calyx is medium sized, semi opened and medium deep. Sepals are small short, sharp, greenish with dried brown tip.
  - **CALYX CAVITY**: Medium wide and medium deep.
  - **FRUIT SKIN**: Moderately rough and moderately tough. Light yellow covered with red colour and dark red stripes. Lenticels are small, white and moderately distributed.
  - **SEED BOX**: Flattened, located in centre of fruit.
  - **FRUIT FLESH**: Moderately firm, mealy, yellowish white, moderately juicy with sour sweet taste.
Kojce

SYNONYMS: Unknown.

ORIGIN: Macedonia, Resen and Ohrid (South western Macedonia).

- Morphological traits
  Tree has intermediate vigour. Branches have a spreading habit.
  Shoots are long and dark brown.
  Leaves are small, oval shaped and green.
  Flower is medium large and white.

- Physiological traits
  Moderately vigorous variety. Ripens in early October.
  Usually used for home processing.

- Fruit characteristics
  Fruit is medium sized and oblong in shape.
  Stalk is medium long and moderately thin. Stalk cavity is deep and narrow.
  Calyx is moderately wide and closed. Calyx cavity is moderately wide and moderately deep.
  Fruit skin is greenish with small lenticels and covered with red stripes.
  Fruit flesh is white, sweet and juicy. Texture of the flesh is intermediate and eating quality is very poor.
**Kolacara**

**SYNONYMS:** Pogacara, Bozicna, Tanjiraca, Koturaca, Pogacunka, Pogacnik, Kanjizak, Nocaljka, Haslinger, Roter Pogatscher.

**ORIGIN:** Unknown.

- **Morphological traits**
  Vigorous tree. Branches with spreading habit. Shoots are medium long and brownish red.
  Leaf buds are small and short. Flower buds are large and densely pubescent.
  Leaves are large with elongated oval shape.
  Flowers are large and light pink to white.

- **Physiological traits**
  Flowering is moderately early. Ripens in mid-October and can be eaten in November.
  Triploid cultivar. Variety has emphasised alternate bearing.
  Good productivity on fertile soil.

- **Fruit characteristics**
  Fruit is large with flat shape. Green colour with washed out, dark red colouration on the sunny side of fruit.
  Stalk is short and thin. Stalk cavity is deep, wide and sometimes rusty.
  Calyx is large, semi-open to closed. Calyx cavity is small, moderately deep and sometimes russeted.
  Fruit skin is thin, strong and shiny with dark red stripes covering fruit from stalk to calyx. Seed box is closed, medium large and located in the centre of fruit.
  Fruit flesh is firm and white with a green tinge. Usually juicy with a sour taste and poor aroma. Texture of flesh is coarse. This variety has poor to intermediate eating quality.
  Because of sour taste this variety is usually used for home processing (juices and cakes).
Križara

SYNONYMS: Štoljanka.
ORIGIN: Gunjavci (near Nova Gradiška, eastern Croatia).
USE OF FRUITS: Fruits ripen mid-October. Good for drying, juices, cider, brandy compote and jam. Not suitable for fresh consumption. Transports well and keeps very well.

• Morphological traits
STEM: Juvenile stem has upright growth and later becomes thicker.
TREETOP: Flattened round crown.
BRANCHES AND SLIVERS: Primary branches are upright and covered with spreading lateral branches and slivers. Branches are smooth. One and two year shoots are light brown with pronounced, round lenticels.
BUDS: Vegetative buds are large. Flower buds are short and wide.
LEAVES: Medium large and elongated egg shaped.
FLOWER: Large and pink. Petals are free or partially free. Pistil is taller than stamens.

• Physiological traits
VIGOUR: Moderately vigorous.
FLOWERING: Moderately early and medium long.
FERTILIZATION: Easily pollinated by cultivars Alvanija, Zelenika and Kardinal.
PRODUCTIVITY: Medium to large bearing. Tends to bear in alternate years.

• Fruit characteristics
FRUIT SIZE: Medium to small, on average 40 to 60 mm wide, 50 to 70 mm tall and weighs 100 to 130 g.
FRUIT SHAPE: Oblong.
STALK AND STALK CAVITY: Stalk is medium long, thick and lignified. Stalk cavity is medium deep and medium wide.
CALYX: Calyx is medium sized, closed and medium deep. Medium large, short, flat, greenish sepals.
CALYX CAVITY: Medium wide and medium deep.
FRUIT SKIN: Rough, moderately thick and tough. Yellow to orange covered with red colour and dark red stripes. Lenticels are small, round, white and moderately distributed.
SEED BOX: Flattened heart shaped located in centre of fruit.
FRUIT FLESH: Firm and yellowish, sweet taste and intense smell.

• Resistance
PESTS AND DISEASES: Resistant to pests and diseases.
Krompiruša

SYNONYMS: Krompirača, Čupa.

ORIGIN: Old, cultivar recorded and collected in Prnjavor village, Potočani (northern Republika Srpska).

USE OF FRUITS: Fruits ripen late September. Suitable for fresh consumption and processing. Keeps well, even in traditional conditions.

• Morphological traits

STEM: Stem has upright growth and later becomes thicker.
TREETOP: Flattened pyramidal crown with strongly bending branches.
BRANCHES AND SLIVERS: Primary branches are very strong, long and covered with spreading lateral branches and slivers. Branches are smooth. One and two year shoots are grey. Short bearing branches.
BUDS: Vegetative buds are small.
LEAVES: Very large, elongated, elliptic egg shape.
FLOWER: Flower is large and white.

• Physiological traits

VIGOUR: Strong vigour.
FLOWERING: Medium early.
PRODUCTIVITY: Produces each year in good climatic conditions and suitable soil.

• Fruit characteristics

FRUIT SIZE: Large or very large, on average 75 to 85 mm long, 60 to 70 mm wide and weighs 170 to 230 g.
FRUIT SHAPE: Round, slightly asymmetrical.
STALK AND STALK CAVITY: Stalk is short, thick and slightly curved. Stalk cavity is narrow and deep.
Calyx: Calyx is deep and narrow with closed sepals.
Calyx Cavity: Deep, funnel shaped.
SEED BOX: Regular round shape, located in centre of fruit.
FRUIT SKIN: Firm, thick and rough. Large, sparse, white lenticels. Dark green becoming light green. Brownish coat which is more intense around the stalk.
FRUIT FLESH: White, firm and slightly sour.

• Resistance

PESTS AND DISEASES: Moderate resistance to pests and diseases.
SYNONYMS: Dapsicanka, Malevka.
ORIGIN: Unknown (probably central Balkan, formerly Yugoslavia).

- **Morphological traits**
  Variety has upright branching habit. Shoots are medium long, pubescent with small lenticels.
  Leaves are medium large, elongated and dark green.
  Flower is large and pink to white.

- **Physiological traits**
  Very vigorous and very productive variety. Ripens late September.
  The name of this variety relates to the time of ripening, 27 September (orthodox holiday Krstovden).

- **Fruit characteristics**
  Fruit is medium large. Average fruit weight is 170 g. Shape of fruit is flat to round, often asymmetric.
  Stalk is medium to short, thin and pubescent. Stalk cavity is deep with moderate width, a russetted end and irregular edges.
  Calyx is medium to small, closed or rarely semi open. Calyx cavity is deep with moderate width and uneven ribs.
  Seed box is medium large, closed and located in the centre of fruit.
  Fruit skin is thin and smooth, green to yellow colour with additional dark red colouration.
  Fruit flesh is white, sometimes with a green tinge, soft, sweet and very aromatic.
  This variety is very popular among local people because of its good taste.
  Used for fresh consumption and home processing.
**Krstovača**

**SYNONYMS:** Unknown.

**ORIGIN:** Old, local variety of Montenegro. Originated and distributed within Andrijevica plus a few trees in Berane.

**USE OF FRUITS:** Fruits ripen in October and keep until April. Good quality fruits can be used for processing or fresh consumption.

- **Morphological traits**
  - **TREE:** Round crown with branches that slope downward before growing upright. Twigs are brown and slightly pubescent.
  - **LEAVES:** Small to medium large, light green, pubescent reverse side, elliptic shape. Leaf petiole is medium thick, long, green.
  - **FLOWER:** Small to medium large, pink. Pistil stalks are shorter than stamens.

- **Physiological traits**
  - **VIGOUR:** Medium vigour to vigorous.
  - **LENGTH OF LIFE:** Long lived.
  - **FLOWERING:** Late season, lasts 15 days.
  - **PRODUCTIVITY:** Good crops, up to 300 kg per tree, occasionally more.

- **Fruit characteristics**
  - **SIZE AND SHAPE:** Medium large, round-conical shape, widest part closest to stem and gradually narrows towards the calyx, 68 mm long, 67 mm wide and weighs about 180 g.
  - **STALK AND STALK CAVITY:** Medium long, thin, green and slightly blushed on one side. Stalk cavity is shallow to moderately deep, narrow.
  - **CALYX:** Small, closed to slightly open.
  - **CALYX CAVITY:** Medium deep, medium narrow and often rusty.
  - **FRUIT SKIN:** Initially green and later yellowish green with a red covering and sparse, grey, slightly elevated lenticels that have a rusty middle.
  - **SEED BOX:** Bulb shape, located at top of fruit. One seed in each chamber. Some fruits have one side of seed box more developed.
  - **SUB CALYX CAVITY:** Narrow and deep.
  - **SEEDS:** Medium large, elongated round shape, chestnut brown colour.
  - **FRUIT FLESH:** White, slightly green around seed box, firm, sweet, juicy, pleasant taste.
  - **TRANSPORTABILITY:** Fruits transport well.

- **Resistance**
  - **PESTS AND DISEASES:** Resistant to pests and diseases.
**Krupnaja**

**SYNONYMS:** Unknown.

**ORIGIN:** Old, local variety from Montenegro. Found throughout Polimlje area.

**USE OF FRUITS:** Fruits ripen in early September keeps for 1.5 to 2 months. Fruits are good for table use or processing.

- **Morphological traits**
  - **TREE:** Trunk is well developed. Branches have narrow crotchets, later bending. Crown is a spreading pyramid.
  - **LEAVES:** Small to medium sized, green, elliptic. Leaf petiole is thin and medium to long.
  - **FLOWER:** Large, pale pink colour. Petals are round. Pistil stalks are longer than stamens.

- **Physiological traits**
  - **VIGOUR:** Very vigorous.
  - **LENGTH OF LIFE:** Long lived.
  - **FLOWERING:** Very early, lasts for 20 days.
  - **PRODUCTIVITY:** Heavy, regular crops.

- **Fruit characteristics**
  - **SIZE AND SHAPE:** Medium large to large, flat-round, usually irregular around the calyx and ribbed. On average 61.2 mm long, 74.0 mm wide, and weights about 180 g.
  - **STALK AND STALK CAVITY:** Short to medium length, medium thick stalk. Medium deep, funnel shaped stalk cavity with rusty colour.
  - **CALYX:** Large and open.
  - **CALYX CAVITY:** Medium deep, wide.
  - **FRUIT SKIN:** Greenish, later becoming straw yellow. Some fruit can have a small area of pink blush on sunny side.
  - **SEED BOX:** Medium sized, sometimes small, bulb shape, located at bottom of fruit.
  - **SEEDS:** Small, egg shaped, brown.
  - **FRUIT FLESH:** Creamy white, moderately firm, moderately juicy and tasty. Unfortunately flesh darkens quickly. Eating quality is moderate.

- **Relationship to environmental factors**
  - **CLIMATE:** Adapted to continental climate. Tolerant to winter and spring frosts, although early blossoming.

- **Resistance**
  - **PESTS AND DISEASES:** Moderately sensitive to *Venturia inaequalis* Aderh. Resistant to other diseases and pests.
**Kuqula**

SYNONYMS: Mollekuqa.

ORIGIN: Old domestic cultivar from Puka (northern Albania).

USE OF FRUITS: Fruits ripen early October and can be immediately used after picking. Keeps very well for a very long time in natural conditions.

• **Morphological traits**
  
  STEM: Stem has upright growth and later becomes thicker.
  
  TREETOP: Wide crown with weeping branches.
  
  BRANCHES AND SLIVERS: Branches are smooth and very strong. One and two year shoots are grey with round lenticels.
  
  BUDS: Vegetative buds are small. Flower buds are short and wide.
  
  LEAVES: Medium large, elliptic shape, light green, margins have fine, sharp serrations.
  
  FLOWER: Medium sized with white to rosy colour.

• **Physiological traits**
  
  VIGOUR: Vigorous, upright and spreading.
  
  FLOWERING: Intermediate to late (late April until early May).
  
  FERTILIZATION: Diploid cultivar.
  
  PRODUCTIVITY: Produces very heavy crops each year.

• **Fruit characteristics**
  
  FRUIT SIZE: Small and consistently sized, on average 50 to 60 mm wide, 60 to 65 mm long, and weighs 80 to 100 g. Skin is mainly smooth. Fruit is smaller on full grown trees.
  
  FRUIT SHAPE: Round and usually symmetric.
  
  STALK AND STALK CAVITY: Stalk is medium length and thick. Small stalk cavity.
  
  CALYX: Calyx is open.
  
  CALYX CAVITY: Shallow.
  
  FRUIT SKIN: Green becoming green to yellow when ripe, with carmine marble red covering three quarters of the surface.
  
  SEED BOX: Oval, evenly developed and open.
  
  FRUIT FLESH: Yellowish white, sour to sweet and aromatic aroma.

• **Resistance**
  
  PESTS AND DISEASES: Resistant to *Venturia inaequalis* Cooke (Wint.) and Codling Moth, *Cydia pomonella*.
**Lagatorka**

**SYNONYMS:** Unknown.

**ORIGIN:** Local variety of Montenegro. Unknown range. This tree was found near Petnjica village (Berane – Lagatore). It is very old with bare lower branches and located in a position with low natural light.

**USE OF FRUITS:** Fruits ripen in early October and keep until spring. Can be cultivated in the backyards and fruits are used for fresh consumption.

**• Morphological traits**

**TREE:** Trunk is tall. Branches grow a skew.

**LEAVES:** Egg shaped, green colour. Leaf petiole medium long to long, reddish.

**FLOWER:** Intensely pink, medium large. Pistil stalks are much longer than the stamens.

**• Physiological traits**

**VIGOUR:** Medium vigorous.

**LENGTH OF LIFE:** Long lived.

**FLOWERING:** Mid to late season.

**PRODUCTIVITY:** Good regular crops each year.

**• Fruit characteristics**

**SIZE AND SHAPE:** Medium large, conical, weighs 148.9 g, 60.1 mm long and 74.2 mm wide. Many uneven areas with asymmetric ribbing. The entire fruit is asymmetric.

**STALK AND STALK CAVITY:** Medium long, medium thick stalk. Deep and wide stalk cavity.

**CALYX:** Calyx is medium sized, closed.

**CALYX CAVITY:** Medium to deep with irregular ribs.

**FRUIT SKIN:** Green, becoming greenish yellow with storage. Covered by carmine red stripes over most of fruit surface.

**SEED BOX:** Flat shaped, located in middle of fruit, not very visible.

**SEEDS:** Seeds are medium large, elongated egg shaped, with very pronounced tip, chestnut coloured.

**FRUIT FLESH:** Green to cream colour, very juicy, sour but good taste. Medium quality.

**TRANSPORTABILITY:** Fruits transport moderately well.

**• Resistance**

**PESTS AND DISEASES:** Slight to moderate susceptibility to *Venturia inaequalis* Aderh.
Livadarka

SYNONYMS: Unknown.
ORIGIN: Macedonia, Resen (South western Macedonia).

• **Morphological traits**
  Tree has intermediate vigour with upright branching habit.
  Shoots are medium long and dark brown.
  Leaves are elongated and dark green. Flower is medium large and white with a pink tinge.

• **Physiological traits**
  Moderately vigorous variety. Ripens mid October.

• **Fruit characteristics**
  Fruit is small to medium with a flat to round shape.
  Stalk is medium long and thin. Stalk cavity is shallow.
  Calyx is semi open. Calyx cavity is shallow.
  Fruit skin is green with washed out, dark red colouration and characteristic rusty lenticells.
  Fruit flesh is white with a yellow tinge, dry and sour. Texture of the flesh is coarse while the eating quality is poor.
Ljutača

SYNONYMS: Kiselpača.

ORIGIN: Montenegrin local variety. Spread across all areas in Montenegro, there are varieties of trees called Ljutača or Kiselpača which differ among themselves upon the fruit size, degree of acidity and other characteristics. Here we show Ljutača from the Mojkovac area.

USE OF FRUITS: Fruits ripen in late October and keep until June in ordinary warehouses. Can be consumed fresh after storing for two months. Fruit can also be used for processing.

- Morphological traits
  TREE: Trunk is very wide and tall. Scaffold branches are almost horizontal. Younger branches bend toward the ground giving crown a weeping habit.
  LEAVES: Round shape, green colour. Leaf petiole is medium short and medium thick. Reverse side of the leaf is densely pubescent.
  FLOWER: Pinkish white inside and pink outside. Petals are slightly bent towards inside of flower. Pistil stalks are longer than the stamens.

- Physiological traits
  VIGOUR: Very vigorous.
  LENGTH OF LIFE: Long-lived.
  FLOWERING: Mid-season.
  PRODUCTIVITY: Good and regular crops.

- Fruit characteristics
  SIZE AND SHAPE: Fruit is small to medium large, lat shaped. Fruit weighs 110.7 g, 50.7 mm long and 69.3 mm wide.
  STALK AND STALK CAVITY: Medium length and thickness. Deep funneled cavity with rusty colour.
  CALYX: Calyx is of medium sized, semi-open.
  CALYX CAVITY: Medium to shallow depth, ribbed, regular.
  FRUIT SKIN: Thick, oily, green, obtains yellowish shade with storage. Additional colour of pale blush on sunny side of fruit but only on very few fruits. Rusty colour on side of fruit toward stalk cavity.
  SEED BOX: Round shape, located in the middle of the fruit. Often not clearly visible, or is clearly visible on only one side.
  SEEDS: Seeds are medium large, oval shaped, chestnut colour, viable.
  FRUIT FLESH: Flesh is creamy green, juicy, firm with sweet sour taste. Fresh cut fruits turn brown.
  TRANSPORTABILITY: Fruits transport and handle well.

- Resistance
  PESTS AND DISEASES: Slightly sensitive to Venturia inaequalis Aderh.
**Lujanca**

**SYNONYMS:** Unknown.

**ORIGIN:** Republic of Moldova. Old, domestic cultivar of Dnestr river region.

**USE OF FRUITS:** Fruits ripen late September and can be used immediately for processing. Fruits keep at +10°C for 90 to 100 days. Recommended for processing and intermediate quality for fresh use.

**Morphological traits**

**STEM:** Juvenile stem has upright growth, medium vigour, later becoming thicker and stable.

**TREETOP:** Wide, dense and strongly weeping crown with thin branches.

**BRANCHES AND SLIVERS:** Primary branches are strong, long and covered with evenly spaced, hanging, lateral branches and slivers. Branches are densely pubescent, brown and medium sized with wide crotchets. One and two year shoots are dark brown with many small, grey lenticels.

**BUDS:** Vegetative buds are small. Flower buds are conical and moderately developed.

**LEAVES:** Medium or small, wide oval, dark green. Leaf blade is moderately serrate.

**FLOWER:** Medium sized with white to rosy rounded petals.

**Physiological traits**

**VIGOUR:** Strong, especially during juvenile stage. Long lived.

**FLOWERING:** Mid-season.

**FERTILIZATION:** Diploid cultivar. Recommended for pollinating Calville de niege, Titovka, Tsiganka and Golubok moldavskii.

**PRODUCTIVITY:** Tends to produce in alternate years. Produces good crops each year on suitable soil and with irrigation. Thinning is necessary.

**Fruit characteristics**

**FRUIT SIZE:** Medium or small, on average 62 mm wide, 74 mm long and weighs from 75 to 90 g.

**FRUIT SHAPE:** Flat round. Widest around centre of fruit.

**STALK AND STALK CAVITY:** Short (20 mm long) and thick stalk.

**CALYX:** Medium sized, semi open with small brown sepals.

**CALYX CAVITY:** Medium sized, deep, slightly ribbed.

**FRUIT SKIN:** Thick, smooth with intense bloom. Green later developing purple to red stripes covering 90% of fruit. Light yellow lenticels cover surface.

**SEED BOX:** Sometimes asymmetric, wide, medium sized, semi open with 8 to 10 seeds.

**FRUIT FLESH:** White with rose spots, firm, juicy, with intermediate taste.

**Resistance**

**PESTS AND DISEASES:** Resistant to common diseases and pests. Tolerates low temperatures.
Majdofija

SYNONYMS: Mušarcika.

ORIGIN: Štefanovec (near Zagreb, North-west Croatia).

USE OF FRUITS: Fruits ripen beginning of November and can be used immediately. Very good for fresh consumption, juice, cider and brandy. Excellent for compote and jam. Transports and keeps very well.

• Morphological traits
  STEM: Juvenile stem has upright growth and later becomes moderately thick.
  TREETOP: Flattened crown.
  BRANCHES AND SLIVERS: Primary branches are very strong, long and covered with evenly spaced, spreading lateral branches and slivers. Branches are smooth. One and two year shoots are brown with pronounced, round lenticels.
  BUDS: Vegetative buds are large. Flower buds are short and wide.
  LEAVES: Medium large and egg shaped.

• Physiological traits
  VIGOUR: Moderately vigorous.
  FLOWERING: Moderately early.
  FERTILIZATION: Easily pollinated by cultivars Srčika and Kraljevina.
  PRODUCTIVITY: Good crops, tends to produce in alternate years.

• Fruit characteristics
  FRUIT SIZE: Small, on average 60 to 75 mm wide, 45 to 55 mm tall and weighs 100 to 150 g.
  FRUIT SHAPE: Flat-round.
  STALK AND STALK CAVITY: Stalk is very short to medium long, medium thick and lignified. Stalk cavity is shallow and wide.
  CALYX: Calyx is shallow, medium large and closed. Large, long, sharp, bent and dried brown sepals.
  CALYX CAVITY: Shallow and wide.
  FRUIT SKIN: Skin is thick and smooth. Green to yellow and covered with red. Lenticels are small, white or brown and sparse.
  SEED BOX: Flat shaped and in centre of fruit.
  FRUIT FLESH: Moderately firm with white yellowish colour, moderately juicy with sweet taste and weak aroma.

• Resistance
  PESTS AND DISEASES: Resistant to pests and diseases.
Mislimka

SYNONYMS: Mislimka kisela.

ORIGIN: Macedonia. Old, domestic cultivar of Resen (South western Macedonia).

• **Morphological traits**
  Tree has intermediate vigour with upright branching habit. Shoots are medium long and thin. Bearing branches are very short. Leaves are medium large, dark green, with elongated oval shape and a very long petiole. Flower is medium large and white.

• **Physiological traits**
  Flowering is moderately early. Diploid cultivar, with very fertile pollen. Early precocity and good productivity. On suitable soil this cultivar is bearing each year.

• **Fruit characteristics**
  Fruit size is very small. Average weight is 60 to 70 g. Shape of fruit is round to conical. Stalk cavity is deep and asymmetric. Stalk is short. Calyx is closed and medium large. Fruit skin is smooth, strong, shiny and green coloured with dark red stripes. Seed box is elongated, evenly developed. Fruit flesh is white to green with intermediate texture, coarse and very sour. Eating quality is very poor. Ripens late October. Variety has very good shelf life.

• **Resistance**
  Moderately tolerant of common diseases and pests. Due to poor quality fruit this variety can only be recommended for breeding programs.
Mohorita

SYNONYMS: Unknown.

ORIGIN: Republic of Moldova. Old, local, domestic cultivar. Cultivated in all economic regions of the Republic of Moldova.

USE OF FRUITS: Fruits ripen mid-September and can be used immediately for fresh consumption or processing (especially gem). Fruits keep at +10 C for 100 to 130 days.

• Morphological traits

STEM: Juvenile stem has upright growth, medium vigour, later becoming thicker and stable.

TREETOP: Wide pyramidal crown, very thick, with thin branches.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with evenly spaced hanging lateral branches and slivers. Branches are densely pubescent, brown, medium sized. One and two shoots are dark brown with many large, grey lenticels.

BUDS: Vegetative buds are small. Flower buds are conical and moderately developed.

LEAVES: Medium or small, wide oval shape, shiny, green. Leaf blade is moderately serrate with a pubescent lower side.

FLOWER: Flower is medium sized with white to rosy, rounded petals.

• Physiological traits

VIGOUR: Strong, especially during juvenile stage.

FLOWERING: Mid to late.

FERTILIZATION: Diploid cultivar, good for pollinating Golden Delicious, Banana de Iarn, Idared, Red Delicious and Renet Simirenko.

PRODUCTIVITY: Tends to produce alternate years. Produces good crops each year on suitable soil and with irrigation.

• Fruit characteristics

FRUIT SIZE: Medium to large.

FRUIT SHAPE: Flat round. Widest around centre of fruit.

STALK AND STALK CAVITY: Stalk is medium, thick towards base. Medium sized, grey cavity with large rust spots.

CALYX: Medium sized, semi open or close, with small, green, pubescent sepals.

CALYX CAVITY: Medium, flat, slightly ribbed.

FRUIT SKIN: Thick, mat, firm, intense bloom. Green becoming yellow to green, during ripening, with dark red stripes on 70 to 90% of fruit and mottled colour. Large, light yellow lenticels cover surface.

SEED BOX: Wide, medium sized, semi open with 7 to 9 large seeds.

FRUIT FLESH: White, intermediate consistency, juicy, slowly browning after cutting, sour sweet and slight aroma, with intermediate taste.

• Resistance

PESTS AND DISEASES: Moderately resistant to common diseases and pests.
Molla Priftit

SYNONYMS: Unknown.

ORIGIN: Originating from around Permet (southern Albania).

USE OF FRUITS: Fruits ripen mid-October and can be used immediately. Good quality for fresh consumption. Fruits keep for a long time and rarely rot.

- **Morphological traits**
  - STEM: Stem has upright growth and later becomes thicker.
  - TREETOP: Branches have excellent wide crotches, with vertical shoots.
  - BRANCHES AND SLIVERS: Branches are very strong and shoots are grey.
  - BUDS: Vegetative buds are small. Flower buds are short and large.
  - LEAVES: Large, oval shape, dark green and margins have fine, double serrations.
  - FLOWER: Large with white to rosy colour.

- **Physiological traits**
  - VIGOUR: Very strong, especially during juvenile stage.
  - FLOWERING: Medium late (late April until early May).
  - FERTILIZATION: Diploid cultivar.
  - PRODUCTIVITY: Produces each year in good conditions. Tendency to produce in alternate years.

- **Fruit characteristics**
  - FRUIT SIZE: Large, on average 70 to 80 mm wide, 60 to 80 mm long and weighs 130 to 160 g.
  - FRUIT SHAPE: Round and usually asymmetric. Narrow towards calyx, causing lower half to be wider than upper half. Ribs are most obvious towards calyx.
  - STALK AND STALK CAVITY: Stalk is short or medium long, sometimes very thin. Deep cavity. Fruits fall easily when windy.
  - CALYX: Calyx is medium deep and medium wide.
  - CALYX CAVITY: Wide and short.
  - FRUIT SKIN: Greenish yellow to orange skin with red stripes. Skin is thin and tender.
  - SEED BOX: Oval, unevenly developed.
  - FRUIT FLESH: White tinged with green. Very juicy, crisp, firm, sweetly sour, slightly tart flavor and fragrant.

- **Resistance**
  - PESTS AND DISEASES: Moderately sensitive to Apple Scab Disease, *Venturia inaequalis* Cooke (Wint.), and to *Monilia* sp. on the fruit.
Molla Rajces

**SYNONYMS:** Unknown.

**ORIGIN:** Originated from the area of Librazhd (Rajca village, eastern Albania).

**USE OF FRUITS:** Fruits ripen early November and can be used immediately. Very good to excellent quality for eating or cooking and keeps for up to 20 weeks.

**• Morphological traits**

**STEM:** Juvenile stem has upright growth and later becomes thicker.

**TREETOP:** Very wide, spreading crown.

**BRANCHES AND SLIVERS:** Branches are smooth. One and two year shoots are grey.

**BUDS:** Vegetative buds are large. Flower buds are short and wide.

**LEAVES:** Large, oval shaped and light green with serrated margins.

**FLOWER:** Large with white to rosy.

**• Physiological traits**

**VIGOUR:** Spreading habit with intermediate vigour.

**FLOWERING:** Full flowering season is medium-late.

**FERTILIZATION:** Diploid cultivar.

**PRODUCTIVITY:** Produces heavy crops each year.

**• Fruit characteristic**

**FRUIT SIZE:** Medium large, on average 70 to 80 mm wide, 60 to 70 mm long and weighs 110 to 140 g.

**FRUIT SHAPE:** Rounded to moderately oblong, sometimes flattened round. Ribs are most obvious towards calyx.

**STALK AND STALK CAVITY:** Stalk is short or medium long. Stalk cavity is medium deep.

**CALYX:** Calyx is small and closed.

**CALYX CAVITY:** Medium.

**FRUIT SKIN:** Greenish becoming yellow with reddish covering over more than 50% of surface. Moderately thick, smooth, firm and slightly greasy.

**FRUIT FLESH:** White to creamy, juicy, moderately firm, textured, slightly acidic but pleasant taste.

**• Resistance**

**PESTS AND DISEASES:** Sensitive to Apple Scab Disease, *Venturia inaequalis* Cooke (Wint.), and to *Monilia* sp. on fruit.
Molla Tharme

SYNONYMS: Molla Tharte.

ORIGIN: Originated from the Librazhd area (eastern Albania).

USE OF FRUITS: Fruits ripen early November and can be used immediately. An apple for fresh consumption. High acid content resists oxidation processes and darkening of flesh. Very good for processing, juice, mush, compote, pies and apple concentrate with ultra filtration.

- Morphological traits
  STEM: Juvenile stem has upright growth and later becomes thicker.
  TREETOP: Broad flattened crown.
  BRANCHES AND SLIVERS: Strong branching habit with wide crotches. Branches are smooth. One and two year shoots are grey with pronounced, round lenticels.
  BUDS: Vegetative buds are large. Flower buds are short and wide.
  LEAVES: Large, oval shaped, green dark.
  FLOWER: Large with white rosy colour.

- Physiological traits
  VIGOUR: Vigorous.
  FLOWERING: Blossoms semi-late (late April until early May).
  FERTILIZATION: Diploid cultivar.
  PRODUCTIVITY: Usually produces regular and good crops each year.

- Fruit characteristics
  FRUIT SIZE: Medium large, on average 60 to 70 mm wide, 70 to 80 mm and weighs 110 to 150 g.
  FRUIT SHAPE: Oblong. Narrow toward calyx causing lower half is wider than upper half. Ribs are most obvious near calyx.
  STALK AND STALK CAVITY: Stalk is short. Fruits are not crowded having an equal distribution over crown.
  CALYX: Calyx is medium sized.
  CALYX CAVITY: Wide and short.
  FRUIT SKIN: Skin is thin and tender. Yellow with red blush.
  SEED BOX: Oval, unevenly developed and closed.
  FRUIT FLESH: White, moderate to coarse texture, sweet sour with pleasurabre aroma.

- Resistance
  PESTS AND DISEASES: Sensitive to Monilia sp. on the fruit. Sensitive to Wooly Apple Aphid, Eriosoma lanigerum (Hausmann) during the wet years.
Muškatnica

SYNONYMS: Unknown.

ORIGIN: Gunjavci (near Nova Gradiška, eastern Croatia).

USE OF FRUITS: Fruits ripen mid-October and can be used immediately. Good for jam, compote, juice, cider and brandy. Less suitable for fresh consumption. Transports and keeps well.

- Morphological traits
  STEM: Juvenile stem has upright growth and later becomes thicker.
  TREETOP: Round pyramidal crown.
  BRANCHES AND SLIVERS: Primary branches upright, long and covered with evenly spaced drooping lateral branches. One and two year shoots are dark brown with pronounced, round lenticels.
  BUDS: Vegetative buds are large. Flower buds are short and wide.
  LEAVES: Small and elongated.
  FLOWER: Flower is small to medium and light pink. Petals are free. Pistil taller than stamens.

- Physiological traits
  VIGOUR: Moderately vigorous.
  FLOWERING: Moderately early.
  FERTILIZATION: Easily pollinated by cultivars Kardinal, Božičnica, Mašanka.
  PRODUCTIVITY: Medium large crops, tends to produce in alternate years.

- Fruit characteristics
  FRUIT SIZE: Small, on average 55 to 70 mm wide, 40 to 60 mm tall and weighs 70 to 110 g.
  FRUIT SHAPE: Fruit is round.
  STALK AND STALK CAVITY: Stalk is very short, thick and greenish. Stalk cavity is medium deep and narrow.
  CALYX: Calyx is small, deep and closed. Small, short, sharp, bent and brown sepals.
  CALYX CAVITY: Deep and narrow.
  FRUIT SKIN: Moderately thick and rough. Yellowish to greenish covered with orange to red colour.
  SEED BOX: Bulb shape, located in centre of fruit.
  FRUIT FLESH: Moderately firm, yellowish to white, moderately juicy and sweet.

- Resistance
  PESTS AND DISEASES: Resistant to pests and diseases.
**Nestret**

**SYNONYMS:** Unknown.

**ORIGIN:** Republic of Moldova. Old, domestic cultivar (registered for propagation in Republic of Moldova) from the Central apple growing region of the Republic of Moldova.

**USE OF FRUITS:** Fruits ripen mid-September. Handles and transports well. Keeps at +10 C for 100 to 130 days.

**Morphological traits**

**STEM:** Juvenile stem has intense upright growth, strong vigour.

**TREETOP:** Upright, but widely spreading crown with wide crotches and frequent branching.

**BRANCHES AND SLIVERS:** Primary branches are strong, long and covered with evenly spaced hanging, lateral branches and slivers. Branches are densely pubescent and medium sized. One and two year shoots are dark brown with prominent lenticels.

**BUDS:** Vegetative buds are small. Flower buds are conical and greatly developed.

**LEAVES:** Medium to large, long with wide oval shape, dark green and weakly rose, corollaceous upper side. Leaf blade is strongly serrate.

**FLOWER:** Flower is medium sized, white rosy colour and long rounded petals.

**Physiological traits**

**VIGOUR:** Strong, especially during juvenile stage. Long lived.

**FLOWERING:** Mid to late.

**FERTILIZATION:** Diploid cultivar, good for pollinating Golden Delicious, Banana de Iarna, Idared, Red Delicious, Renet Simirenko, Domnesti and Jonathan.

**PRODUCTIVITY:** Produces extremely heavy crops in sheltered positions and on suitable soil with irrigation.

**Fruit characteristics**

**FRUIT SIZE:** Medium large, on average 73 to 82 mm wide, 70 to 75 mm long and weighs from 80 to 115 g.

**FRUIT SHAPE:** Flat round, slightly conical.

**STALK AND STALK CAVITY:** Short, moderately thick stalk. Small, light brown cavity.

**CALYX:** Calyx is medium sized, closed or semi closed with small brown sepals.

**CALYX CAVITY:** Small, narrow and short.

**FRUIT SKIN:** Thick and shiny, firm, bloomed. Green becoming yellow, covered with dark red stripes and blush over 75% or more of the surface. Yellow lenticels cover surface of fruit.

**SEED BOX:** Very well defined, large, semi open with 8 to 9 seeds.

**FRUIT FLESH:** White, fine, juicy, with sour sweet taste and weak aroma. Good for processing, intermediate quality as dessert apple.

**Resistance**

**PESTS AND DISEASES:** Moderate resistance to common diseases and pests. High tolerance to low temperatures.
Pamuklija

SYNONYMS: Unknown.

ORIGIN: Old, local variety from Montenegro. Mainly occurring in the Bijelo Polje area.

USE OF FRUITS: Fruit picked in September, and keeps until February. Fruits can be used for fresh consumption or processing, especially in cider or brandy.

• Morphological traits
  TREE: Branches have wide crotchets. Wide crown.
  LEAVES: Elongated, large, green with slightly pubescent reverse side. Leaf petiole is long, thin and green.
  FLOWER: Pinkish white, medium large. Pistil stalks are slightly longer than the stamens.

• Physiological traits
  VIGOUR: Weak to intermediate vigour.
  LENGTH OF LIFE: Long lived.
  FLOWERING: Intermediate flowering variety.
  PRODUCTIVITY: Produces moderate crops.

• Fruit characteristics
  SIZE AND SHAPE: Medium large, weighs 152.3 g, 67.2 mm long and 71.3 mm wide. Conical shape.
  STALK AND STALK CAVITY: Stalk has medium length, medium thickness. Moderately deep to deep, rusty cavity.
  CALYX: Calyx is half open to closed.
  CALYX CAVITY: Medium deep to shallow, regular, same colour as fruit.
  FRUIT SKIN: Initially green with blush on sunny side of fruit.
  SEEDS BOX: Medium sized, bulb shape, located at top of fruit. Each chamber contains one or two developed seeds.
  SEEDS: Seeds are large, elongated oval shape, sound, chestnut colour.
  FRUIT FLESH: Cream coloured, moderately juicy, sweet taste, fine texture, medium quality.
  TRANSPORTABILITY: Fruits transport moderately well and keep until February.

• Relationship to environmental factors
  SOIL: No specific soil requirements.
  CLIMATE: Not examined, adapted to continental climatic conditions.

• Resistance
  PESTS AND DISEASES: Good resistance to pests and diseases.
Pariska palma

SYNONYMS: Unknown.

ORIGIN: Macedonia, Resen (South western Macedonia).

• Morphological traits
Branches have spreading habit. Shoots are long and brown.
Leaves are small, oval shaped and green.
Flower is medium large and white with a pink tinge.

• Physiological traits
Very vigorous variety. Low productivity. Ripens in early October.

• Fruit characteristics
Fruit is medium large to large. Fruit has round shape.
Stalk is short and moderately thin. Stalk cavity is closed, deep and russetted.
Calyx is medium wide and closed. Calyx cavity is moderately wide and moderately deep.
Fruit skin is yellow green with mottled pink colouration.
Fruit flesh is white, sweet and juicy. Texture of the flesh is fine and eating quality is good.
Usually used for fresh consumption.
**Parmen auriu**

**SYNONYMS:** Winter Pearmain, Zolotoiparmen, Parmain D’Or, Winter Gold Parmane.

**ORIGIN:** England. Found in old orchards from almost all apple growing areas in Romania.

**USE OF FRUITS:** Best suited for fresh consumption but can also be used for processing.

- **Morphological traits**
  - **STEM:** Upright stem has thin bark which sheds lengthways.
  - **TREETOP:** Crown is a spreading pyramid to round shape.
  - **BRANCHES AND SLIVERS:** Straight branches. One-year-old shoots have slight glossy skin of reddish brown colour, slight pubescence, short internodes and few lenticels.
  - **BUDS:** Leaf and wood buds are small to medium with pointed tips. Flower buds are medium in size.
  - **LEAVES:** Medium sized, oval shape, dark green and weakly pubescent on lower side. Leaf margin is serrate and has acuminate tip. Petiole is medium, straight, of reddish green colour at base, with narrow stipules.
  - **FLOWER:** Flower is medium with rosy petals.

- **Physiological traits**
  - **VIGOUR:** Medium vigour with spreading habit.
  - **FLOWERING:** Late and gradual.
  - **FERTILIZATION:** Good for cross pollinating other cultivars.
  - **PRODUCTIVITY:** Heavy and regular crops.

- **Fruit characteristics**
  - **FRUIT SIZE:** Medium to large in size. Fruit weigh varies from 83 to 180 g.
  - **FRUIT SHAPE:** Round to conical, relatively regular, without ribbing and sometimes slightly asymmetric.
  - **STALK AND STALK CAVITY:** Medium long, thin and slightly curved stalk, of brown yellowish colour. Stalk cavity is medium depth, wide, regular, conical, with medium russetting of yellowish green or olive colour.
  - **CALYX:** Long sepals, arched, bent inwards, with the top rolled out.
  - **CALYX CAVITY:** Large, shallow, usually in the shape of a heart, yellowish colour and pubescent around calyx.
  - **FRUIT SKIN:** Yellowish, elastic, thin, hard with light dull rust in irregular mycelium shape. Fruit occasionally has greenish yellow warts.
  - **SEED BOX:** Large, wide, open or semi-open. Thin, smooth narrow walls with glossy yellowish colour.
  - **FRUIT FLESH:** Yellowish, firstly seems dense, then juicy, crisp, smooth, sweet and sour, with very nice taste and aroma.

- **Resistance**
  - **PESTS AND DISEASES:** Susceptible to Powdery Mildew, *Podosphaera leucotricha* (Ellis & Everh.) E.S. Salmon, Apple Scab Disease, *Venturia inaequalis* Cooke (Wint.), Coding Moth, *Cydia pomonella* L., and Brown Rot, *Monilinia* sp.
**Pasinka**

**SYNONYMS:** Pasanka, Pasenka, Pasalma.

**ORIGIN:** Middle East, probably introduced to the Balkan region during Ottoman empire.

- **Morphological traits**
  Tree is vigorous to extremely vigorous. Branches have spreading habit. Shoots are very long, upright and light brown.
  Leaves are small, oval shaped and have intense green colour.
  Flower is medium large and white with a pink tinge.

- **Physiological traits**
  Flowering is moderately early. Diploid cultivar, with very fertile pollen.
  Early precocity and good productivity. Variety tends to have alternate bearing.
  Ripens in mid-October.

- **Fruit characteristics**
  Fruit is small to medium large. Average weight is 120 g. Fruit has round shape.
  Stalk is thin, medium long, greenish and russetted. Stalk cavity is moderately wide and very deep.
  Calyx is very small and closed. Calyx cavity is moderately wide, moderately deep and usually uneven.
  Fruit skin is firm, yellow green with light red over colour on the sunny side of fruit.
  Seed box is medium large and unevenly developed. Seed chambers are closed or semi open and smooth.
  Fruit flesh is white, juicy and sweet with low acidity and good aroma.
  Texture of the flesh is intermediate and eating quality is poor to intermediate. Usually used for home processing.

- **Resistance**
  Variety is very sensitive to diseases and has moderate tolerant to pests.
Pašinka

SYNONYMS: Pašanka, Pašenka.

ORIGIN: Introduced in sixteenth century by Hajdarpasha, who promised to introduce an apple, better than any we had. He named it by saying: 'As I am pasha over you this apple will be pasha over the apples'. Most abundantly found in the area of Polimlje, especially in Bihor and around Bijelo Polje.

USE OF FRUITS: Fruits ripen in the mid October. If carefully picked, fruits keep well until May. Used for fresh consumption and for processing.

- Morphological traits

TRUNK: Strong, up-right and resistant trunk. Young bark is greenish grey, later light grey.

CROWN: The crown is a high pyramid. Juvenile branches grow very upright later bending down.

BUDS: Buds are medium and large with pubescence. Flower buds are slightly larger and round to conical.

LEAVES: Leaves are small, oblong, pointed at tip and intense green in colour. Petiole is medium in length, thin and reddish at base.

FLOWER: Flower is medium to large and white with a pink hue.

- Physiological traits

VIGOUR: Vigorous to very vigorous and long lived to one hundred years or more.

FLOWERING: Moderately early, lasting 15 to 18 days.

PRODUCTIVITY: Starts producing early. Abundant crops tend to bear in alternative years.

- Fruit characteristics

SIZE AND SHAPE: Small and medium to large, in average 55 mm long and 64 mm wide, weighs about 120 g.

SHAPE: Fruit shape is round, may vary from rounded oblong to obtusely conical, often asymmetric.

STALK AND STALK CAVITY: Small and medium to long, greenish and partially rusty coloured. Cavity is a very deep funnel with medium width and sometimes exhibits rusty spots.

CALYX: Very small and conined with very small sepals that are brown in colour.

CALYX CAVITY: Deep and moderately wide, irregularly and usually ribbed.

FRUIT SKIN: Thick epidermis yellow to greenish, later straw yellow, with blush covering the sunny side and the surface is sprinkled with whitish dots.

SEED BOX: Medium sized, irregular bulb shape, located toward the calyx. Seed chamber is smooth and usually closed or very slightly open.

SEEDS: Medium large, egg shaped or slightly elongated, sharply pointed and dark brown in colour.

FRUIT FLESH: White, very juicy, firm and crisp, mostly sweet taste, slightly sour and quite fragrant.

- Resistance

PESTS AND DISEASES: Prone to attack by Scab (Venturia inaequalis Aderh.), not attacked by pests.
Patul

SYNONYMS: Patul galben, Batullen, Pomme Batul, Pomme de Transylvanie, Batullenapfel, Batul-alma, Narancsalma, Uvegalma.

ORIGIN: Old cultivar spread in Central and Eastern Europe. In Romania can be found in the Sub Carpathian area of Carpathian Mountains, and mainly found extensively in Transylvania.

USE OF FRUITS: Fruit can be eaten from late November till April. The quality of fruit is very good and, because of this, can be eaten fresh or even used for processing.

• Morphological traits

STEM: Upright stem has thin bark of greenish grey colour which sheds on older trees.

TREETOP: The crown is dense, spreading and round in shape.

BRANCHES AND SLIVERS: Ramified branches of medium size. One-year-old shoots have reddish brown colour with pubescence that create grey appearance. One-year-old shoots have long internodes and large, round, whitish grey lenticels.

BUDS: Leaf and wood buds are small, conical and with pointed tips. Flower buds are ovate conical and medium in size.

LEAVES: Small, oval in shape, dark green with medium pubescence on lower side. Leaf margins are serrate or biserrate and have short acuminate tips. The petiole is medium in size, straight, of light green colour at base, with narrow stipules.

FLOWER: Flower is medium with small, rose petals.

• Physiological traits

VIGOUR: The tree has medium to large vigour and divergent habit.

FLOWERING: Blooming is mid season and gradual.

PRODUCTIVITY: Heavy and regular crops on old trees.

• Fruit characteristics

FRUIT SIZE: Medium sized and weighs between 85 to 140 g.

FRUIT SHAPE: Round to oblong, symmetric, without ribbing.

STALK AND STALK CAVITY: Short to very short stalk, thin and greenish brown. Stalk cavity is small, regular, conical and deep, with weak, greenish russeting.

CALYX: Closed, medium size sepals, arched, bent outwards.

CALYX CAVITY: Medium, regular in size, with no russeting on skin.

FRUIT SKIN: Thin, elastic and semi-glossy with slight adherence to flesh.

SEED BOX: Small, open and round to bulb shaped.

FRUIT FLESH: White to yellowish with greenish tinge, dense, juicy, crisp, and smooth, with sweet and sour, very nice and refreshing taste.

• Resistance

PESTS AND DISEASES: Moderately susceptible to Powdery Mildew, Podosphaera leucotricha (Ellis & Everh.) E.S. Salmon, and Apple Scab Disease, Venturia inaequalis Cooke (Wint.) in wetter years.
Pazarka

**SYNONYMS:** Unknown.

**ORIGIN:** Montenegrin domestic variety. Widespread distribution, mainly in old plantations from Polimlje.

**USE OF FRUITS:** Fruits ripen and picked in late October. Keep until June. Good quality especially for processing or fresh consumption.

- **Morphological traits**
  
  **TREE:** Open crown with pyramid habit. Old branches have a slightly darker colour, twigs are grey brown.
  
  **LEAVES:** Medium sized, elliptic, dark green, slightly pubescent on back. Leaf petiole is medium thick, long.
  
  **FLOWER:** Medium large, white with a hint of pink. Pistil stalks are longer than stamens.

- **Physiological traits**
  
  **VIGOUR:** Medium.
  
  **LENGTH OF LIFE:** Long lived.
  
  **FLOWERING:** Late and lasts 15 days.
  
  **PRODUCTIVITY:** Productive but usually in alternate years.

- **Fruit characteristics**
  
  **SIZE:** Medium large and large, averaging 65 mm long, 75 mm wide and weighing 250 g.
  
  **SHAPE:** Oblong or oblong conical, often asymmetrical, flat and smooth. Widest in the middle, where it gradually narrows towards calyx and more abruptly towards stalk.
  
  **STALK AND STALK CAVITY:** Short or medium length, medium thick with thickened base, green, rusty and pubescent. Cavity is deep and moderately wide, usually rusty.
  
  **CALYX:** Mid-sized, closed, semi long sepals.
  
  **CALYX CAVITY:** Medium deep and ribbed.
  
  **FRUIT SKIN:** Green and gold, however with storage wax colour develops, especially on the sunny side. Some fruits may have more blush on the sunny side. Smooth and shiny with occasional rusty spots which are lined with pale yellow.
  
  **SEED BOX:** Shape of elongated bulb with short and open chambers containing one to two well-developed and healthy seeds. Sub-calyx cavity reaches 10 mm inside the seed box.
  
  **SEEDS:** Medium large to large, elliptic with pointed tip, viable, brown to deep brown colour.
  
  **FRUIT FLESH:** White, quickly oxidizes in air, firm, juicy, light sour taste and pleasantly fragrant.
  
  **TRANSPORTABILITY:** Not very sensitive to transport.

- **Resistance**
  
  **PESTS AND DISEASES:** Quite resistant to pests and diseases. In only wet years suffers a little from Sooty Mold Disease (*Venturia inaequalis* Aderh.).
Petrovača

SYNONYMS: Unknown.
ORIGIN: Old, local variety from Montenegro. Widespread in apple growing regions but only present as individual trees.
USE OF FRUITS: Fruits ripen in mid-July, around St Peter's day on 12 July according to the orthodox calendar. Fruits are only used for fresh consumption.

• Morphological traits
TREE: Branches have wide crotches and create a round crown.
LEAVES: Elliptic, medium large, light green. Leaf petiole is medium thick, medium long to long and green with reddish base.
FLOWER: Medium large, pinkish white. Pistil stalks are distinctly longer than the stamens. Flower is symmetrical.

• Physiological traits
VIGOUR: Medium vigorous to vigorous variety.
LENGTH OF LIFE: Long lived.
FLOWERING: Early and lasts for 18 days.
PRODUCTIVITY: Produces good crops regularly each year.

• Fruit characteristics
SIZE AND SHAPE: Small, round conical, 39 mm long, 42 mm wide and weighs about 35 g.
STALK AND STALK CAVITY: Medium length or long, thin and bent to the side. Stalk cavity is narrow and deep, partially rusty.
CALYX: Small, semi-open.
CALYX CAVITY: Ribbed, small.
FRUIT SKIN: Thin and smooth, whitish yellow and later becomes straw yellow.
SEED BOX: Small with sleek and sealed chamber.
SEEDS: Elongated oval shape, light chestnut colour.
FRUIT FLESH: White, juicy, mostly brittle and sweet with pleasant aroma.
TRANSPORTABILITY: Fruits are sensitive to transport.

• Relationship to environmental factors
SOIL: Not specific soil requirements.
CLIMATE: Adapted to continental climate.

• Resistance
PESTS AND DISEASES: Highly resistant to diseases, suffer from Codling Moth (Carpocapsa pomonella L) in some years.

• Recommendation
Early ripening requires attention. Trees should be cultivated individually.
Petrovača

SYNONYMS: Unknown.

ORIGIN: Serbia. Old, domestic cultivar widely grown in gardens.

USE OF FRUITS: Dessert apple, first to ripen.

• Morphological traits

STEM: Trunk bark is smooth and light coloured.

TREETOP: Round crown.

BRANCHES AND SLIVERS: Dormant one-year-old shoots are thin with intermediate internode length. Spreading to weeping branching habit.

BUDS: Leaf and flower buds are small.

LEAVES: Small, ovate, tip acuminate, pale colour, base obtuse, margins serrate.

FLOWER: Tend to be small, with pale pink petals once fully open.

• Physiological traits

VIGOUR: Adult trees have intermediate vigour.

FLOWERING: Early flowering.

FERTILIZATION: Diploid cultivar. Flowers produce viable pollen, suitable for pollinating other cultivars that bloom during the same period.

PRODUCTIVITY: Produces heavy crops each year. Fruit is evenly distributed throughout the canopy.

• Fruit characteristics

FRUIT SIZE: Small, on average 44 mm long, 48 mm wide and weighs 47.5 g.

FRUIT SHAPE: Fruit shape is oblong.

STALK AND STALK CAVITY: Stem cavity is narrow and deep, slightly russeted. Stalk is medium sized.

CALYX: Sepals are small. Calyx tube tends to be open.

CALYX CAVITY: Small, shallow and uneven in shape.

FRUIT SKIN: Thin, smooth and tender. Yellow when ripe.

SEED BOX: Elliptic shape.

FRUIT FLESH: Crisp, white, soft, melting and sweet acidic.

• Resistance

**Petrovka**

SYNONYMS: Crvena Petrovka, Crvena Petrovača, Petrovnača.

ORIGIN: Old, domestic cultivar recorded and collected from Banja Luka village, Bistrica (Northern Republika Srpska).

USE OF FRUITS: Fruits ripen very early, late June to early July. Cultivar named in celebration of Petrovdan, on 12th July. Used fresh and for processing into pies, compotes and jams. Does not keep well losing its characteristics over time.

- **Morphological traits**
  - STEM: Stem has upright growth and later becomes thicker.
  - TREETOP: Narrow, pyramidal shape.
  - BRANCHES AND SLIVERS: Primary branches are strong, long and covered with lateral branches and slivers. One and two year shoots are grey to brown. Short bearing branches.
  - BUDS: Vegetative buds are small. Flower buds are larger and wide.
  - LEAVES: Small or medium sized and irregular shape.
  - FLOWER: Small or medium and white.

- **Physiological traits**
  - VIGOUR: Strong vigour.
  - FLOWERING: Moderately early and relatively short.
  - FERTILIZATION: Probably diploid cultivar.
  - PRODUCTIVITY: Highly productive each year in good climatic conditions and suitable soil.

- **Fruit characteristics**
  - FRUIT SIZE: Very small or small, on average 55 to 65 mm long, 35 to 45 mm wide and weighs 50 to 80 g.
  - FRUIT SHAPE: Flattened round shape and asymmetrical.
  - STALK AND STALK CAVITY: Stalk is long, straight and moderately thick. Stalk cavity is semi wide and shallow.
  - CALYX: Calyx wide and shallow, closed. Sepals are small and grey.
  - CALYX CAVITY: Extremely shallow, and narrow.
  - SEED BOX: Regular elliptic shape located in centre of fruit.
  - FRUIT SKIN: Smooth, thick and shiny. Ground colour is dark green becoming yellowish green or yellow during ripening. Diffuse and striped red covering colour.
  - FRUIT FLESH: White, sweet and moderately juicy. Over time becomes mealy.

- **Resistance**
  - PESTS AND DISEASES: Sensitive to Codling Moth, *Cydia pomonella*. 
**Prijedorska Zelenika**

**SYNONYMS:** Zelenika, Grmečka Šipunja, Šipinja.

**ORIGIN:** Old, cultivar from Prijedor area (northern Republika Srpska).

**USE OF FRUITS:** Fruits ripen by second half of October. Fruits tend to drop before picking. Can be consumed fresh but improves over time. Keeps well. Suitable for processing into juices and brandy.

- **Morphological traits**
  - **STEM:** Stem has upright growth and later becomes thicker.
  - **TREETOP:** Spreading flat crown with bending branches.
  - **BRANCHES AND SLIVERS:** Primary branches are very strong, long and covered with spreading lateral branches and slivers. Branches are smooth.
  - **BUDS:** Vegetative buds are small. Flower buds are larger and wide.
  - **LEAVES:** Medium or medium large sized, elongated elliptic shape.
  - **FLOWER:** Medium sized and white.

- **Physiological traits**
  - **VIGOUR:** Extremely strong vigour.
  - **FLOWERING:** Mid-season and relatively long.
  - **PRODUCTIVITY:** Produces each year in good climatic conditions and suitable soil.

- **Fruit characteristics**
  - **FRUIT SIZE:** Medium large or large, on average 70 to 75 mm long, 60 to 70 mm wide and weighs 130 to 160 g.
  - **FRUIT SHAPE:** Flat conical shape, asymmetric with ribs around calyx.
  - **STALK AND STALK CAVITY:** Stalk is medium long, thick and curved. Stalk cavity is narrow and deep.
  - **CALYX:** Calyx is wide and shallow, opened. Sepals are small and grey.
  - **CALYX CAVITY:** Extremely deep, round shape.
  - **SEED BOX:** Flat elliptic shape, located towards stalk.
  - **FRUIT SKIN:** Thick, green and smooth. Dark green becoming light green or greenish yellow when ripe. Large, brown, sparse and unevenly dispersed lenticels. Brownish coating is present around stalk cavity.
  - **FRUIT FLESH:** White, firm and sour. Slight aroma that increases with storage.

- **Resistance**
  - **PESTS AND DISEASES:** Relatively sensitive to Apple Scab Disease, *Venturia inaequalis* Cooke (Wint.).
**Montenegro**

**Princeza Ksenija**

**SYNONYMS:** Unknown.

**ORIGIN:** Believed to be introduced to Cetinje by Princess Ksenija (1881-1960, daughter of King Nikola I Petrovic), a gift she received and brought to Cetinje. In mid April 1971, Petar Rudic from Ravna Rijeka brought scions and grafted it at the farm of his father. The Rudic farm has 6 trees of this variety, and another 15 or so trees planted in Bijelo Polje and 20 elsewhere in Montenegro.

**USE OF FRUITS:** Fruits ripen in early September and keep for one month.

- **Morphological traits**
  - **TREE:** Crown has wide and loose habit.
  - **LEAVES:** Oblong to round shape, medium large, green, with back slightly pubescent. Leaf petiole is medium thick, medium length, greenish red coloured.
  - **FLOWER:** Large, pinkish white colour with elongated, wrinkled petals. Pistil stalks are shorter than stamens.

- **Physiological traits**
  - **VIGOUR:** Medium vigour.
  - **LENGTH OF LIFE:** Long-lived.
  - **FLOWERING:** Medium early.
  - **PRODUCTIVITY:** Tends to bear crops in alternate years.

- **Fruit characteristics**
  - **SIZE AND SHAPE:** Medium large, flat shape, ribbed, some fruits are asymmetric. Average fruit is 62.6 mm long, 78.9 mm wide and weighs approximately 156.6 g.
  - **STALK AND STALK CAVITY:** Medium length or long, thin. Stalk cavity medium deep asymmetric, rusty at base.
  - **CALYX:** Medium sized, semi-open.
  - **CALYX CAVITY:** Shallow to moderately deep, wrinkled, same colour as fruit.
  - **FRUIT SKIN:** Thin and firm, coloured yellow with additional striped flush of red covering about 60% of the fruit.
  - **SEED BOX:** Medium sized, flattened and located in the middle of fruit.
  - **SEEDS:** Seeds are small, kidney shaped, light chestnut colour.
  - **FRUIT FLESH:** Colour of flesh is greenish cream, has pronounced veins with sweet sour taste. Fruits are of medium quality and become mealy following storage.
  - **TRANSPORTABILITY:** Fruits handle well.

- **Resistance**
  - **PESTS AND DISEASES:** Good resistance to pests and diseases.

- **Recommendation**
  - Good as table variety with attractive fruit. Suitable for cultivation in backyards.
Prutača

SYNONYMS: Unknown.

ORIGIN: Montenegrin old local variety. Occurs in the area of Bijelo Polje.

USE OF FRUITS: Fruits ripen in mid-October and keep until the end of March.

• **Morphological traits**
  
  TREE: Strong developed trunk. Branches grow upright or at a sharp angle making a pyramid crown shape.

  LEAVES: Round shape, small to medium sized, dark green colour. Leaf petiole has medium length, thin and reddish green colour.

  FLOWER: Large, white pinkish colour, regular. Petals are round. Pistil stalks are longer than stamens.

• **Physiological traits**

  VIGOUR: Vigorous to very vigorous.

  LENGTH OF LIFE: Long-lived.

  FLOWERING: Early blooming and flowering lasts for 20 days.

  PRODUCTIVITY: Good, rather generous crops each year.

• **Fruit characteristics**

  SIZE AND SHAPE: Medium large, flat shaped, average 56.2 mm long, 74.5 mm wide and weighs approximately 142.7 g.

  STALK AND STALK CAVITY: Medium length and thickness. Stalk cavity narrow and medium deep with rusty cover around recess.

  CALYX: Closed or semi-open.

  CALYX CAVITY: Medium deep, wide, slightly ribbed, same colour as fruit.

  FRUIT SKIN: Initially yellowish green, later becoming yellow. Additional colour of slightly pink blush covers about 30% of the fruit.

  SEED BOX: Medium size, flat shape, located in the middle of the fruit. Each chamber has one or two well-developed seeds.

  SEEDS: Small to medium large, egg shaped, chestnut brown.

  FRUIT FLESH: Creamy yellowish colour, firm, and sweet, medium juicy, tasty. Good quality.

  TRANSPORTABILITY: Transports well.

• **Relationship to environmental factors**

  CLIMATE: Adapted to continental climate. Tolerant to spring frosts.

• **Resistance**

  PESTS AND DISEASES: Resistant to pests and diseases.
Punika

SYNONYMS: Unknown.
ORIGIN: Gunjavci (near Nova Gradiška, eastern Croatia).
USE OF FRUITS: Fruits ripen mid-October and can be used immediately. Good for fresh consumption, juice, cider and brandy. Less suitable for compote, jam and drying. Transports and keeps well.

- Morphological traits
STEM: Juvenile stem has upright growth and later becomes moderately thick.
TREETOP: Spreading crown.
BRANCHES AND SLIVERS: Primary branches are long and covered with evenly spaced spreading lateral branches and slivers. Branches are considerably smooth. One and two year shoots are light brown with pronounced, round lenticels.
BUDS: Vegetative buds are large. Flower buds are short and wide.
FLOWER: Flower is medium large and pink. Petals are free or partially free. Pistil equal or taller than stamens.

- Physiological traits
VIGOUR: Moderately vigorous.
FLOWERING: Moderately early.
FERTILIZATION: Easily pollinated by cultivars Slatka srčika, Božićnica and Kronprinz Rudolf.
PRODUCTIVITY: Very good crops, tends to produce in alternate years.

- Fruit characteristics
FRUIT SIZE: Medium large, on average 55 to 65 mm wide, 60 to 70 mm tall and weighs 85 to 115 g.
FRUIT SHAPE: Oblong to conical.
STALK AND STALK CAVITY: Stalk is medium long, moderately thick and lignified. Stalk cavity is deep, and medium wide.
CALYX: Calyx is deep, medium size and closed with large, long, sharp, greenish sepals with dried tips.
CALYX CAVITY: Deep and narrow.
FRUIT SKIN: Smooth and thick. Yellowish to greenish covered with orange colour. Lenticels are small, round, white, moderately distributed.
SEED BOX: Heart shape, located in centre of fruit.
FRUIT FLESH: Soft, white to greenish, juicy with sour to sweet taste, without particular aroma.

- Resistance
PESTS AND DISEASES: Resistant to pests and diseases.
Rasovka

SYNONYMS: Unknown.

ORIGIN: Montenegrin local variety. Spread throughout Polimlje area, but mainly around Brodarevo and Bijelo Polje.

USE OF THE FRUITS: Fruits ripen in September and can be kept until the end of March in ordinary warehouses. Fruit is excellent for processing.

• Morphological traits
  TREE: Trunk is very wide and tall. Branches have wide crotchets creating a spreading crown habit.
  LEAVES: Elliptic shape, dark green, small. Leaf petiole is medium long and thin. Petiole is reddish green on the upper leaf side, green on reverse with reddish base.
  FLOWER: Large, white to pink colour. Pistil stalks are slightly shorter than stamens.

• Physiological traits
  VIGOUR: Very vigorous.
  LENGTH OF LIFE: Long-lived (the tree in the picture is over 130 years).
  FLOWERING: Very early.
  PRODUCTIVITY: Heavy and regular crops.

• Fruit characteristics
  SIZE AND SHAPE: Fruit is medium large, rounded-conical shape, usually asymmetrical being a little higher on one side. Fruit weighs 121.5 g, 59.2 mm long and 69.4 mm wide.
  STALK AND STALK CAVITY: Short stalk. Deep and narrow cavity with rusty cover around recess.
  CALYX: Calyx is a medium sized, closed to semi-closed.
  CALYX CAVITY: Medium deep, ribbed with rusty cover around recess.
  FRUIT SKIN: Thin, greasy, yellowish green at first, later becoming pale yellow. Sunny side has a very slight flush with tiny freckles, and the fruit looks attractive.
  SEED BOX: Flat shape, located in the middle of the fruit, often not clearly defined.
  SEEDS: Seeds are medium large, elongated oval, pointed, dark chestnut colour and viable.
  FRUIT FLESH: Flesh is of a cream (yellowish white) colour, juicy, firm, sweet and sour but with a refreshing taste. Quickly oxidized in air.
  TRANSPORTABILITY: Fruits are sensitive to handling and do not transport well.

• Resistance
  PESTS AND DISEASES: Resistant to pests and diseases.

• Recommendation
  Useful variety given its productivity, resistance to pathogens, and plenty of delicious fruits. Suitable for the processing industry or table use.
Rebrača

SYNONYMS: Unknown.

ORIGIN: Domesticated variety, probably originating from Russia. A number of trees found in the Cetinje region.

USE OF FRUITS: Fruits ripen in September. Becomes mealy and does not keep longer than three months in ordinary warehouse conditions. Fruits are good quality and can be used for fresh consumption or processing.

• **Morphological traits**
  
  TREE: Wide crown. Trunk is strong and grows upright. Primary branches are nearly horizontal.
  
  LEAVES: Medium large to large, dark green, elliptic, with very pubescent reverse side. Leaf petiole is moderately thick, medium length to long, green, reddish at base.
  
  FLOWER: Large, white. Pistil stalks equal length to stamens.

• **Physiological traits**
  
  VIGOUR: Vigorous variety.
  
  LENGTH OF LIFE: Long lived.
  
  FLOWERING: Intermediate flowering variety.
  
  PRODUCTIVITY: Produces abundant crops each year.

• **Fruit characteristics**
  
  SIZE AND SHAPE: Medium large, round conical, with strong ribs, 62.5 mm long, 76.1 mm wide and weighs approximately 144.3 g.
  
  STALK AND STALK CAVITY: Long, medium thick stalk. Stalk cavity deep, narrow, irregular and ribbed.
  
  CALYX: Large, closed with long sepals.
  
  CALYX CAVITY: Deeply ribbed, same colour as fruit.
  
  FRUIT SKIN: Firm, greenish yellow, some fruits have gentle red flush on the sunny side. There are large lenticels across surface.
  
  SEED BOX: Medium sized, round shape, located in centre of fruit.
  
  SEEDS: Medium large, elongated oval shape, chestnut colour.
  
  FRUIT FLESH: White to cream coloured, moderately firm, juicy, sour and sour taste, good quality, flesh becomes mealy with storage.
  
  TRANSPORTABILITY: Fruits transport well.

• **Relationship to environmental factors**

  SOIL: No specific soil requirements.
  
  CLIMATE: Adapted to continental climate.

• **Resistance**

  PESTS AND DISEASES: Resistant to pests and diseases.
Ruski Car

SYNONYMS: Unknown.

ORIGIN: Domesticated variety, probably originating from Russia. A number of trees found in the Cetinje region.

USE OF FRUITS: Fruits ripen in October and keep until March.

• Morphological traits

TREE: Crown has loose, wide shape. Branches have wide crotchets and later bend towards the ground. Trunk is upright. If grafted on vigorous rootstock a thickening develops at graft.

LEAVES: Irregular oval, medium large, dark green to green, with very pubescent reverse side. Leaf petiole is medium thick, medium long, green.

FLOWER: Medium large, white. Petals elongated, pistil stalks are slightly shorter or equal to stamens.

• Physiological traits

VIGOUR: Medium vigorous variety.

LENGTH OF LIFE: Long lived.

FLOWERING: Medium flowering variety.

PRODUCTIVITY: Produces good crops regularly each year.

• Fruit characteristics

SIZE AND SHAPE: Medium large, round conical. Some fruits are asymmetric, average 56.6 mm long, 68.9 mm wide, and weighs approximately 120.6 g.

STALK AND STALK CAVITY: Medium length or long, thin stalk. Stalk cavity is deep, rusty and regular.

CALYX: Medium and closed.

CALYX CAVITY: Medium deep, ribbed, same colour as fruit.

FRUIT SKIN: Thick, yellow green colour, becomes yellow with storage, striped bright red blush covers 60% of the fruit.

SEED BOX: Bulb shape, located at top of fruit, medium sized.

SEEDS: Seeds are tiny, elongated oval shape, with pointed tip, light chestnut colour.

FRUIT FLESH: Greenish creamy colour, very juicy, firm, medium texture with a distinctive sour taste and quite high quality.

TRANSPORTABILITY: Fruits handle well and keep until March.

• Relationship to environmental factors

SOIL: No specific soil requirements.

CLIMATE: Adapted to continental climate.

• Resistance

PESTS AND DISEASES: Moderately sensitive to Venturia inaequalis Aderh..

• Recommendation

Variety is of interest for table use with sweet sour taste, good yield and can be grown as individual tree in the backyard.
**Safran de vara**

SYNONYMS: Safran Vâratic, Safran de Moldova, Safran Moldavski.

ORIGIN: Republic of Moldova. Old domestic cultivar (registered for propagation in Republic of Moldova) from Dnestr river region.

USE OF FRUITS: Fruits ripen mid-August and can be used immediately. Fruits handle well. Fruits keep at +10 C for 28 to 35 days. Recommended for fresh use or processing.

**Morphological traits**

STEM: Juvenile stem has upright growth, medium vigour and later becomes thicker.

TREETOP: Strongly weeping, wide, crown with stooped branches.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with evenly spaced, hanging, lateral branches and slivers. Branches are densely pubescent, medium sized with wide crotchets. One and two year shoots are greenish grey.

BUDS: Vegetative buds are small. Flower buds are conical and greatly developed.

LEAVES: Large, 100 mm long and 63 mm wide, with wide oval shape, dark green with weak rose, corollaceous upper side. Leaf blade is moderately serrate.

FLOWER: Flower is big and has white to rosy coloured, long rounded petals.

**Physiological traits**

VIGOUR: Strong, especially during juvenile stage. Long lived.

FLOWERING: Early to mid-season.

FERTILIZATION: Diploid cultivar. Recommended for large orchards to pollinate other cultivars such as August, James Grieve Red, Plat and Golubok dnestrovskii.

PRODUCTIVITY: Produces good crops each year in sheltered positions and suitable soil. Thinning is necessary.

**Fruit characteristics**

FRUIT SIZE: Medium large, on average 73 mm wide, 65 mm long and weighs from 85 to 110 g.

FRUIT SHAPE: Flat round, attractive. Fruit narrows toward calyx, lower half is wider than upper half.

STALK AND STALK CAVITY: Stalk is short and thick. Deep and green cavity.

CALYX: Calyx is medium sized, closed with small sepals.

CALYX CAVITY: Small and short.

FRUIT SKIN: Thick with intense bloom. Yellow green skin becomes striped with carmine red. Mottled colour on sunny side of fruit.

SEED BOX: Very well defined, medium sized, semi open with seven to nine seeds.

FRUIT FLESH: White, fine, juicy, with sour sweet taste and strong aroma. One of the tastiest domestic summer apple varieties.

**Resistance**

PESTS AND DISEASES: Resistant to common diseases and pests. Tolerates drought and low temperatures.
**Sarbad cl. 1**

**SYNONYMS:** Unknown.

**ORIGIN:** Southern Romania. The Sub Carpathian area of Carpathian Mountains.

**USE OF FRUITS:** Fruit ripens in late September. Fruits can be eaten fresh from the tree. The cultivar is recommended for small orchards and gardens.

**Morphological traits**

**STEM:** The stem is straight and has medium thick, shedding bark.

**TREETOP:** Round with weeping branches.

**BRANCHES AND SLIVERS:** Straight, slightly pubescent. One-year-shoots have moderate covering of lenticels, short internodes and reddish brown colour.

**BUDS:** Leaf and wood buds are small with a pointed tip. Flower buds are medium sized.

**LEAVES:** Medium to large sized, oval shaped, green with weakly pubescent lower side. Second half of leaf edge is crenate. Medium length petiole with small stipules.

**FLOWER:** Medium sized and have white to rose coloured petals.

**Physiological traits**

**VIGOUR:** Medium vigour, with spreading habit.

**FLOWERING:** Mid to late season.

**PRODUCTIVITY:** Crops are regular and consistent.

**Fruit characteristics**

**FRUIT SIZE:** Fruit is medium to large in size. Fruit weighs between 78 to 105 g.

**FRUIT SHAPE:** Fruit shape is flat-round.

**STALK AND STALK CAVITY:** Fruit stalk is very long. Stalk cavity is deep and wide with medium amount of russet stripes.

**CALYX:** Calyx is small and semi-open.

**CALYX CAVITY:** Calyx cavity medium width and medium to shallow depth.

**FRUIT SKIN:** Yellowish green, covered with rose to orange flush and red stripes. The skin is thin, smooth and glossy.

**SEED BOX:** Medium in size, oval to conical in shape, semi-open with shiny walls.

**FRUIT FLESH:** White to yellowish, sweet distinct taste slightly sour.

**Resistance**

**PESTS AND DISEASES:** Susceptible to Apple Scab, *Venturia inaequalis* Cooke (Wint.), and to *Monilinia* sp. on fruits.
Sarbad cl. 2

SYNONYMS: Unknown.

ORIGIN: Domestic cultivar spread into small orchards from apple growing basins located in the Sub Carpathian area of Southern Carpathian Mountains.

USE OF FRUITS: Fruit ripens in late September and can be eaten fresh or used for processing until February.

• Morphological traits
  STEM: Bark is grey, has superficial cracks and is medium thick.
  TREETOP: The crown is a spreading pyramidal to round shape.
  BRANCHES AND SLIVERS: Main branches are well developed and thick at the base. The one-year-old shoots have reddish-brown colour, slight pubescence, a few lenticels and short internodes.
  BUDS: Leaf and wood buds are small and with pointed tip. The flower buds are medium in size.
  LEAVES: Medium size, oval shape, with crenate or serrate margins and acuminate tip. The leaves have long and glabrous petioles.
  FLOWER: Medium sized and has white to rose coloured petals.

• Physiological traits
  VIGOUR: Medium to high vigour.
  FLOWERING: Semi-late and gradual.
  PRODUCTIVITY: Crops are good and regular.

• Fruit characteristics
  FRUIT SIZE: Medium to small and weighs between 72 to 93 g.
  FRUIT SHAPE: Oblong.
  STALK AND STALK CAVITY: Long stalk. Stalk cavity is deep and wide with medium russetting in stripes.
  CALYX: Semi-open and small.
  CALYX CAVITY: Calyx cavity is narrow to medium width and medium in depth
  FRUIT SKIN: Fruit skin is yellowish with a light red flush and thick red stripes covering a majority of the surface. Skin is glossy and smooth.
  SEED BOX: Medium, oval to conical in shape, semi-open with smooth walls.
  FRUIT FLESH: White to yellowish, with slightly acid and characteristic flat taste.

• Resistance
  PESTS AND DISEASES: Moderately susceptible to Apple Scab, Venturia inaequalis, and Monilinia.
Šarena petrovača

SYNONYMS: Petrovka, Petrovača.

ORIGIN: Montenegrin domestic variety, spread through all parts of the country, but only in courtyards of lovers of early fruits.

USE OF FRUITS: Earliest summer apple variety, fruits ripen in July and should be consumed fresh.

• Morphological traits
TREE: Crown has round pyramid habit. Branches grow askew and bend with weight of fruit.
LEAVES: Elliptic, dark green.
FLOWER: Purple to white, medium to large. Petals are slightly elongated. Pistil stalks are longer than the stamens.

• Physiological traits
VIGOUR: Medium vigour to vigorous
LENGTH OF LIFE: Long-lived.
FLOWERING: Early flowering, first apple variety to blossom.
PRODUCTIVITY: Begins fruit production early in the third or fourth year after planting, bearing regular and large crops.

• Fruit characteristics
SIZE AND SHAPE: Fruit is small, oblong, 50 to 80 g, asymmetrical with strong ribs around calyx and stalk cavity.
STALK AND STALK CAVITY: Stalk short or medium length and medium thick. Shallow funnel cavity.
CALYX: Small semi-closed or closed.
CALYX CAVITY: Medium deep.
FRUIT SKIN: Thin, green and shiny. Skin colour is green covered with clumps of with red sun blush.
SEED BOX: Bulb shape, located in the middle of the fruit.
SEEDS: Seeds are medium to large, egg shaped with a very pointed tip.
FRUIT FLESH: Flesh is whitish, crisp with a semi juicy, sweet taste and distinctive aroma.
TRANSPORTABILITY: Fruits transport and keep poorly, and should be used immediately.

• Relationship to environmental factors
SOIL: No specific soil requirements.
CLIMATE: Adapted to various climatic conditions. Tolerates late and early frosts.

• Resistance
PESTS AND DISEASES: Susceptible to Scab (Venturia inaequalis Aderh.) and Codling Moth (Carpocapsa pomonella L.).
Šarenika

SYNONYMS: Šarenka.

ORIGIN: Old cultivar recorded and collected from Laktaši (Banja Luka) (north western Republika Srpska).

USE OF FRUITS: Fruits ripen second half of August. Can be used fresh or processed into pies, cakes, juices and brandy. Keeps well.

• Morphological traits

STEM: Stem has upright growth and later becomes thicker.

TREETOP: Elongated, elliptic shape with bending branches.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with spreading lateral branches and slivers. One and two year shoots are light brown. Short bearing branches.

BUDS: Vegetative buds are small.

LEAVES: Very large, elongated and round with emphasised central leaf vein.

FLOWER: Medium sized and white.

• Physiological traits

VIGOUR: Intermediate vigour.

FLOWERING: Late and relatively short.

FERTILIZATION: Probably diploid cultivar.

PRODUCTIVITY: Highly productive each year in good climatic conditions and suitable soil.

• Fruit characteristics

FRUIT SIZE: Medium large, on average 55 to 65 mm long, 50 to 60 mm wide, and weighs 110 to 135 g.

FRUIT SHAPE: Flat round, asymmetrical.

STALK AND STALK CAVITY: Stalk is extremely short, straight and very thick. Stalk cavity is narrow and shallow.

CALYX: Calyx is wide and shallow, open with short sepals.

CALYX CAVITY: Narrow, deep, with funnel shape.

SEED BOX: Elliptic, round, located towards calyx.

FRUIT SKIN: Thick, smooth and shiny. Dark green becoming light green when ripe. Reddish stripes cover whole of fruit.

FRUIT FLESH: White, crunchy, slightly sour and juicy.

• Resistance

PESTS AND DISEASES: Moderately tolerant to pests and diseases.
Sareno Blago

SYNONYMS: Sareno pote.

ORIGIN: Macedonia, Resen, Ohrid (South western Macedonia).

- **Morphological traits**
  Tree has upright habit. Shoots are long, thin and dark brown.
  Leaves are elongated ovate and dark green.
  Flower is medium large and white with a pink tinge.

- **Physiological traits**
  Vigorous variety with moderate productivity. Ripens late October.

- **Fruit characteristics**
  Fruit is large. Average fruit weighs 150 g. Fruit has round to conical shape.
  Stalk is long and thin. Stalk cavity is very deep and russetted.
  Calyx is semi open. Calyx cavity is very deep.
  Fruit skin is thin, yellow green with additional red colouration and often dark red stripes.
  Fruit flesh is white, sweet and aromatic with intermediate texture.
Šarica

SYNONYMS: Unknown.

ORIGIN: Old, local variety from Montenegro. Widespread around Bijelo Polje.

USE OF FRUITS: Ripens second half of August, and does not keep. Fruits do not transport well. Only suitable for table use.

- **Morphological traits**
  Upright and well developed trunk.
  LEAVES: Medium large, elliptic green shoots, reverse side has moderate pubescence. Leaf petiole is medium thick, medium length to long.
  FLOWER: Medium large, white. Pistil stalks are about the same length as stamens.

- **Physiological traits**
  VIGOUR: Vigorous to very vigorous variety.
  LENGTH OF LIFE: Long lived.
  FLOWERING: Medium.
  PRODUCTIVITY: Not very productive, but regular crops.

- **Fruit characteristics**
  SIZE AND SHAPE: Medium large, conical, average 63.2 mm long, 71.2 mm wide, and weighs 127.6 g.
  STALK AND STALK CAVITY: Stalk has medium thickness and length. Stalk cavity is moderately deep and moderately broad, with regular, funnel shape.
  CALYX: Small and closed.
  CALYX CAVITY: Shallow to moderately deep and ribbed.
  FRUIT SKIN: Yellowish green to greenish yellow with red stripes covering up to 80% of surface. Whitish lenticels.
  SEED BOX: Bulb shape, located at top of fruit, poorly visible in most fruit, majority of chambers are empty.
  SEEDS: Medium large, egg shaped, brown.
  FRUIT FLESH: White with a greenish tinge, firm, sweet taste, juicy, intermediate flavour, medium quality and dark towards centre.

- **Relationship to environmental factors**
  SOIL: No specific soil requirements.
  CLIMATE: Adapted to continental climate. Tolerates winter and spring frosts.

- **Resistance**
  PESTS AND DISEASES: Resistant to *Venturia inaequalis* Aderh., and susceptible to Apple Codling Moth, (*Carpocapsa pomonella* L.).
**Shendellia Hocishtit**

**SYNONYMS:** Molla Hocishtit.

**ORIGIN:** Indigenous. Old domestic cultivar from Hocisht (south eastern Albania).

**USE OF FRUITS:** Fruits ripen late October and can be used immediately. Moderate to good quality for eating fresh or cooking and keeps well until January.

- **Morphological traits**
  - **STEM:** Stem has upright growth and later becomes thicker.
  - **TREETOP:** Round to low spreading crown with soft hanging branches.
  - **BRANCHES AND SLIVERS:** Branches are smooth. One and two year shoots are grey with pronounced, round lenticels.
  - **BUDS:** Vegetative buds are small. Flower buds are larger and wide.
  - **LEAVES:** Medium, oval shaped and light green with serrated margins.
  - **FLOWER:** Large with white to rosy colour.

- **Physiological traits**
  - **VIGOUR:** Vigorous.
  - **FLOWERING:** Late (first half of May).
  - **FERTILIZATION:** Diploid cultivar
  - **PRODUCTIVITY:** Produces crop each year with good climatic conditions and suitable soil.

- **Fruit characteristics**
  - **FRUIT SIZE:** Medium large, on average 60 to 70 mm wide, 50 to 70 mm long and weighs 110 to 150 g.
  - **FRUIT SHAPE:** Flattened round, usually asymmetric with distinctive ribs that develop later.
  - **STALK AND STALK CAVITY:** Stalk is long, sometimes very thin. Fruits fall easily when windy.
  - **CALYX:** Calyx is medium sized, open with wide and long sepals.
  - **CALYX CAVITY:** Wide and short.
  - **FRUIT SKIN:** Thin skin. Yellowish green with red blush covering most of surface.
  - **FRUIT FLESH:** White to cream coloured, moderately coarse, crisp, juicy and sweet with a pleasant flavor. One of the tastiest domestic apple varieties.

- **Resistance**
  - **PESTS AND DISEASES:** Sensitive to *Monilia* sp. and Codling Moth, *Cydia pomonella*.
Croatia

SYNONYMS: Unknown.

ORIGIN: Gunjavci (near Nova Gradiška, eastern Croatia).

USE OF FRUITS: Fruits ripen mid-October and can be used immediately. Good for fresh consumption, compote, jam, juice, cider, brandy and drying. Transports and keeps very well.

• Morphological traits

STEM: Juvenile stem has upright growth and later becomes moderately thick.

TREETOP: Round crown.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with evenly spaced spreading lateral branches and slivers. Branches are very smooth. One and two year shoots are brown with pronounced, round lenticels.

BUDS: Vegetative buds are large. Flower buds are short and wide.

LEAVES: Small and egg shaped.

FLOWER: Flower is big and pink. Petals are partially free. Pistil and stamens equal length.

• Physiological traits

VIGOUR: Moderately vigorous.

FLOWERING: Early and medium long.

FERTILIZATION: Suitable for pollinating Slatka srčika, Božićnica and Alvanija.

PRODUCTIVITY: Very good crops, tends to produce in alternate years.

• Fruit characteristics

FRUIT SIZE: Small, on average 50 to 60 mm wide, 40 to 60 mm tall and weighs 70 to 100 g.

FRUIT SHAPE: Round.

STALK AND STALK CAVITY: Stalk is short, thick and lignified. Stalk cavity is deep, narrow and medium wide.

CALYX: Medium size, medium deep and semi open. Sepals are wide, medium large, long sharp, bent, grey coloured and dried.

CALYX CAVITY: Deep and medium wide.

FRUIT SKIN: Moderately thick, rough and tough. Yellowish to greenish covered with pink colour. Lenticels are small, round, green, white and moderately distributed.

SEED BOX: Heart shape, located at base of fruit.

FRUIT FLESH: Moderately firm and moderately juicy, yellowish to white with sweet taste.

• Resistance

PESTS AND DISEASES: Resistant to pests and diseases.
Slatka šarenika

SYNONYMS: Šarenika.

ORIGIN: Montenegrin domestic variety. There are several varieties of Šarenika in Montenegro distinguishable by fruit size and taste. Highly represented is Slatka Šarenika (Sweet Šarenika) which is most prevalent in Polimlje area.

USE OF FRUITS: Fruits ripen in mid-October and keep until May. Particularly good for processing and can be consumed fresh.

- **Morphological traits**
  
  **TREE:** Spreading crown. Branches have narrow crotches. Secondary and tertiary branches bend towards the ground.
  
  **LEAVES:** Large, green, mild pubescence on reverse side. Shape is oval. Leaf petiole is thin, long and green, and reddish brown near base.
  
  **FLOWER:** Medium large, pink. Sepals are slightly wrinkled. Pistil stalks are considerably longer than stamens.

- **Physiological traits**
  
  **VIGOUR:** Vigorous.
  
  **LENGTH OF LIFE:** Long lived.
  
  **FLOWERING:** Early and lasts for 20 days.
  
  **PRODUCTIVITY:** Abundant and regular crops.

- **Fruit characteristics**
  
  **SIZE AND SHAPE:** Small to medium large, round, sometimes flattened shape, 59 mm long, 71 mm wide and weighs about 146 g. Fruit usually asymmetrical.
  
  **STALK AND STALK CAVITY:** Medium length and thickness. Cavity is medium deep and wide.
  
  **CALYX:** Medium sized, closed.
  
  **CALYX CAVITY:** Medium deep.
  
  **FRUIT SKIN:** Yellowish green to greenish yellow becomes light yellow with storage, with striped, intense red blush on the sunny side of fruit.
  
  **SEED BOX:** Large, flat and located at top of fruit.
  
  **SEEDS:** Medium large, oval shape light brown to chestnut brown.
  
  **FRUIT FLESH:** Creamy white to white, medium firm, juicy, very sweet taste and quite aromatic.
  
  **TRANSPORTABILITY:** Fruits transport well.

- **Relationship to environmental factors**
  
  **SOIL:** No specific soil requirements.
  
  **CLIMATE:** Adapted to various climatic conditions.

- **Resistance**
  
  **PESTS AND DISEASES:** High resistance to pests and diseases.
SYNONYMS: Srčika.

ORIGIN: Gunjavci (near Nova Gradiška, eastern Croatia).

USE OF FRUITS: Fruits ripen mid-October and can be used immediately. Very good for fresh consumption, compote, jam, juice, cider, brandy and drying. Transports and keeps very well.

• Morphological traits

STEM: Juvenile stem has upright growth and later becomes moderately thick.

TREETOP: Spreading round crown.

BRANCHES AND SLIVERS: Primary branches are strong, long and covered with evenly spaced spreading lateral branches and slivers. Branches are smooth. One and two year shoots are dark brown with pronounced, round lenticels.

BUDS: Vegetative buds are large. Flower buds are short and wide.

LEAVES: Small and egg shaped.

FLOWER: Small and light pink. Petals are free. Pistil is taller than stamens.

• Physiological traits

VIGOUR: Moderately vigorous.

FLOWERING: Moderately early.

FERTILIZATION: Easily pollinated by cultivars Božičenica, Alvanija and Mašanka.

PRODUCTIVITY: Moderately good crops, tends to produce in alternate years.

• Fruit characteristics

FRUIT SIZE: Medium large, on average 65 to 75 mm wide, 50 to 60 mm tall and weighs 100 to 150 g.

FRUIT SHAPE: Flattened to round.

STALK AND STALK CAVITY: Stalk is very short, thick and lignified. Stalk cavity is shallow and wide.

CALYX: Calyx is deep, medium size, semi open to closed. Sepals are medium large, medium long, sharp, bent, brown coloured and dried.

CALYX CAVITY: Medium deep and wide.

FRUIT SKIN: Rough with greenish to yellowish skin covered with pink colour. Lenticels are medium large, white and moderately distributed.

SEED BOX: Heart shape, located in centre of fruit.

FRUIT FLESH: Moderately firm, yellowish to white, medium juicy with sour sweet taste.

• Resistance

PESTS AND DISEASES: Resistant to pests and diseases.
Stolovača

SYNONYMS: Unknown.
ORIGIN: Old, domestic cultivar recorded and collected from Srbac village, Nožičko (northern Republika Srpska, within Croatian border).
USE OF FRUITS: Fruits ripen late September and early October. Suitable for fresh consumption or processing. Keeps for a short period.

- **Morphological traits**
  STEM: Stem has upright growth and later becomes thicker.
  TREETOP: Spreading crown with straight branches.
  BRANCHES AND SLIVERS: Primary branches are strong, long and covered with spreading lateral branches and slivers. Branches are smooth. Short bearing branches.
  BUDS: Vegetative buds are small.
  LEAVES: Medium sized or large, round elliptic shape.
  FLOWER: Flower is medium sized and white.

- **Physiological traits**
  VIGOUR: Intermediate or strong vigour.
  FLOWERING: Mid-season and relatively short.
  PRODUCTIVITY: Produces moderate crops each year in good climatic conditions and suitable soil.

- **Fruit characteristics**
  FRUIT SIZE: Medium large to large, on average 65 to 75 mm long, 45 to 55 mm wide and weighs 155 to 185 g.
  FRUIT SHAPE: Flat round and asymmetric.
  STALK AND STALK CAVITY: Stalk is short, straight and very thick. Stalk cavity is narrow and semi deep.
  CALYX: Calyx is semi wide and shallow, semi opened. Sepals are small.
  CALYX CAVITY: Shallow and wide.
  SEED BOX: Elongated, located in centre of fruit.
  FRUIT SKIN: Medium thick, smooth and shiny. Dark green becoming light green when ripe. Ribbing is present within calyx.
  FRUIT FLESH: White, moderately crunchy, slightly sour and moderately juicy.

- **Resistance**
  PESTS AND DISEASES: Tolerant to Apple Scab Disease, *Venturia inaequalis* Cooke (Wint.).
**Šumatovka**

**SYNONYMS:** Popadija.

**ORIGIN:** Serbia. Old, domestic cultivar found on farms in Pomoravlje, east and south Serbia.

**USE OF FRUITS:** Very late to ripen. Picked in October and keeps until January. Long shelf life in common storage. Good dessert and processing apple.

- **Morphological traits**
  - **STEM:** Trunk is upright, strong with smooth, dark red bark.
  - **TREETOP:** Crown is pyramidal.
  - **BRANCHES AND SLIVERS:** Dormant one-year-old shoots are long, thin and brown.
  - **BUDS:** Leaf and flower buds are small.
  - **LEAVES:** Ovate, pale green, acuminate tip, base obtuse and serrate margins.
  - **FLOWER:** Small, white to rosy coloured when fully opened.

- **Physiological traits**
  - **VIGOUR:** Adult trees is extremely vigorous.
  - **FLOWERING:** Early to intermediate onset of flowering.
  - **FERTILIZATION:** Diploid cultivar. Flowers produce viable pollen suitable for pollinating other cultivars that bloom during the same period.
  - **PRODUCTIVITY:** Produces regular and large crops.

- **Fruit characteristics**
  - **FRUIT SIZE:** Small to medium sized fruit, 67 mm long, 57 mm wide and weighs 117 g.
  - **FRUIT SHAPE:** Oblong to conical and uniform.
  - **STALK AND STALK CAVITY:** Stalk cavity is deep. Thin stalk of medium length, 22.6 mm on average.
  - **CALYX:** Sepals are medium in length. Calyx tube tends to be closed.
  - **CALYX CAVITY:** Narrow and shallow.
  - **FRUIT SKIN:** Ground colour is green to yellow with red blush over 90% of skin surface, but without stripes. Lenticels are white and conspicuous. Fruit do not exhibit russet or bitter pit.
  - **SEED BOX:** Elliptic shape.
  - **FRUIT FLESH:** Firm, crisp, white, crumbly and sweet to slightly acidic. Keeping quality is excellent, fruit retains quality and texture for 12 months at 1°C.

- **Resistance**
  - **PESTS AND DISEASES:** Tolerant to Scab, *Venturia inaequalis* (Cke) Wint., and Powdery Mildew, *Podosphaera leucotricha* (Ell. & Everh.) Salm.
**Macedonia**

**SYNONYMS:** Demirka, Mirisavka, Kandile, Belo kandile, Kustendilsko belo kandile.

**ORIGIN:** Macedonia. Old, domestic cultivar of Tetovo (Western Macedonia).

- **Morphological traits**
  
  Tree has spreading to weeping habit. Shoots are light brown, long and moderately thick. Bearing branches are numerous and short.
  
  Leaf buds are small. Flower buds are medium large and pubescent.
  
  Leaves are medium large, dark green with an elongated shape.
  
  Flower is medium large and white.

- **Physiological traits**
  
  Vigorous variety. Flowering is very late. Diploid cultivar, with very fertile pollen. Productive variety with heavy crops in alternate years. Ripens in October and has good shelf life.

- **Fruit characteristics**
  
  Fruit is medium large to large. Average weight is 150 g. Fruit has flat to round shape, usually symmetric.
  
  Stalk is short (1 cm), thick and pubescent. Stalk cavity is deep, moderately wide and russetted.
  
  Calyx is medium large, closed or semi open. Calyx cavity is conical, small and moderately deep to deep.
  
  Fruit is green to greenish yellow with flushes of red colour. Fruit skin is thin, smooth and waxed with large, sparse, oval, white lenticels. Seed box is small and flat. Fruit flesh is white, coarse, juicy, sweet and very aromatic. Fruit has good eating quality. One of the tastiest domestic apple varieties.

- **Resistance**
  
  Variety is sensitive to Apple Scab (*Venturia inaequalis*).
Tiganka

SYNONYMS: Tiganca de Moldova, Tiganca Alaia, Tiganca Moldavskia.

ORIGIN: Republic of Moldova. Old cultivar from the Central apple growing region of the Republic of Moldova.

USE OF FRUITS: Fruits ripen mid-September. Fruits handle well and keep at +10 C for 70 to 90 days. Recommended for fresh use after 1 to 2 months, or processing.

• Morphological traits
STEM: Juvenile stem has strong vigour.
TREETOP: Spreading, round crown, with wide crotches and frequent branching.
BRANCHES AND SLIVERS: Primary branches are strong, long and covered with evenly spaced, hanging, lateral branches and slivers. Basal branches are medium sized, forming at right angles to stem. One and two year shoots are dark grey with prominent light lenticels.
BUDS: Vegetative buds are small. Flower buds are moderately developed.
LEAVES: Medium to large, shiny with wide oval shape, dark green with slight green corollaceous upper side. Leaf blade is moderately serrate.
FLOWER: Flower is medium sized and has white to rosy, long rounded petals.

• Physiological traits
VIGOUR: Strong, especially during juvenile stage. Long lived.
FLOWERING: Mid to late season (second half of April until first half of May).
FERTILIZATION: Diploid cultivar.
PRODUCTIVITY: Produces extremely heavy crops in sheltered positions and on suitable soil with irrigation.

• Fruit characteristics
FRUIT SIZE: Medium large, on average 73 to 82 mm wide, 70 to 75 mm long and weighs from 80 to 115 g.
FRUIT SHAPE: Flat round, slightly conical.
STALK AND STALK CAVITY: Stalk is short, medium thick. Small light brown cavity.
CALYX: Calyx is of medium size, closed or semi closed with small brown sepals.
CALYX CAVITY: Small, narrow and short.
FRUIT SKIN: Thick, shiny and firm. Green becoming yellow with dark red stripes and blush. Yellow lenticels cover surface of fruit.
SEED BOX: Very well defined, large, semi open with 8 to 9 seeds.
FRUIT FLESH: White, fine, juicy, with sour sweet taste and weak aroma. Good for processing, intermediate quality as dessert apple.

• Resistance
PESTS AND DISEASES: Moderate resistance to common diseases and pests. High tolerance to low temperatures.
Ţiganka Grie

SYNONYMS: Tiganca.

ORIGIN: Republic of Moldova. Old cultivar from the Central apple growing region of the Republic of Moldova.

USE OF FRUITS: Fruits ripen late September. Fruits handle well and keep at +10 C for 60 to 70 days. Recommended for fresh use or processing.

• **Morphological traits**
  STEM: Juvenile stem has strong vigour.
  TREETOP: Weeping, round crown, with wide crotches and frequent branching.
  BRANCHES AND SLIVERS: Primary branches are strong, medium sized, covered with evenly spaced, hanging, lateral branches and slivers. One and two year shoots are grey with prominent light lenticels.
  BUDS: Vegetative buds are medium sized. Flower buds are moderately developed.
  LEAVES: Medium to large, shiny, with wide oval shape, dark green with silver green corollaceous upper side.
  FLOWER: Flower is medium sized, white to rosy colour with long rounded petals.

• **Physiological traits**
  VIGOUR: Strong, especially during juvenile stage. Long lived.
  FLOWERING: Mid to late.
  FERTILIZATION: Diploid cultivar, good for pollinating Red Delicious, Renet Simirenko, Domnești and Jonathan.
  PRODUCTIVITY: Produces heavy crops on suitable soil with irrigation.

• **Fruit characteristics**
  FRUIT SIZE: Medium large, on average 70 to 92 mm wide, 70 to 85 mm long and weighs from 85 to 125 g.
  FRUIT SHAPE: Flat round, slightly asymmetric.
  STALK AND STALK CAVITY: Stalk is medium to long, moderately thick. Small green cavity.
  CALYX: Calyx is medium sized, flat, semi closed with small brown sepals.
  CALYX CAVITY: Small, wide and short.
  FRUIT SKIN: Thick and firm, easily bruised. Dark green becoming yellow to green, covered with dark red stripes and blush over more than 70 % of the surface.
  SEED BOX: Very well defined, large, semi open with 8 to 9 seeds.
  FRUIT FLESH: White, coarse, juicy, with sour sweet taste and weak aroma. Good for processing, intermediate quality as dessert apple.

• **Resistance**
  PESTS AND DISEASES: Good resistance to common diseases and pests. High tolerance to low temperatures.
Varatic dulce

SYNONYMS: Varatice.

ORIGIN: Republic of Moldova. Old, domestic cultivar from all apple growing regions in the Republic of Moldova.

USE OF FRUITS: Fruits ripen first week of August and can be used immediately. Recommended for fresh use or drying.

- **Morphological traits**
  - **STEM:** Juvenile stem has upright growth, medium vigour and later becomes thicker.
  - **TREETOP:** Wide and strongly weeping crown with stooped branches.
  - **BRANCHES AND SLIVERS:** Primary branches are medium long or long, covered with evenly spaced, hanging, lateral branches and slivers. Branches are moderately pubescent, medium sized. One and two year shoots are greenish grey.
  - **BUDS:** Vegetative buds are small. Flower buds are conical and moderately developed.
  - **LEAVES:** Variable, wide oval shape, light green with light rose corollaceous upper side. Leaf blade is moderately serrate.
  - **FLOWER:** Large with white to rosy, long, rounded petals.

- **Physiological traits**
  - **VIGOUR:** Strong, especially during juvenile stage. Long lived.
  - **FLOWERING:** Early to mid-season (second half of April until May).
  - **FERTILIZATION:** Diploid cultivar. Good for pollinating August, James Grieve Red and Plat.
  - **PRODUCTIVITY:** Tends to produce in alternate years. Produces good crops each year in sheltered positions and on suitable soil. Thinning is necessary.

- **Fruit characteristics**
  - **FRUIT SIZE:** Small to medium.
  - **FRUIT SHAPE:** Round and attractive.
  - **STALK AND STALK CAVITY:** Stalk is medium length. Wide, green, striped cavity.
  - **CALYX:** Medium sized, closed, with small, grey, pubescent sepals.
  - **CALYX CAVITY:** Medium sized, short.
  - **FRUIT SKIN:** Thin. Green becoming yellow with dark red and carmine red stripes. Mottled rose colour on sunny side of fruit.
  - **SEED BOX:** Very well defined, medium sized, semi open with 7 to 9 seeds.
  - **FRUIT FLESH:** Greenish white, fine, juicy, with sour sweet taste and strong aroma typical of apple.

- **Resistance**
  - **PESTS AND DISEASES:** Moderate to weak resistance to common diseases and pests. Good resistance to drought and low temperatures.
Verorja

SYNONYMS: Korrikja.

ORIGIN: Provenance unknown, but material comes from the area of Tirane, Kruje, Elbasan (central Albania).

USE OF FRUITS: Fruits ripen late July until early August and can used immediately. Fruits bruise easily and need to be treated carefully during picking and transport.

• Morphological traits
  STEM: Stem has upright growth and later becomes thicker.
  TREETOP: Wide crown.
  BRANCHES AND SLIVERS: Branches are considerably smooth. One and two year shoots are grey and have lenticels.
  BUDS: Vegetative buds are large. Flower buds are larger.
  LEAVES: Medium, with oval shape, light green with silver and pubescent underside.
  FLOWER: Flower is big and has white to rosy colour.

• Physiological traits
  VIGOUR: Vigorous, with good branching habit.
  FLOWERING: Intermediate (mid of April).
  FERTILIZATION: Diploid cultivar.
  PRODUCTIVITY: Very productive each year.

• Fruit characteristic
  FRUIT SIZE: Small, on average 50 to 60 mm wide, 50 to 60 mm long and weighs 100 to 120 g.
  FRUIT SHAPE: Fruit is small, oblong and usually asymmetric.
  STALK AND STALK CAVITY: Stalk cavity is narrow to medium wide. Moderately thick, short to medium long stalk.
  CALYX: Calyx is medium sized, open with wide and long sepals.
  CALYX CAVITY: Wide and short.
  FRUIT SKIN: Skin is thick, mainly smooth, greenish yellow with blushed, bright red stripes.
  SEED BOX: Oval, evenly developed and open.
  FRUIT FLESH: White, firm, crisp, juicy, fine grained texture, sweet sour and sprightly flavoured.

• Resistance
  PESTS AND DISEASES: Very sensitive to Apple Scab Disease, Venturia inaequalis Cooke (Wint.).
**Vidovdanka**

**SYNONYMS:** Unknown.

**ORIGIN:** Serbia. Old, domestic cultivar grown in a large number of private gardens and a few orchards as an early ripening dessert apple.

**USE OF FRUITS:** One of the first to ripen, large fruited, well coloured, dessert apple.

**Morphological traits**

**STEM:** Trunk bark is smooth and light coloured.

**TREETOP:** Round crown.

**BRANCHES AND SLIVERS:** Primary branches are strong with densely spaced lateral branches. One year shoots are red colour and have pronounced lenticels.

**BUDS:** Leaf and flower buds are medium sized.

**LEAVES:** Leaves are large, broad with pointed tips, margins have very fine serrations.

**FLOWER:** Large with white to rosy colour.

**Physiological traits**

**VIGOUR:** Grows vigorously with upright habit.

**FLOWERING:** Early flowering.

**FERTILIZATION:** Diploid cultivar. Flowers produce viable pollen, suitable for pollinating early blooming cultivars.

**PRODUCTIVITY:** Fruit is evenly distributed throughout canopy. Produces heavy crops each year, but fruit is subject to pre-harvest drop.

**Fruit characteristics**

**FRUIT SIZE:** Large but light, on average 74 mm long, 64 mm wide and weighs 130.5 g.

**FRUIT SHAPE:** Conical, uniform.

**STALK AND STALK CAVITY:** Stalk cavity is of medium depth and width. Stalk is medium sized.

**CALYX:** Sepals are upright and open.

**CALYX CAVITY:** Medium depth and width.

**FRUIT SKIN:** Attractive, green with a dark red blush covering 85% of the surface. Skin is thin with white and moderately conspicuous lenticels. Russeting is not evident.

**SEED BOX:** Oval.

**FRUIT FLESH:** Light green, fine textured, moderately firm, juicy, acidic in taste. Softens very quickly after picking.

**Resistance**

**PESTS AND DISEASES:** Moderately resistant to Scab, *Venturia inaequalis* (Cke) Wint., and Powdery Mildew, *Podosphaera leucotricha* (Ell. & Everh.) Salm.
**Vrbovača**

**SYNONYMS:** Grkača, Vrbača, Vrbovka.

**ORIGIN:** Montenegrin old local variety. Some trees are found throughout Polimlje, but mostly spread around Andrijevica and Berane.

**USE OF FRUITS:** Picking is in mid-October and keeps until March.

- **Morphological traits**
  
  **TREE:** Nearly horizontal branches create rounded crown. Bark is light coloured and twigs are grey, pubescent, with buds of medium size. Lenticels are small, oval and rare.

  **LEAVES:** Elliptic, green.

  **FLOWER:** Light pink, medium large, stamens and pistil stalks are approximately of equal length.

- **Physiological traits**

  **VIGOUR:** Vigorous tree.

  **FLOWERING:** Late blossoming variety.

  **PRODUCTIVITY:** Heavy and annual crops.

- **Fruit characteristics**

  **SIZE AND SHAPE:** Medium large to large (weighs 180 g, 68 mm high, 79 mm wide). Fruit shape is round-conical with strong ribbing particularly around the calyx and stalk.

  **STALK AND STALK CAVITY:** Short or medium length, moderately thick and pubescent. Moderately deep to deep and narrow cavity.

  **CALYX:** Large, closed or semi-closed.

  **CALYX CAVITY:** Moderately deep to deep, irregular. Same colour as fruit with traces of russetting.

  **FRUIT SKIN:** Initially white, later yellow with blush covering most of fruit. In areas of blush there are more coloured, short and choppy, irregularly scattered stripes. Over the whole fruit there are many ash grey lenticels.

  **SEED BOX:** Large and poorly defined. Bulb shape, located in middle of fruit. Each chamber usually contains one well developed seed.

  **SEEDS:** Seeds are medium large to large, egg shaped, dark brown with a pointed tip.

  **FRUIT FLESH:** Flesh is whitish to greenish yellow, sweet taste a little harsh or bitter, juicy and firm.

  **TRANSPORTABILITY:** Fruits transport well.

- **Resistance**

  **PESTS AND DISEASES:** Resistant to pests and diseases.

- **Recommendation**

  Fruits do not have traces of damage from disease or pests. Good for processing and animal feeding, however not as a table apple.
Vusanka

SYNONYMS: Unknown.

ORIGIN: Old, local variety from Montenegro. Some trees found near Plav.

USE OF FRUITS: Picked in early October and keeps until April. Good quality fruit can be used for fresh consumption or processing, especially for cider and brandy.

- **Morphological traits**
  TREE: Branches grow mostly upright. Pyramidal crown.
  LEAVES: Elliptic, small, green, densely pubescent on reverse side. Leaf petiole is long, thin and green, reddish at base.
  FLOWER: Medium large, white, symmetrical. Pistil stalks are slightly shorter than stamens.

- **Physiological traits**
  VIGOUR: Medium vigorous to vigorous.
  LENGTH OF LIFE: Long lived (one tree pictured is over 100 years old).
  FLOWERING: Late blossoming.
  PRODUCTIVITY: Heavy crops every year.

- **Fruit characteristics**
  SIZE AND SHAPE: Medium large, conical (weighs 132.3 g, 63.4 mm long and 71.5 mm wide).
  STALK AND STALK CAVITY: Medium length to long, moderately thick. Deep and narrow cavity, same colour as fruit.
  CALYX: Closed, medium size.
  CALyx CAVITY: Medium deep, regular and the colour of the fruit.
  FRUIT SKIN: Firm, thin. Initially green becoming greenish yellow or yellow with storage. Flush of red covers various surfaces of fruit. Whitish lenticels are spread across surface.
  SEEDS Box: Medium sized, bulb shape, located at top of fruit.
  SEEDS: Seeds are medium large, egg shaped, viable, chestnut coloured.
  FRUIT FLESH: Creamy green colour, moderately juicy, firm, sweet taste and fine textured. Good quality.
  TRANSPORTABILITY: Fruits transport well.

- **Relationship to environmental factors**
  CLIMATE: Adapted to continental climatic. Frost resistant.

- **Resistance**
  PESTS AND DISEASES: High resistance to pests and diseases, although fruit shows symptoms of *Venturia inaequalis* Aderh. in some years.
Zimska Kolačara

SYNONYMS: Unknown.

ORIGIN: Old, domestic cultivar from Novi Grad and Prijedor (northern Republika Srpska).

USE OF FRUITS: Fruits ripen second half of September to early October. Suitable for fresh consumption or processing into cakes, pies, compotes and brandy. Keeps well.

- Morphological traits
  STEM: Stem has upright growth and later becomes thicker.
  TREETOP: Irregular round crown.
  BRANCHES AND SLIVERS: Primary branches are strong, long and covered with spreading lateral branches and slivers. One and two year shoots are light brown.
  BUDS: Vegetative buds are small. Flower buds are larger and wide.
  LEAVES: Small or medium sized, elongated elliptic shape.
  FLOWER: Flower is large and white with slight pink colour.

- Physiological traits
  VIGOUR: Intermediate or strong vigour.
  FLOWERING: Mid-season with long flowering period.
  FERTILIZATION: Unknown.
  PRODUCTIVITY: Produces each year in good climatic conditions and suitable soil.

- Fruit characteristics
  FRUIT SIZE: Medium large to large, highly variable weight from 170 to 210g, 65 to 75 mm long and 55 to 65 mm wide.
  FRUIT SHAPE: Asymmetric and round. Slight ribbing around calyx.
  STALK AND STALK CAVITY: Stalk is short, slightly curved and thick. Stalk cavity is narrow and semi deep.
  CALyx CAVITY: Deep and narrow. Regular triangle shape.
  SEED BOX: Irregular heart shape, located in centre of fruit.
  FRUIT SKIN: Moderately thick, soft and bruises easily. Light green becoming greenish yellow to yellow. Sometimes noticeable red colour on sunny side. Large, brown, sparse and unevenly dispersed lenticels.
  FRUIT FLESH: White, moderately firm, sweet and juicy.

- Resistance
  PESTS AND DISEASES: Moderately resistant to pests and diseases.
Zvecarka

SYNONYMS: Unknown.

ORIGIN: Macedonia, Resen and Ohrid (South western Macedonia).

• **Morphological traits**
  Branches have spreading habit. Shoots are medium long and brown.
  Leaves are small, elongated oval shaped and green.
  Flower is medium large and white.

• **Physiological traits**
  Intermediate vigour. Ripens early October.

• **Fruit characteristics**
  Fruit is medium large to large. Shape of the fruit is oblong to conical.
  Stalk is short and medium thin. Stalk cavity is closed and deep.
  Calyx is moderately wide and semi closed. Calyx cavity is moderately wide and moderately deep.
  Fruit skin is yellow with red stripes.
  Fruit flesh is white, sweet and juicy. Texture of the flesh is coarse and has intermediate eating quality.
  Usually used for home processing.
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The BALKAN POMOLOGY – APPLES systemize the genetic diversity of plums found in the Balkan region. It attractively portrays 104 apple cultivars with detailed descriptions and illustrations. The descriptions are presented in alphabetical order and outline the fruit characteristics of each cultivar, as well as their morphological and physiological traits. In addition, information on origins, known uses and synonyms are provided.