STUDY ON THE BEHAVIOR OF POTATO VARIETIES WITH DIFFERENT PERIOD OF VEGETATION IN PEDOCLIMATIC CONDITIONS IN THE BANAT PLAIN

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Abstract: *The study aimed at introducing and expanding new varieties in culture, which would respond to fresh consumption and industrialization. The applied technology is consistent with the current trend of introduction and expansion of soil conservation works in our country, a direction in which there is already some progress. The yield of tubers per hectare was calculated and determinations were made on the starch content, which ranged from 16% to 19.2% in the area under study. The tuber yield varied between 27,331 kg / ha and 38,645 kg / ha. The harvest of the late varieties was between 27,693 kg / ha for the Garet variety and 36,3310 for the Armonia variety, and for the semi-late varieties the harvests were between 27,331 kg / ha for the Productive variety, 38,645 kg / ha for the Albioana variety, 30,712 kg / ha for Nemere variety and 32,963 kg / ha for Red Sec. Determinations of tuber weight by variety and size ranged from 178 g for the Harmonia variety to 128 g for the Albioana variety for large tubers, from 81 g for the Nemere variety to 38 g for the Albioana variety for medium tubers and from 20 g for the variety Nemere and 31 g of the Harmonia variety in small tunnels.*

Key words*: potato varieties, their production and quality.*

INTRODUCTION

The potato was introduced and spread with difficulty in world agriculture, and is currently one of the most important crops, widespread in the world, occupying over 27% of the world total. Potato variety contributes 40-60% in the production of potatoes (BERINDEI M., 1985). The number of varieties in the world is very large, grouped by the most important characteristics (vegetation period, production, quality, resistance to degeneration and various other stressors such as drought, various diseases, etc.). In each country is cultivated. a large number of varieties (for example in Germany, in 1998 225 varieties were considered, of which 51 varieties owned 80% of the cultivated area) BÎLTEANU GH., 2001. In Romania, in the Official Catalog of cultivated plant varieties (hybrids) from 2000, 64 varieties were registered, a number that has halved in recent years.

The study aimed at introducing and expanding new varieties in culture, which would respond to fresh consumption and industrialization. The applied technology is consistent with the current trend of introduction and expansion of soil conservation works in our country, a direction in which there is already some progress (BERCA M., 2011).

MATERIALS AND METHODS

The varieties studied were: Harmonia, Garet, Nemere, Productiv, Red Sec and Albioana, of which the first two are late and the next four are semi-late.

The forerunner was the cultivation of autumn wheat. Fertilization was carried out uniformly, with 25 t / ha of manure and 300 kg / ha of complex fertilizers of the 15:15:15 type. The soil works were the current ones, specific to the potato crop. The tubers were planted in the first half of the first decade of April, with a density of 40,000 nests / ha, which would provide over 180 thousand vines. Weed control was carried out by spraying with Dual gold 960 EC and

Sencor 600 SC. Treatments against diseases and pests were carried out during the vegetation. Harvesting was done at the physiological maturity of the tubers.

The method of placing the experiment was that of blocks with linear placement. After harvesting, determinations were made regarding the weight of the tubers in the nest; determinations on the length and diameter of the tubers, by size categories (large, medium and small). The production of tubers was determined and analyzes were carried out on the starch content for each variety.

RESULTS AND DISCUSSIONS

Table 1 shows the harvest results obtained.

Table . 1

Harvest results obtained in the comparative culture with potato varieties in the Banat Plain.

VARIETY	Harvest kg / ha	%	Difference kg / ha	The meaning
Harmony	36310	100		
Garet	27693	76	-8617	OOO
Nemere	30712	84	-5598	OOO
Productive	27331	75	-8979	OOO
RedSec	32963	91	-3347	OOO
Albion	38645	106	2335	XXX

DL5% = 708
DL1% = 1007
DL 0.1% = 1458

It results that out of the 6 varieties studied, two varieties were registered with harvests between 35 thousand and 40 thousand kg / ha, two varieties were classified between 30 thousand and 35 thousand kg / ha and two varieties between 25 thousand and 30 thousand kg / ha. The highest yield was obtained for the Albioana variety of 38,645 kg / ha, surpassing the harvest of the control Harmonia variety by 6% and 2335 kg / ha, respectively, a statistically significant difference. placed under the harvest of the late Harmonia variety with very significant negative differences, between 3347 kg / ha for the Red Sec variety and 8979 kg / ha for the Productive variety.

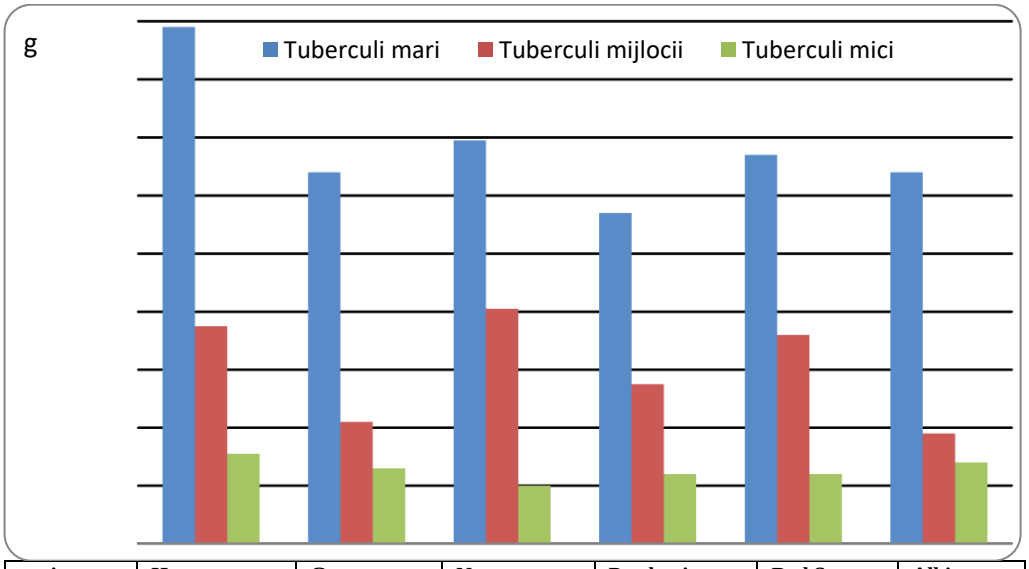
It should be noted that in all the studied varieties the yields were below their productive potential, their biological capacity being 55 t / ha for Garet and Red Sec varieties, 52 t / ha for Productive variety, 50 t / ha for Albioana variety and 48 t / ha t / ha of the Nemere variety.

The classification of the 2021 crops below the productive potential of the varieties was due to the deficit of precipitation, from the respective critical interval of June, July, August, September when the semi-late and late varieties require 90-120 mm per month, the quantities falling in the area being smaller and the average monthly temperature was 250C in August.

One of the conclusions is that the area is more favorable for early and summer varieties, as well as the need to ensure irrigation for the safety of crops over 40 t / ha to ensure the coverage of current production costs,

At harvest, determinations were made regarding the weight of the tubers, their length and diameter, and quality analyzes were performed on the starch content.

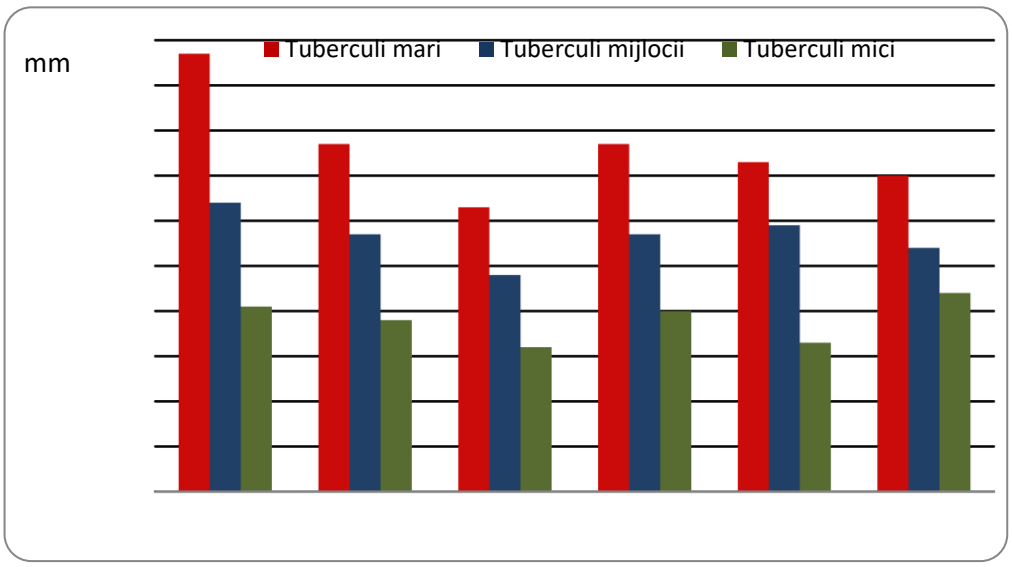
Figure 1 shows the results regarding the weight of the tubers, by size categories for the studied varieties.



variety	Harmony	Garet	Nemere	Productive	Red Sec	Albion
Large tubers	178	128	139	114	134	128
Medium tubers	75	42	81	55	72	38
Small tubers	31	26	20	24	24	28

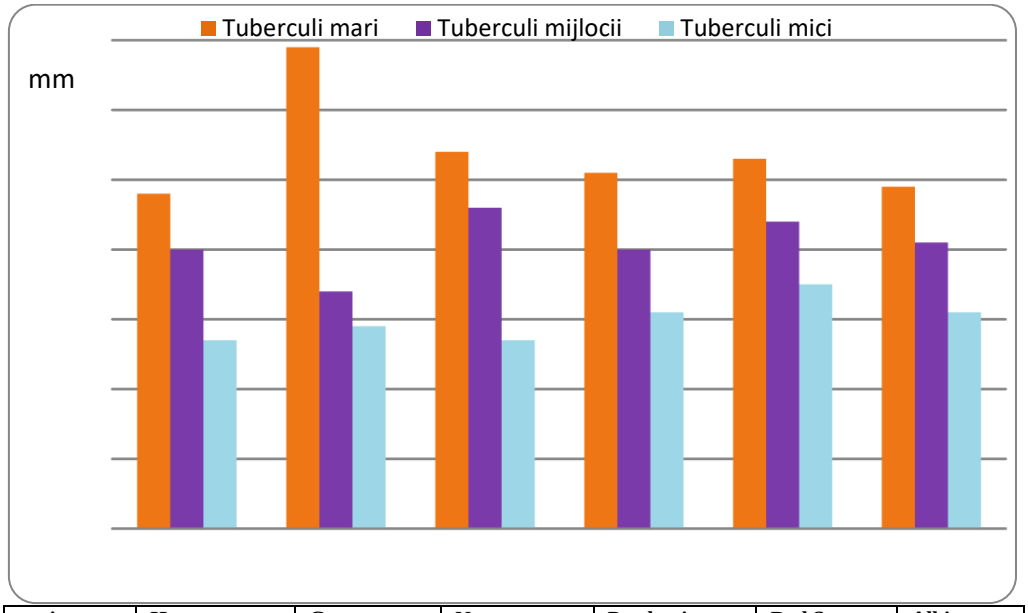
Fig.1. Variation of tuber weight by variety and size (g)

It results that in the 4 semi-late varieties the values in the large tubers ranged between 139 g and 114 g, in the medium tubers the values were between 81 g and 38 g and in the small tubers between 20 g and 28 g.



variety	Harmony	Garet	Nemere	Productive	Red Sec	Albion
Large tubers	97	77	63	77	73	70
Medium tubers	64	57	48	57	59	54
Small tubers	41	38	32	40	33	44

Fig.2. Variation in tuber length depending on variety and size (mm



variety	Harmony	Garet	Nemere	Productive	Red Sec	Albion
Large tubers	48	69	54	51	53	49
Medium tubers	40	34	46	40	44	41
Small tubers	27	29	27	31	35	31

Fig.3. Variation in tuber diameter by variety and size (mm

Figure 2 shows the results of the determinations on the length of the tubers, which ranged from 97 mm to 63 mm for the large tubers, from 64 mm to 48 mm for the medium tubers and from 14 mm to 32 mm for the small tubers.

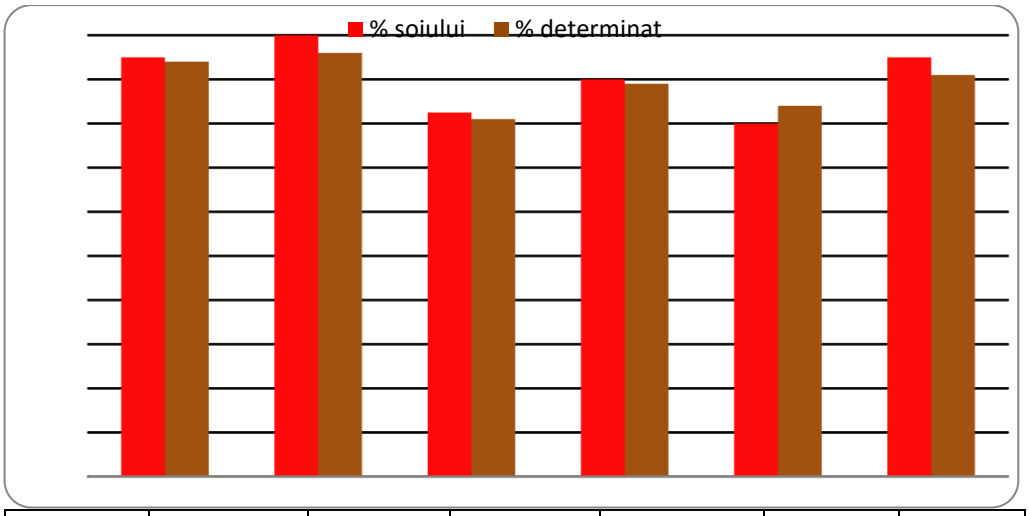
Figure 3 shows the diameter of the tubers, which recorded values between 69 mm and 48 mm for large tubers, between 46 mm and 34 mm for medium-sized tubers and between 27 mm and 35 mm for small tubers.

The dimensions of the tubers varied depending on the shape of the tubers, the genetic characteristic of each variety, as well as the pedoclimatic peculiarities of the area where the research was carried out.

Figure 4 shows the variation of the determined starch content compared to the starch content mentioned by the improver.

The starch content is a genetic feature of each variety but also influenced by the climatic conditions in the area where it is grown in that year.

In the present research, in five of the experimental varieties the starch content was lower than that with which the varieties were launched into production, with the exception of the Red Sec variety in which the value of the determined content was significantly higher. The highest starch content was determined by the late varieties Harmonia and Garet, to which the semi-late variety Albioana was aligned.



variety	Harmony	Garet	Nemere	Productive	Red Sec	Albion
% of the variety	19.0	20.0	16.5	18.0	16.0	19.0
% determined	18.8	19.2	16.2	17.8	16.8	18.2

Fig.4. The variation of the starch content determined in comparison with the content of the variety.

Analyzing the quality of the varieties in terms of starch content, for food consumption the most valuable are the varieties Nemere and Red Sec in which the content is below 17% followed by the productive variety in which the content was 17.8%.

CONCLUSIONS

1. A study carried out in the Banat Plain on a soil with a typical glycated chernozem type, weakly glazed, loam-clayey epicalcaric, showed that in this very favorable area for early potatoes, semi-late and late varieties can also be cultivated with good results. Thus, the best results were obtained for the semi-late Albioana variety, in which the harvest obtained was 38,645 kg / ha, followed by the late Harmonia variety with a harvest of 36,310 kg / ha.
2. The biometric measurements performed at harvest on the tubers showed that the texture of the soil in the experimental field ensured the obtaining of tubers that kept their specific shape of the studied varieties.
3. The starch content of 5 of the studied varieties was below their characteristic, due to the lower amount of precipitation and their distribution throughout the vegetation period. The highest content was determined for the Garet variety of 19.2%, followed by the Armonia (18.8%) and Albioana (18.2%) varieties.

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