Scientific Papers. Series B, Horticulture. Vol. LXII, 2018
Print ISSN 2285-5653, CD-ROM ISSN 2285-5661, Online ISSN 2286-1580, ISSN-L 2285-5653

RESEARCH ON THE VARIETY INFLUENCE ON VEGETABLE GROWTH AT APRICOT SPECIES IN SANDY SOILS CONDITIONS IN SOUTHERN OLTENIA

Viorel ENACHE, Mihaela CROITORU, Milică DIMA

Research-Development Station for Plant Crop on Sands Dăbuleni, Dolj County, Romania

Corresponding author email: enacheviorel13@yahoo.com

Abstract

The growth of shoots is a basic element in the relationship between growth and fructification, on which depends the fruit trees equilibrium respectively the production provision for year and next years. Cuttings made during the spring and green works on annual increases are a very important link in agrotechnics of intensive plantations, but at the same time an element that loads the production cost. In conditions the sandy soils from Dăbuleni, fourteen apricot varieties were studied, with different maturation periods, but also with differences in growth processes. Of the three experimental years, the highest annual growth rates were recorded in year 2015 (158.21 cm average varieties) year in which both the air temperature and the amount of rainfall were at normal values during the intensive growth of the shoots. The rhythm of most intense growth was recorded in June and July, after which it diminished slightly in August and September as a result of the ending vegetative increases of vegetative growth and the beginning of preparing the trees for the winter dormancy. The year 2016, following the measurements made, showed smaller growth increases (124.21 cm), due to the thermohydric stress conditions in the sandy soil area. In year 2017, on the background of optimum soil humidity the growth of shoots was very intense as early as May. Due to the fact that in 2017 the trees presented fruit, the growth rate decreased in June and July, and after the harvesting production, the vegetative growths again showed an intense rhythm. The average value of varieties was 121.60 cm. The varieties that showed the highest annual increases in the three years of study were 'Crystal' (130.2-190.2 cm) and 'Orizont' (132.8-199.2 cm).

Keys words*: dynamic, annual growths, shoots, works in green.*

INTRODUCTION

The changes expected in the climate regime in Romania fall within the global context, but with particularities specific to the geographic region in which it is located. Compared with northwestern Europe, for example, where the warmest heating is expected in winter, for Romania, heating is expected to be more pronounced during the summer (Sunley et al., 2006).

In the intensive growth process, the synthesized substances are consumed almost entirely, the accumulations being poorly represented. In the phenophase of intense growth, trees have high nitrogen and water needs to form new tissues to increase the volume and size of the crowns.

The intense growth phenophase of shoots is due to the production and spread of neoformed internodes, an activity that is growing more and more accelerating. As a result of this intense activity, the shoots grow in length, the number of leaves and the foliar surface grow rapidly, the leaves being of normal size (Baciu Adrian A., 2005).

In the juvenile period the interval that is sufficient for the tree not to suffer is between 10-20 branches on the tree. As trees grow, their number may increase, suggesting that 40% of the branches are vegetative (Mitrea, and Tudosie, 2011).

MATERIALS AND METHODS

The research was carried out at the, Research-Development Station for Plant Crop on Sands Dăbuleni in the apricot species, with fourteen varieties.

The trees were planted at a distance of 4 m x 4 m, and the crown shape was flattened.

Determinations have been made on the growth rate of annual shoots from May to September during the period 2015-2017.

RESULTS AND DISCUSSIONS

Measurements of the growth rate of shoots in apricot varieties were carried out in vegetation phases from May to the end of September. The results obtained are presented in table 1. The measurements included a group of fourteen varieties with different ripening time and highlighted very differentiated growth depending on the variety and climatic conditions.

In the climatic conditions of year 2015, the length of the shoots was of 77.8 cm at the 'Goldrich' variety, and 101.2 cm at the 'Cristal' variety in May, and reached the end of the growth at values ranged between 128.5 cm at the 'Goldrich' variety and 190.2 cm to the 'Cristal' variety (Table 1).

Compared to the 'Olimp' control variety, the annual growth rates were of 158.4 cm in September, higher values been determined to the next varieties: 'Histria' (169.2 cm), 'Cristal' (190.1 cm), 'Auraş' (161.4 cm), 'Ceres' (179 cm) and 'Orizont' (199.2 cm).

The growth rate was very intense in June and July, after that it slightly diminished in August and September as a result of the interruption of vegetative growth and the start of preparing trees for winter dormans (Figure 1).

Table 1. The dynamics growth of shoots at apricot cultivars in 2015

Variety	Mean length of shoots on tree to species apricot (cm)				
	May	June	July	August	September
'Fortuna'	65.2	96.9	118.7	131.5	142.3
'Dacia'	58.3	97.5	125.5	142.7	145.7
'Goldrich'	50.7	89.6	115.3	122.1	128.5
'Harcot'	66.7	110.7	145.5	161.3	165.8
'Amiral'	62.3	98.7	129.9	132.4	134.6
'Mamaia'	51.1	94.5	126.6	136.8	141.3
'Olimp' (Control)	82.5	111.6	139.9	156.9	158.4
'Augustin'	68.5	102.8	126.6	137.8	141.5
'Histria'	54.7	116.4	145.5	168.7	169.2
'Cristal'	89.0	145.9	172.1	189.6	190.2
'Auraş'	73.8	129.9	141.0	157.8	161.4
'Euxin'	70.8	118.7	140.0	153.5	157.6
'Ceres'	71.3	133.6	162.1	176.7	179.3
'Orizont'	71.4	110.7	188.8	196.9	199.2

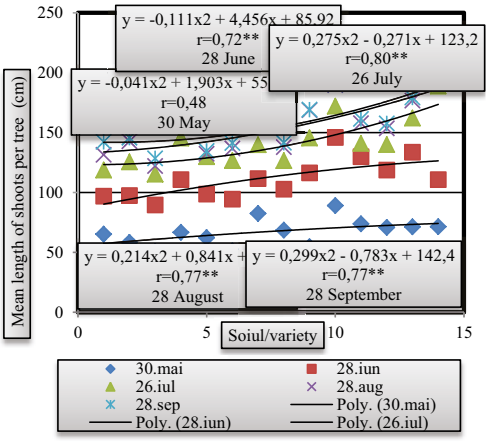

Figure 1. The correlation between the average length of apricot shoots and the growth dynamics of apricot varieties studied in the year 2015

Compared to 2015, in 2016, the measurements showed smaller growth increases between 50.7 cm for 'Mamaia' variety and 76.5 cm for 'Orizont' variety in May, and at the end of the increases, the length of the shoots was 104.6 cm in the 'Goldrich' variety and 146.8 cm in the 'Orizont' variety, but the rhythm of growth was much more intense (Table 2). The correlation factors determined were significant as early as May, from 0.73** to 0.82** in August, after then fell to 0.77** (Figure 2).

Table 2. The dynamics growth of shoots at apricot species in year 2016

Variety	Mean length of shoots on tree to species apricot (cm)				
	May	June	July	August	September
'Fortuna	55.7	73.7	94.7	106.7	115.5
'Dacia'	46.8	66.8	91.6	108.8	114.8
'Goldrich'	51.9	68.7	87.9	98.9	104.6
'Harcot'	58.8	77.5	100.8	116.2	125.1
'Amiral'	60.6	81.3	103.5	113.2	119.4
'Mamaia'	48.4	71.4	98.8	107.5	113.8
'Olimp' (Control)	70.1	88.9	112.9	125.7	131.7
'Augustin'	61.4	81.3	104.1	117.2	123.1
'Histria'	49.9	72.9	91.9	107.3	112.1
'Cristal'	79.8	102.7	121.3	132.4	139.2
'Auraş'	67.8	92.8	113.7	124.8	131.5
'Euxin'	65.8	87.8	110.4	122.6	126.5
'Ceres'	72.6	95.4	118.6	129.9	134.8
'Orizont'	76.5	98.7	125.8	139.7	146.8

The growth rate of shoots depends on the variety, the climate conditions, the amount of water in the soil and the supply of nutrients.
In the early years of planting the apricot has a rapid growth rate, forming shoots of 60-120 cm and numerous early shoots.

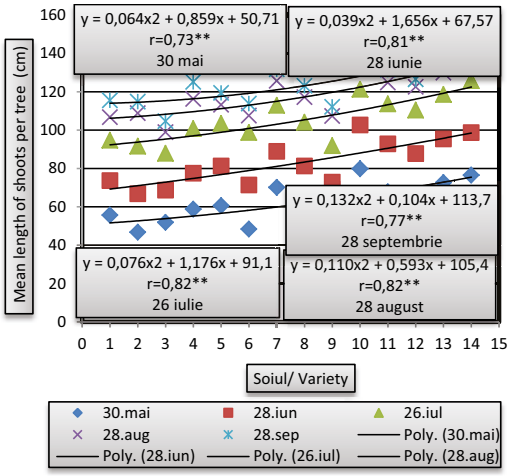

Figure 2. The correlation between the average tree length of apricot shoots and the growth dynamics of the apricot varieties studied in the year 2016

In 2017, on the background of optimum soil humidity the growth of shoots was very intense as early as May.
Values were included between 45.6 cm in the 'Goldrich' variety and 74.3 cm in 'Ceres' variety.
Compared to the 'Olimp' control variety which in may the annual increases were 66.7 cm, the 'Cristal', 'Auraş', 'Euxin', 'Ceres' and 'Orizont' varieties were recorded higher values between 68.1 cm in the 'Euxin' variety and 74.3 cm in the 'Ceres' variety (Table 3).
Due to the fact that in 2017 the trees presented fruit, the growth rate decreased in June and July, and after harvesting production, the vegetation growths again showed an intense rhythm.
The correlation factors shown in (Figure 3) show the intensity of this process.
The highest annual growth rates were recorded in 2015, in which both the air temperature and the amount of rainfall were at normal values during the intensive growth of the shoots.
The highest values were determined for the varieties: 'Cristal' (190.2 cm), 'Orizont' (199.2 cm) and 'Ceres' (179.3 cm).

Table 3. The dynamics growth of shoots at apricot species in year 2017

Variety	Mean length of shoots on tree to species apricot (cm)				
	May	June	July	August	September
'Fortuna	49.3	67.6	86.4	96.1	104.5
'Dacia'	50.1	73.1	97.4	109.9	118.1
'Goldrich'	45.6	64.6	82.5	104.6	110.5
'Harcot'	56.2	79.2	95.5	105.6	113.4
'Amiral'	58.5	79.8	104.1	113.9	120.6
'Mamaia'	52.3	70.2	90.3	101.5	108.8
'Olimp' (Control)	66.7	98.0	112.3	122.1	128.0
'Augustin'	63.2	90.2	108.6	121.5	128.4
'Histria'	52.5	84.5	100.0	112.7	122.3
'Cristal'	71.4	93.4	108.8	120.4	130.2
'Auraş'	72.4	97.4	110.3	123.6	128.8
'Euxin'	68.1	87.1	105.4	116.0	126.5
'Ceres'	74.3	101.3	114.1	123.0	129.3
'Orizont'	69.7	92.2	105.4	118.9	132.8

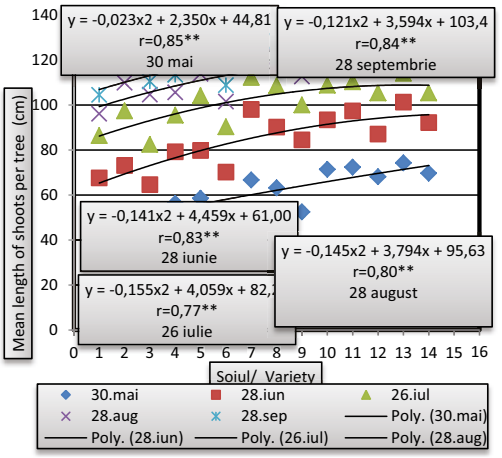

Figure 3. The correlation between the average tree length and the growth dynamics of apricot varieties studied in the year 2017

If we compare the three years of study, the highest annual growth rates were recorded in 2015, when both the air temperature and the amount of rainfall were at normal values during the intensive growth of the shoots.
The highest values were determined for the varieties: 'Cristal' (190.2 cm), 'Orizont' (199.2 cm) and 'Ceres' (179.3 cm) (Figure 4).

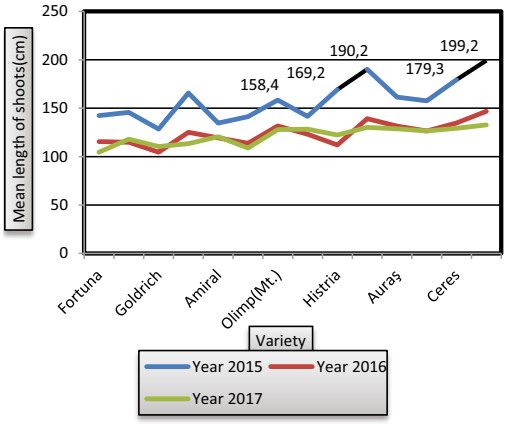

Figure 4. Annual vegetative increases in apricot varieties studied in the period 2015-2017

CONCLUSIONS

In three years of experiments (2015-2017), climatic conditions in 2015 have inprinted an overlapping of phenophases of growth and fructification earlier by about a week, compared to 2017.

The highest annual growth rates were recorded in 2015, when both the air temperature and the amount of rainfall were sitated at normal values during the intensive growth of the shoots.

The highest values were determined for the varieties: 'Cristal' (190.2 cm), 'Orizont' (199.2 cm) and 'Ceres' (179.3 cm).

The growth rate of shoots depends on the variety, climatic conditions, the amount of water in the soil and the supply the tree with nutrients.

REFERENCES

Baciu A., 2005. Pomicultură generală. Editura Universitaria Craiova; 231-236.

Mitrea R., Tudosie R.E., 2011. The behavior of some varieties of apple tree to the attack of pathogens *Venturia inaequalis* (Cke.) Wint. and *Podosphera leucotricha* (Ell. Et Everh.) Salm, XVI (LII).

Sunley R.J., Atkinson C.J., Jones H.G., 2006. Chill unit model sand recent changes in the occurrence of winter chill and spring frost in the United Kingdom. Journal of Horticultural. Science & Biotechnology, 81: 949-958.