

## DEVELOPMENT OF TECHNICAL DATASHEETS BASED ON FRUIT CHARACTERISTICS OF OLD TRADITIONAL APPLE VARIETIES FROM SĂLAJ COUNTY, A DATABASE WITH REAL STORIES OF APPLE SPECIMENS IDENTIFIED IN HNV AREAS

Anamaria Raluca Denes <sup>1,\*</sup>

<sup>1</sup> Dried & Fresh Fruits S.R.L., Jac - Creaca, nr. 209/2, Salaj County, Romania



### Abstract

*In the gardens of Sălaj county, you can still find apple specimens from old traditional varieties. They represent both a genetic heritage and a very valuable raw material for processing, from which new value-added products can be obtained. This study presents the apple specimens of old traditional varieties from the gardens of farmers in the communes located in Sălaj County, with GPS coordinates, nominal identification and technical datasheets for each individual apple variety, with the observed fruit characteristics. Using a data sheet, which looks like a variety determiner, helps farmers and processors recognize the apple variety more easily and with greater precision, based only on the morphological characteristics of the fruit. The identified and studied old apple varieties from the HNV areas in Sălaj county were Raluca apple variety, Oarzăn apple variety (BARLEY), Poinic apple variety, Mărul Anii apple variety (ANII'S APPLE), Dulce apple variety (SWEET), Clar Alb apple variety (CLEAR WHITE), London Pepping apple variety, Cormoș apple variety, Zguroș apple variety (SLAGGY APPLE), Gustav apple variety, Albuș apple variety (LITTLE WHITE), Pătul apple variety (BED APPLE), Mărul din Mierța apple variety (APPLE from MIERȚA), Șovar apple variety (GRAY APPLE), Dulce Roșu apple variety (SWEET RED), Statin apple variety (RED STETTIN), Mustos apple variety (JUICY), Vară apple variety (SUMMER), Parmen Auriu apple variety (GOLD PARMEN), Jonathan apple variety, Franc apple variety, Ronean apple variety, Țigănesc apple variety (GYPSY APPLE), Roșu apple variety (RED), some, also known in other geographical areas. The identified apple trees are between 40 and 100 years old and still productive. Among the established apple varieties, those with yellow or shades of yellow are: Cormoș, Albuș, Dulce, Mărul Ralucai, Oarzăn, Zguroș, Poinic, Clar Alb, London Pepping. The apple varieties with a sweet taste are Poinic, Dulce, Gustav, Măr din Mierța, Roșu Dulce, Jonathan, while the apple varieties with a sour or sweet-sour taste are Mărul Ralucai, Oarzăn, London Pepping, Mărul Anii, Clar Alb, Zguroș, Albuș, Pătul, Cormoș, Șovar, Statin, Țigănesc, Parmen Auriu, Vară, Mustos, Roșu. The fruits of Jonathan, Șovar, Franc, Pătul, Statin, London Pepping, Vară and Poinic varieties contained worms inside the pulp, showing that the varieties have no resistance and have some predisposition to infestation, which leads to difficulty in processing and use.*

**Keywords:** *old apple varieties, morphological determination, transponder*

### 1. INTRODUCTION

In the gardens of Sălaj county, you can still find apple specimens from old traditional varieties. They represent a valuable local genetic heritage as well as a very valuable raw material for processing, from which new value-added products can be obtained.

The study is part of a large project in which the actions undertaken have the final goal of obtaining a diversity of processed products from apples from traditional old varieties in Sălaj county and as a vision, the economic development in the rural environment, on the long term, under a common brand, through the collaboration between small farmers.

Among the actions that were taken, for the apple specimens from old traditional varieties identified by GPS, an inventory was carried out and the next step was phenotyping and comparing the results to clearly establish the varieties, and then characterizing the fruits in the form of a technical sheet.

This study presents the apple specimens of old traditional varieties from the gardens of farmers in the communes located in Sălaj County, with GPS coordinates, and technical datasheets for each individual apple variety, with the observed fruit characteristics.

Using a data sheet, which looks like a variety determiner, helps farmers and processors recognize the apple variety more easily and with greater precision, based only on the morphological characteristics of the fruit.

## 2. MATERIALS AND METHODS

The map of the communes of Sălaj county considered HNV was used, these being Agrij, Almaşu, Bălan, Buciumi, Cizer, Creaca, Cuzăplac, Dragu, Fildu de Jos, Gâlgău, Gârbou, Hida, Horoatu Crasnei, Poiana Blenchii, Românaşi, Sâg, Sânmihailu Almaşului, Şimişna, Treznea, Zalha, Zimbor.

*Table 1. Distribution by communes located in Sălaj County, and the number of related old apple varieties found so far*

Commune name	Nr. of varieties	Varieties names
Creaca	17	Poinic, Jonathan, Raluca, Şovari, Mustos (Juicy), Dulce (Sweet), Clar Alb (Clear White), Iarnă (Winter), Winter varieties, Vară (Summer), Summer varieties, Ronean, Gustav, Roşu Dulce (Sweet red), Scorţos, Roşu (Red), Delia;
Cuzăplac	13	Apple of Mierţa, Batul, Pătul (Bed apple), Clar Alb (Clear White), London Pepping, Oarzăn (Barley), Parmen Auriu (Gold Parmen), Stettin, Şovari, Jonathan, Poinic, Summer varieties, Iarnă (Winter);
Almaşu	10	Pătul (Bed apple), Ani, Cormoş, Şovari, Poinic, Jonathan, Summer varieties, Iarnă (Winter), Citron, Roşu lunguiet;
Şimişna	8	Domnesc, Pătul (Bed apple), Stettin, Zguroş (Slaggy), Țigănesc (Gypsy), Şovari, Summer varieties, Iarnă (Winter);
Zalha	8	Dulciu, London Pepping, Mustos (Juicy), Albuţ (Little White), Poinic, Vară (Summer), Jonathan, Iarnă (Winter);
Gârbou	8	Poinic, Şovari, Vară (Summer), Pătul (Bed apple), Stettin, Jonathan, Summer varieties, Iarnă (Winter);
Poiana Blenchii	8	Parmen Auriu (Gold Parmen), Oarzăn (Barley), Dulce (Sweet), Gustav, Pătul (Bed apple), Jonathan, Summer varieties, Iarnă (Winter);
Cizer	8	Franc, Şovari, Mustos (Juicy), Jonathan, Vară (Summer), Iarnă (Winter), Făinos, Dulce (Sweet);
Fildu de Jos	7	Pătul (Bed apple), Talgere, Parmen Auriu (Gold Parmen), Poinic, Vară (Summer), Iarnă (Winter), Jonathan;
Bălan	7	Parmen Auriu (Gold Parmen), Pătul (Bed apple), Mustos (Juicy), Poinic, Jonathan, Summer varieties, Iarnă (Winter);
Hida	6	Sur (Gray), Mustos (Juicy), Poinic, Jonathan, Summer varieties, Iarnă (Winter);
Buciumi	5	Parmen Auriu (Gold Parmen), Sur (Gray), Jonathan, Summer varieties, Iarnă (Winter).

The identified apple trees are between 40 and 100 years old and still productive.

The nomination of apple specimens was carried out in two stages. Initially, in the first stage, the names given by farmers were taken into account. Later, in the second stage, the nomination was made based on the results of the comparative evaluation of the characteristics of the fruits. Characterization was done *in situ* from a morphological point of view. When the fruit's technical datasheet was created, they were characterized by descriptors such as size, shape, skin and flesh color, skin and flesh texture, maturity for consumption, resistance to storage and transportation.

For the varieties Raluca's apple variety, Clar Alb, Batul, Oarzăn, Winter varieties, Summer varieties, Parmen Auriu, Apple of Mierța, Stettin, within the project, the Whole Genome sequencing and subsequently the phylogenetic tree were also performed.

### 3. RESULTS AND DISCUSSIONS

In the first stage, based on the information taken from the farmers the study included old apple varieties from the HNV areas in Sălaj county, respectively 2 specimens of Raluca apple variety, 4 specimens of Oarzăn apple variety (Barley Apple), 16 specimens of Poinic apple variety, 1 specimen of Domnesc apple variety (Lordly), 1 specimen of Talgere apple variety, 2 specimens of Mărul Anii apple variety, 5 specimens of Dulce apple variety (Sweet Apple), 7 specimens of Clar Alb apple variety (Clear White), 2 specimens of London Pepping apple variety, 1 specimen of Cormoș apple variety, 1 specimen of Zguros apple variety (Slaggy Apple), 2 specimens of Gustav apple variety, 2 specimens of Albuț apple variety (Little White), 18 specimens of Pătul apple variety (Bed Apple), 4 specimens of Mărul din Mierța apple variety, 20 specimens of Șovar apple variety (Gray Apple), 2 specimens of Dulce Roșu apple variety (Sweet Red), 3 specimens of Statin apple variety (Red Stettin), 1 specimen of Dulciu apple variety, 8 specimens of Mustos apple variety (Juicy Apple), 14 specimens of Vară apple variety (Summer Apple), 8 specimens of Parmen Auriu apple variety (Golden Parmen), 17 specimens of Jonathan apple variety, 2 specimens of Franc apple variety, 1 specimen of Ronean apple variety, 1 specimen of Țigănesc apple variety (Gypsy Apple), 1 specimen of Roșu apple variety (Red), 1 specimen of Delia apple variety, 23 specimens of unnamed late ripening apple varieties (Winter Apple). Some of the varieties are also known in other geographical areas.

During the phenotypic study, it was identified that the variety named, initially, the Domnesc variety is actually Poinic apple variety. The variety named, initially, the Dulciu variety is actually Mustos apple variety.

After the second stage, that is after the comparative evaluation of the fruits characteristics, the following varieties were established: **Raluca apple variety, Oarzăn apple variety, Poinic apple variety, Mărul Anii apple variety, Dulce apple variety, Clar Alb apple variety, London Pepping apple variety, Cormoș apple variety, Zguros apple variety, Gustav apple variety, Albuț apple variety, Pătul apple variety, Mărul din Mierța apple variety, Șovar apple variety, Dulce Roșu apple variety, Statin apple variety, Mustos apple variety, Vară apple variety, Parmen Auriu apple variety, Jonathan apple variety, Franc apple variety, Ronean apple variety, Țigănesc apple variety, Roșu apple variety, 1 unnamed late ripening apple variety.**

### Raluca's Apple variety



Comuna / Sat – coordonate GPS:  
Creaca / Jac - 47.1624, 23.1981

RALUCA

Synonyms: Apple from Onu

Origin: variety from Jac village, Sălaj county

Distribution in Sălaj county: It is distributed in Creaca commune.

The fruit:

- Very large size; different sizes on the same tree.
- The shape is frustoconical, slightly flattened, with a smooth and irregular surface.
- The background color is light green, uniform on the whole face of the fruit. Whitish dots can be seen under the skin, they look very similar to the shell of a walnut.
- Light green color at harvest and yellow at maturity.
- Thick skin, stuck to the meat.
- White flesh with greenish infiltrations, hard, quite juicy, **without sweetness** and aroma, floury after ripening, and after the first frost has fallen, the taste is particularly aromatic and lacking satiety, creating a continuous sensation for consumption.
- Maturity for consumption from October to January, after the first frost.

The fruits look beautiful, but do not keep well on the tree. Fresh fruits are good for processing by drying, and dried apples in the form of cubes can be obtained from them. Dried apples can be consumed as such or mixed with ingredients such as cereals, yogurt, honey, seeds, or other fruits. Dried apples can be used to prepare tea.

### Oarzăn variety (BARLEY)



Comuna / Sat – coordonate GPS:  
Cuzăplac  
Poiana Blenchii / Gostila

OARZĂN

Synonyms: Barley

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in Poiana Blenchii and in Cuzăplac communes.

The fruit:

- Medium or large size.
- Round, flattened shape with smooth and regular surface.
- Background color light yellow with green.
- Hard skin, adherent to the pulp.
- Flesh with firm, crunchy texture and **sour taste**.
- Ripening period:* at the same time as barley, July

### Poinic variety



POINIC

Comuna / Sat – coordonate GPS:  
Almașu / Iebucu - 46.8803, 23.1082  
Cuzăplac / Mierța - 46.9936, 23.1776  
Zălha / Zălha - 46.9936, 23.1776  
Hida / Păduris - 47.09797, 23.409044  
Bălan / Bălan - 47.1568, 23.3194  
Bălan / Bălan - 47.1568, 23.3194  
Hida / Păduris - 47.097677, 23.410498  
Hida / Păduris - 47.095666, 23.409600  
Hida / Păduris - 47.096484, 23.408431  
Creaca / Jac - 47.1625, 23.1981  
Creaca / Jac - 47.1626, 23.1982  
Creaca / Creaca - 47.1943, 23.2326  
Creaca / Prodănești - 47.2104, 23.2621  
Șimișna / Șimișna - 47.238822, 23.624248  
Gârbou / Gârbou - 47.1493, 23.4188

Synonyms: Roticălat, Rotilat, Twisted, The Lady's Apple, Domnesc

Origin: variety of unknown provenance

Distribution: It is spread in the Almașu, Cuzăplac, Zălha, Creaca, Hida, Bălan, Gârbou, Șimișna communes and others located in Sălaj county

The fruit:



- Medium or large size, with H=63 mm and D=84 mm, weighing 165-443 g.
- Spherical shape is much flattened, sometimes visibly asymmetric, with a wavy surface due to the barely visible ribs; the maximum diameter located at half the height of the fruit.
- The background color is yellow-green at harvest and yellow at maturity; the covering is represented by a slight redness, over which sometimes very fine longitudinal stripes are laid. Under the skin there are small, rare, fine and discrete points, greenish or gray in color, with a rusty-black point in the center.
- The skin is thick, smooth, crumbles finely, very adherent to the flesh.
- The flesh is white-yellowish on the outside and greenish in the area delimited by the heart bundles, dense, crunchy, very juicy, **very sweet, with weak acidity**, aromatic. The pulp oxidizes quickly.
- Consumption maturity* from the end of October to April.



Fig.1. Apple varieties: Raluca's Apple, Oaržăn (Barley), Poinic, Domnesc (Lady's Apple)

### The Talgere variety



Comuna / Sat – coordonate GPS:  
Filidu de Jos / Filidu de Jos - 46.9306, 22.9644

Synonyms: not known

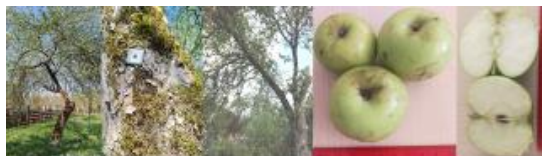
Origin: variety of unknown provenance

Distribution in Sălaj county: It is widespread in Filidu de Jos commune.

The fruit:

- Small or medium size, averaging H=5.5 cm, D=6 cm.
- Round, flattened shape with smooth and regular surface, like the Jiboane apple variety.
- Background color light yellow with red.
- Thin skin, clinging to the pulp.
- Flesh with crunchy texture and **musty, proper sour taste**.

-*Maturity for consumption* from September, extending until October.



**Fig.2. The Talgere variety – the tree and the fruit**

### **Ani's Apple variety**



Mărul ANII

Comuna / Sat – coordonate GPS:  
Almaşu / Almaşu - 46.9426, 23.1376  
Almaşu / Almaşu - 46.9418, 23.1364

Synonyms: not known

Origin: variety of unknown provenance

Distribution in Sălaj county: It is distributed in Almaşu commune.

The fruit:

-Medium size.

-Round, flattened shape with smooth and irregular surface.

-Green and red background color.

-Thin skin.

-White flesh greenish at first, then yellowish. The fruits after storage become mealy; they are winter fruits.

-*Maturity for consumption* from September, extending until October.

The fruits are often used for "Pălincă" drink, they are prepared in the oven, slices, on trays together with bread.

### **Dulce variety (SWEET)**



DULCE

Comuna / Sat – coordonate GPS:  
Creaca / Jac - nr. 209  
Creaca / Brusturi  
Cizer / Cizer - 47.0688N, 22.8513E  
Buciumi / Răstolt - 47.02866N, 23.06767E  
Şimişna / Şimişna - 47.239182N, 23.624395E  
Poiana Blenchi / Goştia

Synonyms: not known

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in the communes of Creaca, Poiana Blenchi, Buciumi, Cizer, Şimişna and others in the county.

The fruit:

-Small size, 4-8 cm diameter; a little bigger than a chicken egg.

-Ovoid shape, flattened and rounded at apex and base, with smooth and regular surface.

-Light green background color, uniform over the whole face of the fruit, light yellow when ripe.

-The skin is very thin, non-adherent to the flesh.

-Heart small, cepiform, with a central location, well defined.

-The greenish-white flesh is soft, mealy, very slightly juicy, with a **fine sweetness** and flavor.

-*The consumption maturity* is in July. It is considered a seasonal, non-resistant fruit.



**Fig.3. The Sweet Variety – the fruit**

### Clar Alb variety (CLEAR WHITE)



Comuna / Sat – coordonate GPS:  
Creaca / Jac - 47°10'1"N 23°11'53"E  
Creaca / Jac - 47.1626, 23.1954  
Creaca / Brusturi  
Creaca / Prodănești - 47.2105N, 23.2620E  
Cuzăplac / Tămașa - 47.9496, 23.1786  
Cizer / Cizer - 47.0N, 22.8E

CLAR ALB

Synonyms: not known

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in Cuzăplac commune, Tămașa village, Cizer commune, Creaca commune, Brusturi and Jac villages.

The fruit:

-Medium size, average weight of 174g.

-Variable shape, ovo-spherical fruits predominate, rarely conical-elongate.

-On the surface of the fruit, three, four, less often five, well-pronounced ribs can be observed around the calyceal cavity.

-Characteristic for this variety is the presence of a narrow and sharp edge that extends from the calyx to the peduncle.

-The background color, when harvested, is greenish, covered with a thick layer of whitish pruina, at the beginning of maturity it becomes white, and at full maturity, light yellow. On the sunny side, in some cases, a faded blush can be observed, with a brick shade.

-The skin is thin, smooth, with an abundant layer of whitish hair, which is why it looks matte, before maturity it has a hard texture.

-The flesh is white, smooth, juicy, **sweet-sour-acidic**, refreshing taste, slightly aromatic; high-quality fruit. Cellular juice can accumulate in the pulp, which makes it transparent and very tasty. Before maturity, the flesh is crunchy, when the fruit is overripe, it becomes floury.

-*Ripe for consumption* in July, the fruits can be consumed before the ripe stage.

Due to the fact that they have a soft flesh, they cannot withstand long-distance transport.

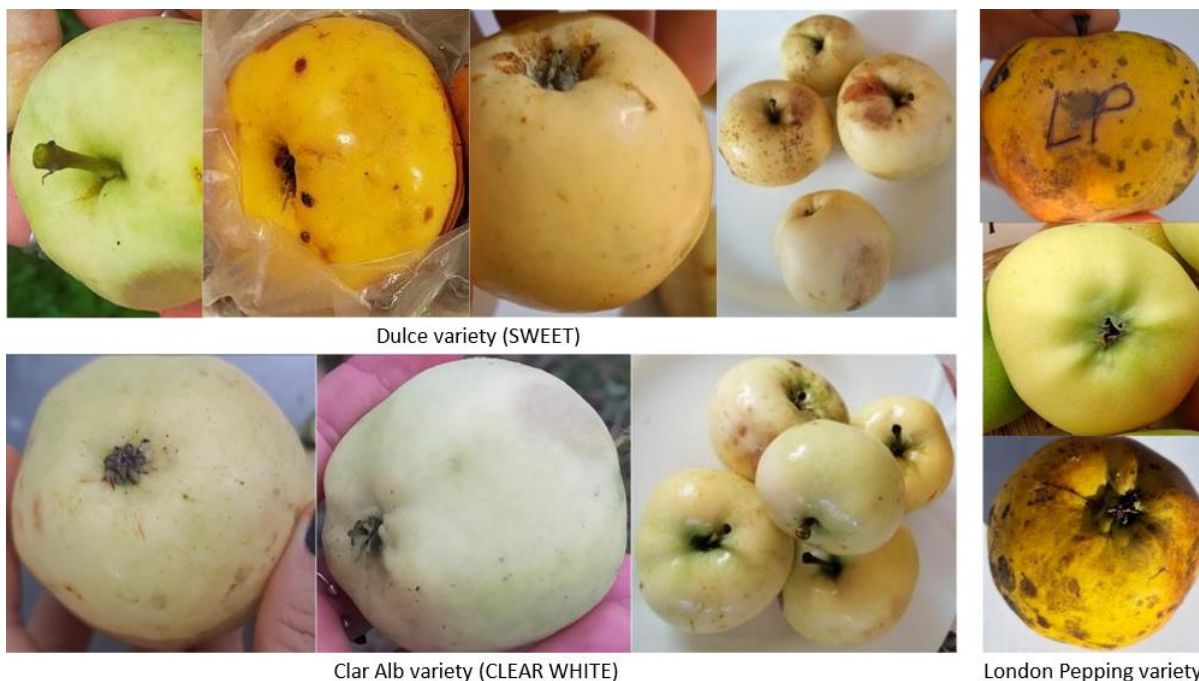


Fig.4. Apple varieties: Dulce (SWEET), Clar Alb (CLEAR WHITE), London Pepping



### London Pepping variety



Comuna / Sat – coordonate GPS:  
Zalha / Zalha - 47.1943, 23.5245

Synonyms: not known

Origin: England, Norfolk County

Distribution in Sălaj county: It is spread in the commune of Zalha and others in the county.

The fruit:

-The fruits are uneven in size, large, medium and very small fruits can be found on the same tree. Fruit weight is 93-280g; conical, irregular shape.

-The background color is yellowish-green during harvest and yellow at full maturity and covered with a lot of sebum, greasy to the touch.

-Skin thin, tough, resistant, semi-adherent, the skin comes apart nicely in big pieces when peeled, due to the abundant waxy layer, during storage it becomes greasy and glossy, acquiring a darker shade at the same time; even in May the skin of the apples does not wrinkle.

-The pulp is yellow-whitish, with green vines, crispy, quite consistent, very fine, tender, juicy, **sweet-sour**, with a very pleasant specific aroma, after long storage it becomes soft, pasty, floury, and loses its sweetness and aroma.

-*Ripening* in September – October.

-*The consumption maturity* starts from November and extends until March.

### Cormos variety



Comuna / Sat – coordonate GPS:  
Almaşu / Almaşu - 46.9448, 23.1359

Synonyms: Rennet, Răpănos

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in Almaşu commune and others from the county

The fruit:

-Small size, weighing between 70 g – 200 g

-Truncated shape, very flattened, with a smooth, sometimes asymmetrical surface.

-The background color of the peel is green at the time of harvesting and turns yellow-green when fully ripe; on the sunny side, the fruits are covered with a red-orange blush, on the surface of the skin it shows numerous rusty spots, characteristic of this variety.

-Thin, smooth, matte skin, weakly adherent to the pulp.

-The white flesh is greenish at first, then yellowish, with greenish infiltrations, soft, a little floury, crumbly, a little juicy, **without sweetness** and flavor and **with acidity lacking finesse**.

-*Ripening period:* October 10-25. *Maturity of consumption* from October, extending until April.

The fruit is good for fresh consumption and for industrialization - dried fruit, juices.





Cormoș variety

**Fig.5. Cormoș variety**



Zgueros variety (SLAGGY Apple)



Gustav / Scorțos variety

**Fig.6. Apple varieties: Zgueros (SLAGGY Apple), Gustav / Scorțos**

### **Zgueros variety (SLAGGY Apple)**



ZGUEROS

Comuna / Sat – coordonate GPS:  
Șimleușu Mare / Șimleușu Mare – 47.239205, 23.624287

**Synonyms:** Răpănos, Boskoop

**Origin:** variety of unknown provenance

**Distribution in Sălaj county:** It is widespread in Șimleușu Mare commune.

**The fruit:**

- Medium – big size.
- Slightly flattened shape, with a rough and regular surface.
- Yellow-orange background color with brown bark.
- Thick and tough skin, clinging to the flesh, covered with coarse rough rust; the bark is not shiny.
- Yellow flesh, crispy, with a **sweet – sour taste**, and noble aroma, at maturity the pulp becomes mealy.
- Maturity for consumption* from September, extending until October. The fruits rarely stay over the winter, until May.

### **Gustav variety**



Comuna / Sat – coordonate GPS:  
Creaca / –  
Poiana Blenchii / Gostila – 47.321875N, 23.796476E

**Synonyms:** Scortos

**Origin:** variety of unknown provenance, probably German

**Spread in Sălaj county:** It is widespread in the communes of Poiana Blenchii, Creaca, and others located in the county.

### **The fruit:**

- Variable size with H= 65 mm and D= 70 mm; the weight varies between 100-180 g.
- Truncated shape, flattened at the base and at the top, with the maximum diameter in the lower third; mostly asymmetric, with a smooth surface, sometimes very lightly ridged.
- The background color is green-yellow at first and later yellow-orange; over this is laid the raspberry-red covering color, and superimposed on it are interrupted, darker, purple stripes of different lengths and widths, less visible on the side exposed to the sun, because they merge with the covering color. Under the skin, numerous white-violet dots are scattered, with a lighter center.
- The skin is hard, thick, smooth, elastic, covered with dew, semi-glossy, adherent to the flesh. The whole fruit is covered with purple-tinged pruina.
- White pulp, with greenish hues when harvested, white-yellowish when ripe, consistent, fine, quite juicy, **sweet**, with slightly pronounced acidity and characteristic aroma; at full maturity it becomes floury.
- *Maturity of consumption* starts from October - November and lasts until the end of March; from April, the fruits start to lose some of their sweetness and aroma.

### **Albut variety (LITTLE WHITE)**



Comuna / Sat – coordonate GPS:  
Zalha / Zalha - 47.1934, 23.5244  
Zalha / Zalha - 47.1943, 23.5246

**Synonyms:** not known

**Origin:** variety of unknown provenance

**Distribution in Sălaj county:** It is spread in Zalha commune and others located in the county.

### **The fruit:**

- Large size.
- Spherical shape, regular, slightly flattened at the ends, symmetrical.
- Green background color during harvesting and lemon-yellow at full maturity, on the side exposed to the sun, some fruits turn red, under the skin there are white or red lenticels on the entire surface of the fruit.
- Very thin skin, hard, non-adherent to the pulp, with a slight grassy aroma.



-White pulp, tender, floury, **sweet taste**, no aroma, bland fruit. In a rotten state, the fruit has a blackish color and a rubbery smell.

-*Consumption maturity* from September to February-March.

The fruits are resistant in winter, but they do not withstand transport, because due to their thin skins, they get crushed quickly.



Albuț variety (LITTLE WHITE)



Pătul variety (BED APPLE)

**Fig.7. Apple varieties: Albuț (LITTLE WHITE), Pătul (BED APPLE)**

### **Pătul variety (BED APPLE)**



**BATUL**

Comuna / Sat – coordonate GPS:  
 Almașu / Jebucu - 46.8803, 23.1082  
 Almașu / Jebucu - 46.8975, 23.1190  
 Almașu / Jebucu - 46.8801, 23.1082  
 Almașu / Jebucu - 46.8802, 23.1082  
 Fildu de Jos / Fildu de Sus - 46.9306, 22.9644  
 Fildu de Jos / Fildu de Sus - 46.9307, 22.9644  
 Fildu de Jos / Fildu de Sus - 46.9308, 22.9644  
 Cuzăplac / Mierța - 46.9941, 23.1789  
 Cuzăplac / Mierța - 46.9933, 23.1758  
 Șimișna / Șimișna - 47.239484, 23.624047  
 Gârbou / Gârbou - 47.1600, 23.4086  
 Bălan / Gălgăul Almașului - 47.1156, 23.2019  
 Bălan / Gălgăul Almașului - 47.1156, 23.2018  
 Bălan / Gălgăul Almașului - 47.1156, 23.2018  
 Bălan / Gălgăul Almașului - 47.1156, 23.2019  
 Bălan / Gălgăul Almașului - 47.1157, 23.2019  
 Bălan / Bălan - 47.1583, 23.3182

**Synonyms:** Batul, Pat, Botul, Butul

**Origin:** original variety from the Mures valley in Transylvania, being obtained from seeds. The name Pătul is given by the way of keeping it over the winter, by the Transylvanian villagers, in the beds.

**Distribution in Sălaj county:** It is spread in the communes of Fildu de Jos, Almașu, Cuzăplac, Șimișna, Gârbou, Bălan and others in the county.

### **The fruit:**

Pătul apples acquire an excellent refreshing taste and a color highly appreciated by consumers.

-Sub-medium or small size, very uniform on the same tree and has an average weight of 143g (65g when it starts to dehydrate), the maximum diameter is at half the height of the fruit, with a width of approximately 6 cm when it is in a state of dehydration.

-The shape is spherical, regular, slightly flattened at the ends, symmetrical, having the appearance of an object modeled on a lathe.

-The background color is yellowish green during harvesting and yellow at full maturity, on the side exposed to the sun the fruits acquire a dark carmine red blush that gives them a very attractive

appearance. On the surface of the fruit there are whitish-brown spots of various sizes, spread irregularly, sometimes even rust-brown spots.

-The skin is very thin, elastic, semi-glossy, weak adhesion to the pulp, it can become tough after storage.

-The pulp is white or yellowish-white, with a green tinge, firm, compact, crunchy, very fine, juicy, **very good fine herbaceous taste, sweet-sour acid** (similar to the taste of Aronia melanocarpa fruits); they are considered first quality; deteriorates starting from the inside; can have 6-7 seeds.

-*Harvest*: early October

-*Maturity for consumption* – from the end of November or the beginning of December until April.

### **Măr din Mierța variety (APPLE from MIERȚA)**



Măr din MIERȚA

Comuna / Sat – coordonate GPS:  
Cuzăplac / Mierța - 46.9929, 23.1779  
Cuzăplac / Mierța - 46.9934, 23.1778  
Cuzăplac / Mierța - 46.9962, 23.1800  
Cuzăplac / Mierța - 46.9934, 23.1756

Synonyms: not known

Origin: Mierța village in Cuzăplac commune, Sălaj county

Distribution in Sălaj county: It is widespread in Cuzăplac commune.

The fruit:

-Medium size, having an average H=6 cm; average weight of 300-500g.

-Spherical shape, flattened, with a smooth and regular surface.

-Ground color pale yellow with pink, with few brown subcutaneous dots.

-Thin skin, non-adherent to the flesh.

-Flesh with a crunchy texture, hard initially, then soft and smooth when mature and **very fragrant sweet taste**.

-*The ripening period* from September, extending to October.



Apple variety from Mierța

**Fig.8. Apple variety from Mierța**





Șovar / Sur / Șuai variety

*Fig.9. Șovar / Sur / Șuai variety*

### Sovari variety (GRAY APPLE)



ȘOVARI / SUR / ȘUAR

Comuna / Sat – coordonate GPS:  
 Cuzăplac / Mierța - 46.9934, 23.1758  
 Cuzăplac / Mierța - 46.9933, 23.1754  
 Almașu / Almașu - 46.9459, 23.1378  
 Almașu / Almașu - 46.9462, 23.1385  
 Almașu / Almașu - 46.9455, 23.1386  
 Cizer / Cizer - 47.0689, 22.8597  
 Șimișna / Șimișna - 47.239029, 23.624550  
 Cuzăplac / Petrinzel - 46.9071, 23.1422  
 Cuzăplac / Petrinzel - 46.9193, 23.2348  
 Creaca / Brusturi - 47.1620, 23.2280  
 Creaca / Brusturi - 47.1645, 23.2287  
 Creaca / Prodănești - 47.2104, 23.2621  
 Creaca / Ciglean - 47.2243, 23.2468  
 Creaca / Creaca - 47.1931, 23.2336  
 Gârbou / Gârbou - 47.1600, 23.4091  
 Hida / Păduris - 47.098109, 23.410530 (SUR)  
 Hida / Păduris - 47.098268, 23.409790 (SUR)  
 Hida / Păduris - 47.0291328, 23.0647343 (SUR)  
 Hida / Păduris - 47.09824, 23.40995 (SUR)  
 Buciumi / Răstoliț - 47.0291328, 23.0647343 (SUR)

Synonyms: Șuai, Șoar, Șuar, Sur, Gray Apple variety

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in the communes of Cuzăplac, Almașu, Cizer, Șimișna, Creaca, Buciumi, Hida and others from the county.

The fruit:

- The size is medium, with an average weight of 140-160 g.
- Conical-truncated or spherical-elongate shape, slightly ridged.
- The background color is green-yellowish, the covering red-violet, over which reddish-brown, more or less wide, irregular stripes / patches overlap. The points stand out well.
- The skin is thick, not smooth, glossy, adherent to the pulp.
- Greenish-white pulp, with greenish infiltrations, at first crunchy, hard, and later at full maturity, tender, with a creamy consistency, **sweet and sour to the taste** and with a pleasant aroma, around the heart it is spongy and spoils starting from the middle.
- Ripening period:* Autumn apple, September - October.
- Consumption maturity* from December to May.

The fruits have a beautiful appearance, are of good quality, they stay well on the tree, they withstand transport and long-term storage very well, must be picked as late as possible, so as not to shrivel during storage. The variety is not resistant to the apple worm.

### Dulce Roșu variety (SWEET RED)



Comuna / Sat – coordonate GPS:  
Șimișna / Șimișna - 47.239605N, 23.623751E  
Șimișna / Șimișna - 47.239233N, 23.624211E  
Creaca / Jac - 47°10'1"N 23°11'53"E  
Creaca / Prodănești - 47.21N, 23.26E

Synonyms: Roșu dulce de vară

Origin: unknown

Spread in Sălaj county: It is spread in Creaca and Șimișna commune and others from the county.

The fruit:

- Small or medium size, with 9-10 large brown seeds.
- The truncated shape, with a smooth and irregular surface.
- Yellow background color, with 2/3 of the surface covered in pinkish color with dark pink stripes; similar to the Mustos variety. The skin is covered with a fine, waxy layer that covers the surface of the apple like a hoar.
- The skin is not adherent to the pulp.
- The pulp with floury texture when cooked and **fine sweet taste**. The fruits can be used as raw materials to make homemade cakes.
- *Ripening period:* July. *Maturity for consumption:* July.



Sweet Red variety



Statin (STETTIN RED) variety

*Fig.10. Apple varieties: Dulce roșu (SWEET RED), Statin (STETTIN RED)*

### Statin variety (STETTIN RED)



Comuna / Sat – coordonate GPS:  
Șimișna / Șimișna - 47.238849, 23.624016  
Cuzăplac / Mierța - 46.9931, 23.1761  
Gârbou / Gârbou - 47.1602, 23.4135

Synonyms: Statin Red, Statin, Statin Red

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in the communes of Șimișna, Cuzăplac, Gârbou.

The fruit:

- Medium size, sometimes large, with an average weight of 150g.

-Spherical or spherical-flattened shape, very regular, with a smooth surface and only rarely with weakly distinct ribs, slightly asymmetric in longitudinal section, and perfectly circular in horizontal section.

-The green background color, yellowish when ripe, is almost completely covered by a pink-raspberry on the side exposed to the sun. Sometimes warts and very narrow stripes of rust can be observed on the surface of the fruit, which extend from the calyx to the peduncle. Under the skin there are numerous small, whitish dots, which are better distinguished on the shaded side.

-The thick, hard skin peels off from the flesh, covered with a thin layer of rind.

-Whitish green pulp, with green bundles, hard, rarely crunchy, very juicy, having an **acidic taste**, without aroma.

-*Consumption maturity* from December to June. The fruit survives the winter.

### Mustos variety (JUICY)



Comuna / Sat – coordonate GPS:
Zalha / Zalha - 47.1941, 23.5239
Zalha / Zalha - 47.1934, 23.5248
Bălan / Bălan - 47.1584, 23.3182
Bălan / Bălan - 47.1583N, 23.3182E
Bălan / Bălan - 47.1573, 23.3194
Bălan / Gălgăul Almaşului - 47.1152, 23.1959
Hida / Pădurîş - 47.098456, 23.410318
Creaca / Creaca - 47.1932, 23.2322
Creaca / Brusturi - 47.1669, 23.2290
Creaca / Jac - 47.1698N, 23.1903E
Creaca / Jac - 47.1626, 23.1930

MUSTOS

Synonyms: Muciulean, Mucelean, also called Wine apples or Wort apples, Dulciu

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in the communes of Zalha, Hida, Bălan, Creaca.

The fruit:

-Large size.

-Flattened spherical shape with smooth and regular surface.

-The background color is green, over which pink-red stripes appear, undefined, as if painted and then diluted with water and the color spread over the surface of the fruit, and with a few white subcutaneous dots.

-Skin thin, smooth, matte, loosely adherent to the pulp.

-Flesh with floury, pasty texture and **sweet-sour taste**, very fragrant, musty, watery, mushy (soft and mealy).

-*Ripe for consumption* from August to September.

The fruits look beautiful, but they don't keep well on the tree, they don't withstand transport and long-term storage very well.

The fruits are good for processing. The dried fruit can be consumed in tea.





Mustos / Dulciu variety (JUICY)

**Fig.11. Dulciu / Mustos variety (JUICY)**



Vară variety (SUMMER)

unnamed late ripening apples (WINTER)

Parmen Auriu variety (GOLDEN PARMEN)

**Fig.12. Apple varieties: Vară (SUMMER), unnamed late ripening apples, Parmen Auriu (GOLDEN PARMEN)**

### Vară variety (SUMMER)



VARA

Comuna / Sat – coordonate GPS:  
 Fildu de Jos / Fildu de Sus - 46.9303, 22.9644  
 Cizer / Cizer - 47.0690, 22.8413  
 Creaca / Jac - 47.1623, 23.1980  
 Creaca / Jac - 47.1624, 23.1982  
 Creaca / Jac - 47.1623, 23.1980  
 Creaca / Prodănești - 47.2105, 23.2620  
 Creaca / Prodănești - 47.21, 23.26  
 Creaca / Ciglele - 47.2225, 23.2405  
 Creaca / Ciglele - 47.22, 23.24  
 Creaca / Ciglele - 47.2243, 23.2456  
 Creaca / Brusturi - 47.1646N, 23.2287E  
 Creaca / Creaca - 47.1932, 23.2321

Synonyms: no others are known

Origin: variety of unknown provenance

Distribution in Sălaj county: It is spread in the communes of Fildu de Jos, Cizer, Creaca.

The fruit:



- Small or medium size.
- Round, flattened shape with smooth and regular surface.
- Green and orange background color with more numerous red stripes on the side towards the sun, red core.
- Thin skin, not adhering to the pulp.
- The flesh is yellowish-white, soft, **sour-sweet, acidic**, quickly overripe, becoming mealy.
- Maturity for consumption* from September, extending until October.

The variety is suitable for processing by drying, and can be obtained from fresh fruit, dried apples in the form of chips or cubes.

### **Parmen Auriu variety (GOLDEN PARMEN)**



Comuna / Sat – coordonate GPS:  
Fildu de Jos / Fildu de Sus - 46.9312, 22.9650  
Buciumi / Răstolt - 47.029171, 23.067338  
Buciumi / Răstolt - 47.0291328, 23.0647343  
Bălan / Gălgăul Almaşului - 47.1157, 23.2019  
Bălan / Gălgăul Almaşului - 47.1049, 23.1840  
Bălan / Bălan  
Poiana Blenchiu / Gostila - 47.324177N 23.796348E

**Synonyms:** Golden parmen

**Origin:** variety obtained in England, of unknown origin, introduced into culture in 1802

**Distribution in Sălaj county:** It is spread in the communes of Fildu de Jos, Buciumi, Bălan, Poiana Blenchiu.

### **The fruit:**

- Average or above average size, fairly uniform, with H=39-68 mm and D=49-75 mm; the weight of a fruit varies between 85 and 245 g, with an average of 167 g.
- The truncated or sphero-conical shape, flattened, wider towards the base, rounded in the region of the cavity of the calyx and the peduncle, in general, very regular, with a smooth surface; in cross-section, the outline of the fruit is regularly rounded; sometimes the fruits are a bit asymmetrical; the maximum diameter of the fruit is less than half the height.
- The background color is greenish-yellow in the harvest season and yellow-orange, with golden reflections at maturity, being covered on the side exposed to the sun with red-orange blush, over which stripes/spots of different shapes and sizes are superimposed, of color carmine, of varying shades and intensities that give the fruit an attractive appearance. On the entire surface of the fruit there are small, rounded or angular, cork-colored or reddish dots, spread irregularly; under the skin you can see other small dots, of a lighter color, almost whitish.
- The skin is thin, elastic, hard, rough due to the very fine rust, olive, stretched irregularly in the form of mycelium, matte, rarely glossy, covered with wax; as the fruit approaches maturity, it becomes oily; some fruits have greenish-copper warts.
- The pulp is yellowish, with numerous golden veins, at first harder, dense, then juicy, crunchy, fine, **sweet-sour, acidic**, aromatic, fragrant, very good taste, when ripe.
- Maturity for consumption* begins immediately after harvesting and extends until October-December, and in some cases until January-February. The fruits have a beautiful appearance, they stay well on the tree, they withstand transport and long-term storage very well.



**Fig.13. Apple varieties: Jonathan, Franc, Ronean**

### Jonathan variety



**JONATHAN**

Comuna / Sat--coordonate GPS:  
Cuzăplac / Mierla - 46.9933, 23.1765  
Hida / Păduris - 47.098103, 23.410573  
Hida / Păduris - 47.097769, 23.410471  
Hida / Păduris - 47.098655, 23.408513  
Creaca / Jac - 47.1621, 23.1982  
Creaca / Jac - 47.1626, 23.1981  
Creaca / Jac - 47.1742, 23.1639  
Creaca / Creaca - 47.1932, 23.2318  
Creaca / Brusturi - 04378E2CB7181  
Creaca / Brusturi - 0491C2E3CB7180  
Creaca / Brusturi - 47.1613, 23.2259  
Creaca / Brusturi - 47.1620, 23.2277  
Buciumi / Răstoli - 47.0285, 23.0677  
Buciumi / Răstoli - 47.0293, 23.0668  
Buciumi / Răstoli - 47.0291, 23.0672  
Creaca / Prodănești - 47.2105, 23.2618  
Almașu / Petrinzel - 45.5425, 23.0832  
Gârboi / Gârboi - 47.1583, 23.4207  
Creaca / Creaca - 47.1962, 23.2324

Synonyms: does not have

Origin: originally from the USA, obtained in 1880

Distribution: In our country it is found in many gardens near the houses.

The fruit:

-Medium or medium size fairly uniform on the same tree, with average dimensions H=51-79mm and D=52-82mm, average weight of 113g for trees grafted on

wild apple and 131g, varying between 110-147g for dwarf trees.

-The fruit has a beautiful appearance, conical-truncated shape, rounded at both ends, regular and almost symmetrical, with the maximum diameter located at the middle of the height or slightly displaced in the lower half of the fruit; smooth surface, with barely visible ribs towards the calyx; in cross section, the outline is almost regular.

-The yellow background color, with a slight greenish yellow tint, can be observed only on the shaded side of the fruit and in the calyx cavity; the covering color, which extends almost over the entire fruit, is bright blood-red, over which dark burgundy stripes extend, barely visible in most fruits. On the whole surface there are round, whitish - yellow subcutaneous, rare, very small dots. In the region of high hills, as well as in cool years, the fruits do not color intensely, but remain yellow with a diffuse blush; in such conditions, the fruit does not have the characteristic blood color, but is striped, through uneven brushstrokes.

-The skin is medium thick, smooth, hard, elastic, crumbles when stored in poor conditions, shiny, slightly waxy and with a faint fragrance; many fruits are slightly rough due to a fine layer of rust that covers part of the surface of the fruit in the form of mycelium.

-Of good quality, yellowish-green flesh, creamy yellow or darker yellow in the heart area, in some fruits under the skin with reddish infiltrations, very fine crispy texture, juicy, strongly aromatic excellent taste, **sweet, barely acidic**.

-*The consumption maturity* starts in September and lasts until April-May. Fruits sit well on the tree, withstand transport and long-term storage very well.

### Tigănesc variety (GYPSY)



Comuna / Sat – coordonate GPS:  
Șimișna / Șimișna - 47.239506, 23.624199

TIGĂNESC

Synonyms: Gypsies

Origin: variety of unknown provenance

Distribution in Sălaj county: It is widespread in Șimișna commune.

The fruit:

-Big size.

-Spherical shape, flattened, with a irregular surface.

-Black or dark red skin, cherry-colored.

-Thin skin, adherent to the flesh.

-Flesh with slightly soft texture, crunchy, **sweet and sour taste**; If they are stored for about two weeks, they become floury; perishable.

-*Ripen* in autumn, September - October

-*Maturity for consumption* from September, extending until October.



Tigănesc variety (GYPSY)



Roșu (RED) variety

**Fig.14. Apple varieties: Tigănesc (GYPSY), Roșu (RED)**

## 4. CONCLUSIONS

During the study, I found that within the communes considered HNV areas located in Sălaj County, the distribution of traditional old apple varieties and their number is uneven. In addition, from one commune to another, farmers are not aware of the existing varieties.

Batul apple variety is based on Albuț variety.



The Şovar, Sur, Şuar, Şuai varieties are similar varieties.

The existence of the varieties with the name Winter and Ronean has not been validated.

The varieties Mărul Anii, Talgere, Mărul din Mierţa, are not clearly nominally established and validated.

Some apple specimens considered to be Parmen Auriu variety, could be local varieties of Vară variety.

The most widespread old apple variety in Sălaj County is Vară variety.

Poinic apple variety is the most widespread in the Creaca commune from Sălaj County.

For processing and marketing, only apple varieties whose fruit could be both clearly named and morphologically observed in the field can be used. The fruits can be used both for fresh consumption and for the production of dried apples. For the manufacture of apple chips, varieties with thin skin are suitable.

The fruits of Jonathan, Şovar, Franc, Pătul, Statin, London Pepping, Vară and Poinic varieties contained worms inside the apple core, showing that the varieties have no resistance and have some predisposition to infestation, which leads to difficulty in processing and use.

Among the established apple varieties, those with yellow or shades of yellow are: Cormoş, Albuţ, Dulce, Mărul Ralucăi, Oarzăn, Zguros, Poinic, Clar Alb, London Pepping.

The apple varieties with a sweet taste are Poinic, Dulce, Gustav, Măr din Mierţa, Roşu Dulce, Jonathan, while the apple varieties with a sour or sweet-sour taste are Mărul Ralucăi, Oarzăn, London Pepping, Mărul Anii, Clar Alb, Zguros, Albuţ, Pătul, Cormoş, Şovar, Statin, Țigănesc, Parmen Auriu, Vară, Mustos, Roşu.

## 5. ACKNOWLEDGEMENTS

This study was carried out within the project entitled "TRADITIONAL ROMANIAN APPLE IN ECOLOGICAL SYSTEM: PRESERVATION OF GENETIC HERITAGE AND LONG-TERM ECONOMIC DEVELOPMENT, No. C161A0000011863300011 / 04.05.2021" - Main funding source: Romania - Rural Development Program (National).

## 6. REFERENCES

- 1.(1964) – Pomologia României [Pomology of Romania], Vol II., Editura Academiei Române
- 2.NFC fruit (undated) Unpublished characterisation by staff at NFC, Brogdale from <http://www.nationalfruitcollection.org.uk/full2.php?varid=1607&&acc=1958103&&fruit=apple>
- 3.Barbu, I. (2014) RAPORT FINAL - Listă descriptivă a soiurilor de măr și păr din zona SIBIEL-FÂNTÂNELE from [http://www.traiverde.ro/uploads/fisiere\\_biblioteca/13/A1.2.%20Lista%20descriptiva%20a%20soiurilor%20de%20mar%20si%20par.pdf](http://www.traiverde.ro/uploads/fisiere_biblioteca/13/A1.2.%20Lista%20descriptiva%20a%20soiurilor%20de%20mar%20si%20par.pdf) [Descriptive list of apple and pear varieties from the SIBIEL-FÂNTÂNELE area]