APPLE PRODUCTION IN REPUBLIC OF MOLDOVA

PRODUCŢIA DE MERE DIN REPUBLICA MOLDOVA

BALAN V. [1]***, BÎLICI Inna***[1]***, BALAN P.***[1]
e-mail: innabotnariuc@mail.ru

Abstract. *This paper presents a study on the development of apple orchards and especially in recent years in Moldova. The total area of apple orchards is decreasing from 70300 ha in 2003 to 64210 hectares in 2013, of which: 63.10 thousand hectares are traditional orchards and groves only 9200 ha superintensive. And for the years 2015-2025 is forecast to gradually increase the area up to 18920 ha orchard superintensive. This development will allow a rapid increase of productivity and fruit quality.*
Key words: fruit growing, plantation, apple, harvest.

Rezumat. *Această lucrare prezintă un studiu asupra dezvoltării livezilor de măr în special pe durata ultimilor ani în Republica Moldova. Suprafaţa totală ocupată de livezile de măr a scăzut de la 70300 hectare în 2003 la 64210 hectare în 2013, din care: 63,10 mii hectare sunt livezi clasice şi numai 9200 hectare de plantaţie superintensivă. Pentru anii 2015-2025 se preconizează creşterea suprafeţei cu plantaţii superintensive până la 18920 hectare. Această dezvoltare va permite o rapidă creştere a productivităţii şi a calităţii fructelor.*
Cuvinte cheie: pomicultură, plantaţie, măr, recoltă

INTRODUCTION

Moldovan fruit growing passed through several stages, including changing the ratio of state and private property in favor of private property. Suffice to mention that the area of fruit plantations was reduced from 251 000 ha in 1993 to 135 600 ha in 2015. At the present, there are recorded 65 300 hectares of seed orchards and 42.0 thousand hectares kernels fruits. Development of fruit growing in Moldova at present lies in the efficient operation of orchards existing potential unspent and replaced successively with new orchards type superintensive with an assortment of modern and advanced technologies that bring into early bearing, high productivity fruit during fructification (40-45 t ha), required quality and competitive in domestic and foreign markets (Babuc *et al.*, 2013)

MATERIAL AND METHODS

The study refer to the evolution of the main indicators of Moldovan fruit growing such as: developments in the area of fruit, apple orchards developments in the area after culture system, productivity developments plantation of apple rootstocks and varieties perspective.

[1]State Agrarian University of Moldova, Chişinău, Republic of Moldova

RESULTS AND DISCUSSIONS

The main fruit tree species in temperate areas of the globe is the apple, and in Moldova it ranks first among the fruit tree species cultivated in accordance with the conditions of culture and it is well represented in all areas of the country orchards (Bucarciuc, 2015).

In accordance with horticulture development concept approved by the Ministry of Agriculture and Food Industry in Moldova in 2020 is expected that orchards area will be about 100 thousand hectares, and the global harvest of fruit will be 900-980 thousand tons. Abovementioned area of 50-60 percent will be occupied with apple orchards, of which 20-25 percent will be superintensive plantations (Gudumac 2008).

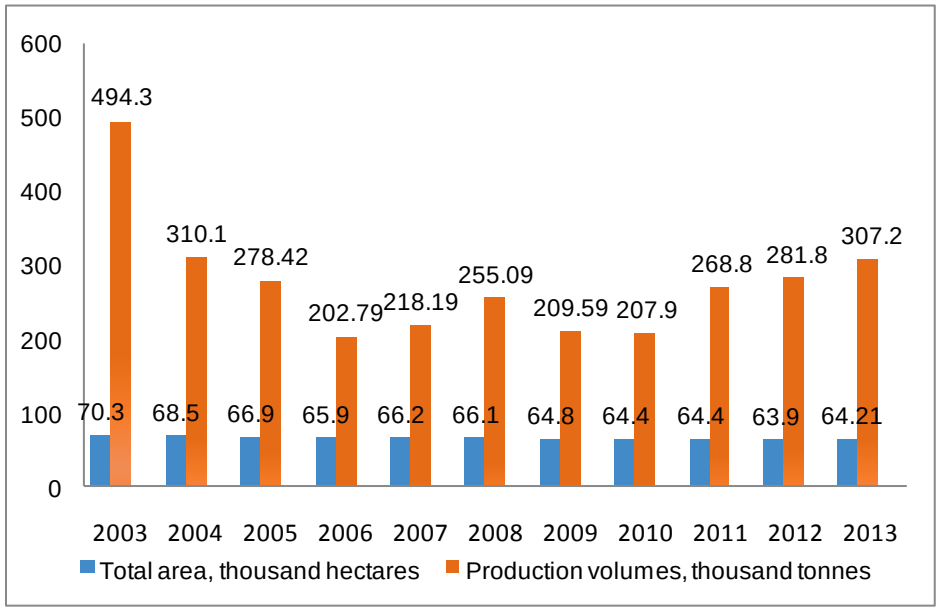

Fig.1 Dynamic area of apples orchards and fruit volume during 2003-2013

Analyzing the dynamics of the total area planted with apple certify that during 2003-2013 (fig. 1) declined from 70 300 ha in 2003 to 64210 hectares in 2013.

The average harvest of apple per hectare within the European Union was in limits of 25.9 tons in 2014 (fig. 2). The highest harvest per hectare in EU countries was registered in Slovenia with production exceeding 60 t/ha, followed by Belgia and Netherlands more than 40 t/ha, France and Italy with more than 30t/ha, while Austria and Germany to 30 t/ha. Other countries have a major harvest in up to 20 t/ha and Moldova recorded in 2014 6.4 t / ha (Gudumac 2008).

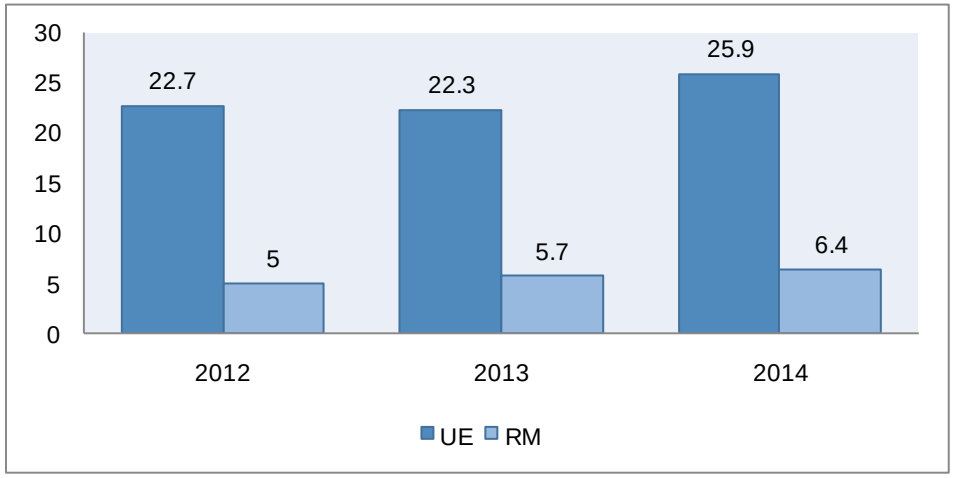

Fig. 2 The average harvest of apple per hectare, tons

The establishment of new plantations will be made according to basic scientific projects oriented towards optimizing assortment of varieties, according to the requirements of markets, ever fuller use of the potential ecological, biological, technological, economic, sector specific to each field individually. Annually will be planted around 2.5-2.7 thousand hectares of new orchards harvest capable of producing high-quality, international standards (Gudumac, 2008).

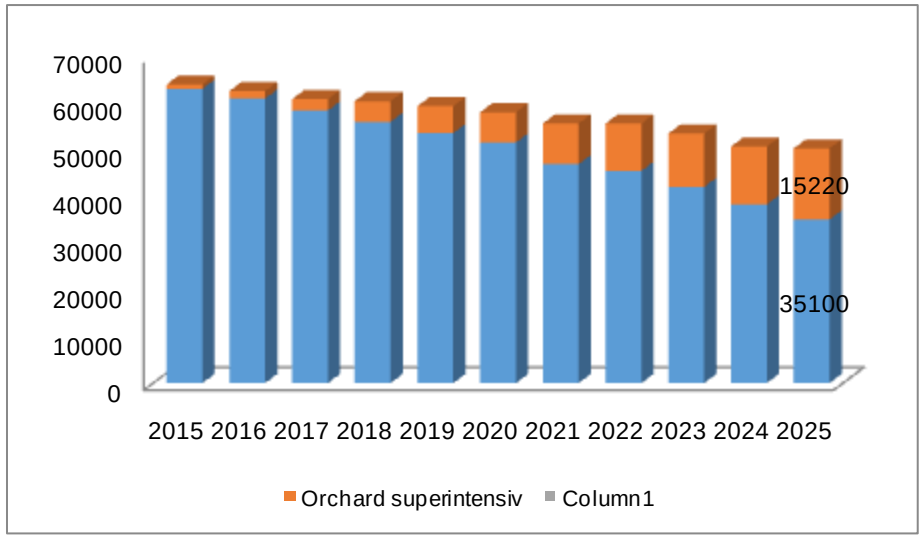

Fig. 3 Forecast apple orchards after culture system, ha

Analyzing the surface of apple orchards after culture system (fig. 3), we see that even in 2025 it is forecast a decrease traditional orchards surfaces, being gradually replaced by a superintensive orchards. This means high yield, fruit quality, high level of mechanization of work, low costs for the workforce and stable quantity of fruit.

Supeintensive orchard apple tree planting material for 2 years with chronic trees will allow to get the first crop of 1-2 year after planting with capital spending recovery in 2 years full fruit. It is characterized by the following advantages:

- Increasing productivity per unit of plantation area 4-6 times quality fruit;
- Due to decrease of crown volume will allow to perform more easily the care procedures of trees (tree pruning, harvesting fruit, disease and pests control);
- Increasing productivity will help increase the amount of pesticide per unit of production;
- Decrease the prime cost of production essential - 2-3 times;
- Will use more efficient agricultural machinery, water, mineral fertilizers;
- Production during the vegetation will be protected from unfavorable environmental factors (hail, direct sunlight, causing burns on fruit) etc.

Much importance have the rootstock and assortment of fruit, which in most orchards are old and do not corresponds to the requirements domestic and foreign market. In recent years the register assortment of Moldova approved new varieties that were introduced by performance, new disease resistant, requiring less intervention, more effective protection and biotic use, high productivity and adequate quality fruit market requirements.

Rootstock selected for the establishment of an orchard must possess a great capacity to adapt ecological and to offer corresponding vigor rootstock to expedite entry fruit, grafted varieties and ensure a constant and rich fruition with top quality fruit. Most used rootstock is M9 for superintensive apple plantations.

M9 rootstock induces small vigor, because trees have shallow roots tied to the trellis orchard, not to be uprooted by strong winds. It has good affinity with all varieties. It prefers fertile, irrigated and permeable soils. Trees grafted on M9 bear fruits much earlier, have high productivity fruit quality, competitive. Currently M9 rootstock and its clones are most required to establish plantations superintensive worldwide.

In line with consumer requirements and improvers of fruit, perfecting assortment of apple varieties grown every year. New varieties must possess high efficiency. High efficiency is determined primarily by the high productivity of the variety, which fully satisfy producers, genetic resistance to diseases and pests, very good taste qualities of apples that meet consumer requirements (Gudumac 2008).

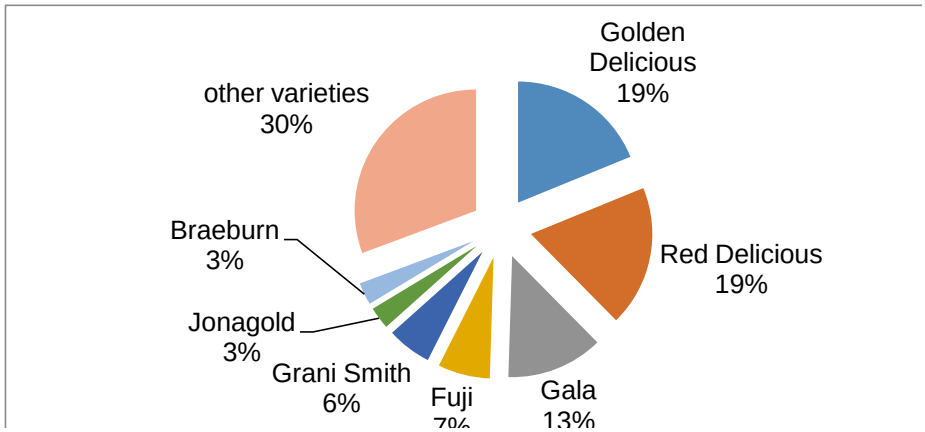

Fig. 4 The report of the main apple varieties grown worldwide

The present assortment of apple it is very rich worldrepresenting about 10-12 thousand varieties. As a worldwide assortment of apple varieties predominate: Golden Delicious, Red Delicious, Gala, Fuji, Grany Smith, Jonagold, Braeburn, and others (fig 4).

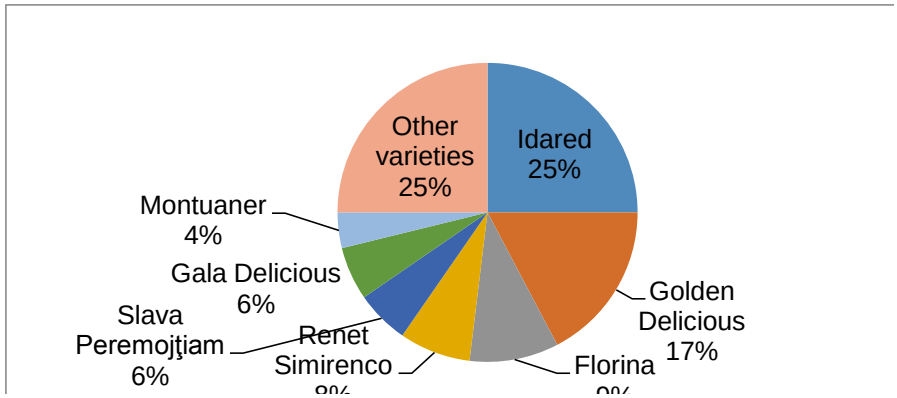

Fig.5 Apple production in Moldova after varieties, 250 thousand tons

In Moldova in 2015, the first place was located by Idared variety, followed by Golden Delicious, Florina, Renet Simirenco, Slava Peremojţiam Gala, Delicious, Montuaner and others (fig. 5).

In the years 1977-2004 the focus was on early bearing fruit varieties entry, and in the years 2005-2015 resorting to the introduction into production of the best varieties, cultivated in major fruit producing countries in the European Union and other countries of the world. Thus, in 2015 were recorded in the Catalogue of Plant Varieties of the Republic of Moldova 16 apple varieties asked by producers

and which is popular at consumers in the international market: Early Geneva, Discovery, Vista Bella, Redfree, Braeburn, Crimson Crisp, Dalinete, Dalirene, Fuji, Galaval, Simons Gala, Granny Smith, Jeromine, Jonica, Mutsu, Wilma (Bucarciuc, 2015).

CONCLUSIONS

Fruit-growing area was reduced from 251 000 ha in 1993, to 135 600 in 2015. At present, recorded 65 300 hectares of seed orchards and 42.0 thousand hectares kernels fruits. Apple orchard area in 2003 amounted to 70030 hectares and was decreased by 6009 hectares in 2013.

The area of classic orchards in 2015 recorded 63.10 thousand hectares, and until 2025 is projected to decrease surface up to 12 050 ha, which is gradually replaced with super-type orchards that will enable rapid growth, competitiveness and quality of fruits. Global fruit harvest in 2015 is 480 800 tonnes.

Apple assortment in Moldova is permanently developing, completing and continuing modernization in line with market requirements and consumer in the first place. Planting the modern apple orchards will enable the complete assortment of apple varieties in our country with us and very valuable competitive.

Concept development of horticulture in Moldova provides for effective exploitation of orchards existing potential essentially unspent and replaced successively with new orchards super intensive type with an assortment of modern and advanced technologies that bring into early in bearing high productivity fruit during fruiting (40-45 t/ha), required quality and competitive in domestic and foreign markets.

REFERENCES

1. **Babuc V.,Peşteanu A., Gudumac E., Cumpanici A., 2013** - *Producerea merelor*, Chişinău 2013, 6-31 p.
2. **Bucarciuc V., 2015** - *Soiuri de măr de perspectivă*, Chişinău 2015, 6-30-39 p.
3. **Gudumac E., 2008** - *Înfiinţarea şi exploatarea livezilor superintensive de măr,* Chişinău, 2008, 6-9-12 p.