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THE ESTIMATION OF THE GROWTH AND THE BRANCHING OF THE SIX STOCKS UNDER THE CHERRY AND THE SWEET CHERRY TREES

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Abstract. The experiment was established at Felin Experimental Farm of Lublin Agricultural University. The aim of this study was to estimate the growth and the branched of the six stocks used in the production of the cherry and the sweet cherry young trees. Results of the study proved that F 12/1 and Colt stocks were the most vigorous, while P-HL 6 and P-HL 84 were characterised by the weakest growth. The best branched was by mahaleb cherry seedlings and P-HL 84 stock. The greatest precentage of cut off the buds of the cherry cv. 'Łutówka' proved on the rootstocks: F 12/1, P-HL 84 and P-HL 6.

Key words: nursery, cherry, stock, growth, branching

INTRODUCTION

Cherry occupies the second place after apple trees in Poland as regards the size of the fruit production and the number of trees produced.

The basic rootstocks used under cherries in Poland are the seedlings of mahaleb cherry (*Prunus mahaleb* L.) and sweet cherry (*Prunus avium* L.). The seeds for their production are obtained from rather indefinite places [Czynczyk et al. 1988, Grzyb and Gronek 1991]. The parent trees, from which the seeds for seedlings production are obtained, differ in the growth strength, resistance to frost, the period of the fruit ripening and other properties [Grzyb 1999a].

A serious problem in the production of seedlings is the degree of their infection by virus diseases [Rejman et al. 2002]. Improvement of the healthiness of the initial material should consist of selecting and establishing new parent plantation [Webster and Schmidt 1996].

The work on the selection of generative rootstocks for cherry and sweet cherry was undertaken a number of years ago in different countries. The most famous achievements

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include the selected types of mahaleb cherry: 'Alpruma', 'SL 64', 'Ferci-Pontaleb', 'Piast' and 'Popiel' and four types of sweet cherry: 'Al-Kavo', 'Hüttner Hochzucht', 'Pontaris', 'Pontavium' and 'PTU'.

An alternative for the production of trees on seedlings are the rootstocks obtained due to vegetative multiplication, which gives genetically equal material after grafting. The proportion of this type of rootstocks in the production of cherry trees in Poland is very small and it does not exceed a few percent [Grzyb and Sitarek 1998].

The purpose of the undertaken research was to estimate the growth, branching and usefulness of six rootstocks in the production of cherry trees.

MATERIAL AND METHODS

The studies were carried out in the years 1997–2000 at the Felin Experimental Station of the Agricultural University in Lublin. The field experiment was established on grey brown podzolic soil formed from loess formations on marlstone, belonging to the second valuation class. The objects of the studies were four types of vegetative rootstocks: P-HL 84 (A), P-HL 6 (C), Colt, F 12/1 and the seedlings mahaleb cherry (*Prunus mahaleb* L.) and sweet cherry (*Prunus avium* L.). The rootstocks were planted in a nursery in the spacing of 90 × 25 cm in early spring (44.4 thousand rootstocks $\cdot$ ha^{-1}). During the research no herbicides were used and the nursery was mechanically and – if needed – manually weeded. No irrigation was used in the nursery, while the fertilization and control were according to the up-to-date recommendations for the nurseries of stone fruit trees.

The experiment was set in random blocks. It comprised 6 combinations with 5 repetitions. The combinations were the kinds of rootstocks, whereas the repetitions were the plots with 20 plants on each.

In the first year of the nursery the experiment measured the diameter of the trunks at the height of 5 cm from the ground at the following dates: after the planting (25 April), before the budding period (15 July) and in autumn (15 November). The measurements of the trunk diameter of the stocks for particular growth periods gave the basis to calculate the increase of the trunk thickness between the planting and the budding period, in the first year of the nursery and in the period of two years. The measurements of the height of the stocks were performed in autumn of the first year of the nursery, the height of the stock from the ground to the top bud of the axis shoot. The degree of the branching of the stocks was estimated measuring the lateral shoots with the height of more than 5 cm. The obtained measurements were the basis to calculate the total length of the lateral shoots and their number. An estimation was made of the cut off buds expressed as the ratio between the buds cut off in spring in the second year of the nursery and the number of grafted rootstocks.

The results were statistically analyzed, making use of variance analysis and Tukey's confidence intervals. The significance of differences was defined at $p = 0.05$.

RESULTS

Within the period of three years the studies found no significant differences in the stock thickness after the first year of growth in the nursery (tab. 1). In 1997 clone P-HL 84 and the seedlings of sweet cherry had a significantly bigger trunk diameter as compared to Colt rootstocks. In the following years the trunk diameter of the stocks F12/1 and Colt was significantly bigger than the others. The studies showed significant differences between the production cycles. In 1999 the clones of P-HL and the seedlings sweet cherry were significantly thinner than in the other years. In the case of mahaleb cherry the studies observed a reverse regularity, while as for Colt rootstock there were significant differences between particular production cycles.

Table 1. The trunk diameter of the stocks (mm) in the first year of the nursery in the years 1997–1999
Tabela 1. Średnica pni podkładek (mm) w pierwszym roku szkółki w latach 1997–1999

Stock Podkładka	1997	1998	1999	Mean Średnio	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
P-HL 84 (A)	15.0 a	15.5 b	11.7 c	14.1	A	A	B	1.2
P-HL 6 (C)	13.6 ab	14.6 bc	10.5 c	12.9	A	A	B	1.1
Colt	12.5 b	17.9 a	19.4 a	16.6	C	B	A	1.3
Punus mahaleb L.	13.4 ab	13.0 c	15.2 b	13.9	B	B	A	1.7
F 12/1	-	18.9 a	19.0 a	-	-	ns ni	ns ni	ns ni
Prunus avium L.	15.0 a	13.7 c	11.7 c	13.5	A	A	B	1.4
LSD NIR p = 0.05	1.8	1.7	1.3	ns ni				

*Means followed by the same letter are not significantly different at α = 0.05
Średnie oznaczone tymi samymi literami nie różnią się istotnie przy α = 0,05

Table 2. The trunk diameter of the stocks (mm) in the secend year of the nursery in the years 1998–2000
Tabela 2. Średnica pni podkładek (mm) w drugim roku szkółki w latach 1998–2000

Stock Podkładka	1998	1999	2000	Mean Średnio	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
P-HL 84 (A)	23.7 b	26.3 b	18.3 cd	22.8	A	A	B	2.8
P-HL 6 (C)	22.4 b	22.7 c	16.7 d	20.6	A	A	B	1.5
Colt	26.9 a	31.6 a	27.1 a	28.8	B	A	B	3.0
Prunus mahaleb L.	27.2 a	31.3 a	24.6 b	27.7	B	A	B	3.1
F 12/1	-	27.8 b	25.7 ab	-	-	A	B	1.5
Prunus avium L.	28.4 a	25.3 bc	20.5 c	24.7	A	B	C	2.2
LSD NIR p = 0.05	3.1	3.3	2.2	ns ni				

* For explanation: see table 1 – Objaśnienie: patrz tabela 1

After the second year of growth the biggest mean stump diameter was characteristic of Colt rootstock (28.8 mm) and the mahaleb cherry seedlings (27.7 mm), while rootstock P-HL 6 (20.6 mm) had the smallest diameter, and the differences were not significant (tab. 2). In 1998 the seedlings of mahaleb cherry and sweet cherry as well as Colt rootstocks were thicker than the others. In the second year the studies found out the biggest stump diameter in the case of Colt rootstocks and the mahaleb cherry. In 2000 Colt and F12/1 were considerably thicker than clones P-HL and the seedlings of sweet cherry. Significant differences between the years of studies were found out for all types of rootstocks. Colt rootstocks and mahaleb cherry tree were significantly thicker in 1997 than in the other production cycles. Clones P-HL were by far the thinnest in 2000. In the case of sweet cherry significant differences were found between particular production cycles, while for rootstock F 12/1 such differences were observed between the years 1998 and 2000.

In the period of three years of studies, the rootstocks did not differ significantly between each other as for the increase of the stock thickness from the planting till the budding period (tab. 3). In 1997 the greatest significant increase of the stump thickness was observed in the seedlings of sweet cherry. In the next year rootstocks F 12/1 had significantly greater increases in the thickness than the others. In 1999 the greatest significant increase of the trunk thickness was characteristic of vegetative rootstocks Colt, P-HL 84 and the mahaleb cherry seedlings as compared to F 12/1 and sweet cherry. In the case of all the rootstocks the studies found out significant differences between the increase of the trunk thickness since the planting till the budding period between particular production cycles.

Table 3. The increase of stock stump thickness (mm) from the planting to the budding period in the years 1997–1999
Tabela 3. Przyrost grubości pni podkładek (mm) w okresie od posadzenia do okulizacji w latach 1997–1999

Stock Podkładka	1997	1998	1999	Mean Średnio	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
P-HL 84 (A)	3.0 b	4.1 b	6.6 ab	4.6	C	B	A	0.7
P-HL 6 (C)	2.4 b	3.9 b	5.8 bc	4.0	C	B	A	0.6
Colt	1.7 c	4.5 b	6.9 a	4.4	C	B	A	0.9
Prunus mahaleb L.	2.9 b	4.4 b	6.6 ab	4.6	C	B	A	1.0
F 12/1	-	5.6 a	3.9 d	-	-	A	B	0.4
Prunus avium L.	4.1 a	2.3 c	5.4 c	3.9	B	C	A	0.6
LSD NIR p = 0.05	0.9	0.7	1.0	ns ni				

* For explanation: see table 1 – Objaśnienie: patrz tabela 1

In the years 1997–1999 the studied rootstocks did not differ significantly in the increase of the trunk diameter after the first year of growing in the nursery (tab. 4). The studies showed significant differentiation in particular years. In 1997 the seedlings of mahaleb cherry and sweet cherry had a significantly greater increase of the trunk thickness as compared to vegetative rootstocks. In the second year bigger increases of the stump thickness were characteristic of rootstocks F12/1 and Colt. In the year 2000 the mahaleb cherry seedlings had significantly bigger increases in the trunk thickness than the other rootstocks. The statistical analysis showed significant differences between the production cycles (tab. 4). In 1998 clones P-HL had a significantly greater increase of the stump thickness than in the other years. Rootstock F 12/1 significantly differed between 1998 and 1999, while sweet cherry differed between the first and the other production cycles. In the case of mahaleb cherry the increase of the stump thickness in the first two years was significantly poorer than in 2000. Colt rootstock significantly differed between the first and second production cycles.

Table 4. The increase of stock stump thickness (mm) in the first year of the nursery in the years 1997–1999
Tabela 4. Przyrost grubości pni podkładek (mm) w pierwszym roku szkółki w latach 1997–1999

Stock Podkładka	1997	1998	1999	Mean Średnio	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
P-HL 84 (A)	8.1 b	9.5 b	8.2 bc	8.6	B	A	B	1.2
P-HL 6 (C)	7.0 b	9.1 b	7.4 c	7.8	B	A	B	1.0
Colt	8.1 b	10.3 ab	9.1 b	9.2	B	A	AB	1.3
Prunus mahaleb L.	10.2 a	8.8 b	12.0 a	10.3	B	B	A	1.7
F 12/1	-	11.6 a	7.4 c	-	-	A	B	1.5
Prunus avium L.	10.4 a	6.8 c	9.1 b	8.8	A	B	B	1.5
LSD NIR p = 0.05	1.6	1.9	1.3	ns ni				

* For explanation: see table 1 – Objaśnienie: patrz tabela 1

Table 5. The increase of stock stump thickness (mm) in two years of the nursery in the years 1997–2000
Tabela 5. Przyrost grubości pni podkładek (mm) w okresie dwóch lat szkółki w latach 1997–2000

Stock Podkładka	1997 1998	1998 1999	1999 2000	Średnio Mean	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
P-HL 84 (A)	16.7 b	20.3 c	14.9 bcd	17.3	B	A	B	2.9
P-HL 6 (C)	15.7 b	17.2 c	13.6 d	15.5	B	A	C	1.4
Colt	22.4 a	24.0 b	17.0 b	21.1	A	A	B	2.9
Prunus mahaleb L.	23.6 a	27.1 a	21.4 a	24.0	B	A	B	3.3
F 12/1	-	20.0 c	14.3 cd	-	-	A	B	1.7
Prunus avium L.	23.8 a	18.3 c	16.3 bc	19.5	A	B	B	2.4
LSD NIR p = 0.05	3.2	3.4	2.2	ns ni				

* For explanation: see table 1 – Objaśnienie: patrz tabela 1

The biggest mean increase of the stump thickness in the period of two years was characteristic of the mahaleb cherry seedlings and Colt rootstock, and they did not significantly differ from the others (tab. 5). In the years 1997–1998 the seedlings of mahaleb cherry, sweet cherry as well as Colt rootstock had significantly the biggest increase of the stump thickness. In the next production cycle the studies found out a significantly greater increase of the stump thickness in mahaleb cherry seedlings and Colt rootstock as compared to the other stocks. After two years of growth the studies found out significant differences between the production cycles. The rootstocks planted in the second production cycle and Colt in the first one had significantly greater increases of the stumps than in the other years. In the case of rootstock P-HL 6 the differences between particular production cycles were significant. Sweet cherry increased in its thickness significantly faster in the first production cycle.

Table 6. The height of the stocks (cm) in the years 1997–1999
Tabela 6. Wysokość podkładek (cm) w latach 1997–1999

Stock Podkładka	1997	1998	1999	Mean Średnio	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
P-HL 84 (A)	95.7 d	101.6 cd	73.4 bc	90.2	A	A	B	11.4
P-HL 6 (C)	89.1 d	102.2 cd	65.2 c	85.5	A	A	B	18.5
Colt	124.2 b	119.9 bc	90.2 b	111.4	A	A	B	17.5
Prunus mahaleb L.	109.6 c	89.7 d	91.0 b	96.8	A	B	B	18.6
F 12/1	-	167.4 a	144.1 a	-	-	A	B	8.8
Prunus avium L.	134.5 a	135.8 bc	86.2 b	118.8	A	A	B	14.0
LSD NIR p = 0.05	8.1	21.0	20.8	ns ni				

* For explanation: see table 1 – Objaśnienie: patrz tabela 1

Table 7. The branching of the stocks in the years 1997–1999
Tabela 7. Rozgałęzianie się podkładek w latach 1997–1999

Stock Podkładka	1997	1998	1999	Mean Średnio	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
Całkowita długość pędów bocznych – Total lenght of lateral shoots, cm								
P-HL 84 (A)	700.7 a	329.2 ab	230.2 ab	420.0	A	B	B	230.9
P-HL 6 (C)	383.9 b	309.2 b	146.0 bc	279.7	A	A	B	106.8
Colt	353.2 b	314.0 ab	140.2 bc	269.1	A	A	B	80.9
Prunus mahaleb L.	698.2 a	400.2 a	312.2 a	470.2	A	B	B	272.8
F 12/1	-	319.4 a	130.7 bc	-	-	A	B	54.1
Prunus avium L.	132.9 b	173.7 c	84.8 c	130.5	A	A	B	56.3
LSD NIR p = 0.05	299.9	89.9	116.9	ns ni				
Number of lateral shoots per tree – Liczba pędów bocznych, -								
P-HL 84 (A)	14.8 ab	10.1 b	7.7 ab	10.9 ab	A	AB	B	5.3
P-HL 6 (C)	8.0 bc	8.2 bc	5.7 bc	7.3 abc	ns ni	ns ni	ns ni	ns ni
Colt	5.4 c	7.5 c	3.8 cd	5.6 bc	AB	A	B	2.6
Prunus mahaleb L.	18.2 a	12.4 a	10.5 a	13.7 a	A	AB	B	6.8
F 12/1	-	3.6 d	3.0 cd	-	-	ns ni	ns ni	ns ni
Prunus avium L.	1.9 c	3.2 d	2.1 d	2.4 c	ns ni	ns ni	ns ni	ns ni
LSD NIR p = 0.05	7.0	2.2	3.6	7.1				
Lenght of lateral shoots – Długość pędów bocznych, cm								
P-HL 84 (A)	47.3 b	32.5 c	29.9 bc	36.6	A	B	B	3.9
P-HL 6 (C)	48.6 b	37.5 bc	25.1 c	37.1	A	B	C	6.8
Colt	52.6 ab	42.0 bc	35.9 ab	43.5	ns ni	ns ni	ns ni	ns ni
Prunus mahaleb L.	38.2 b	32.5 c	29.9 bc	33.5	A	AB	B	6.5
F 12/1	-	88.5 a	41.9 a	-	-	A	B	12.2
Prunus avium L.	72.9 a	48.3 b	36.9 ab	52.7	A	B	B	18.1
LSD NIR p = 0.05	20.5	12.0	10.4	ns ni				

* For explanation: see table 1 – Objaśnienie: patrz tabela 1

The analysis of the mean values did not show any significant differences in the height of the studied rootstocks (tab. 6). In the period of six years the greatest height was reached by the seedlings of sweet cherry – 118.8 cm and the Colt rootstocks – 111.4 cm. In 1997 sweet cherry and Colt rootstock had a significantly greater height than the other rootstocks. In the following years clone F 12/1 significantly differed in its height from the remaining rootstocks. In the last production cycle the studied rootstocks were significantly lower than in the two first ones. The only exception was mahaleb cherry, whose plants in 1998 and 1999 were significantly shorter than the seedlings in the first production cycle.

In the years 1997–1999 the rootstocks significantly differed from each other only with the number of their lateral shoots (tab. 7). The biggest number of shoots was found in mahaleb cherry seedlings (13.7) and clone P-HL 84 (10.9), while the smallest was observed for sweet cherry (2.4). In 1997 P-HL 84 and mahaleb cherry had a bigger total length of lateral shoots than the other rootstocks. In the second and third years of studies significantly the smallest sum of lateral shoots was observed in the seedlings of sweet cherry. The rootstocks planted in 1997 had significantly greater length of lateral shoots as compared to the rootstocks planted in 2000. Significant differences between the first and the second production cycles were observed only for rootstocks P-HL 84.

Within the three years of studies the mahaleb cherry tree formed significantly more lateral shoots than sweet cherry, F 12/1, P-HL 6 or Colt rootstocks (tab. 7). In the case of three rootstocks the studies showed significant differences between the production cycles. The differences were significant in mahaleb cherry and P-HL 84 only between the first and the last production cycles. Colt rootstock significantly differed with the number of lateral shoots in the years 1999 and 2000. In 1997 sweet cherry had significantly longer lateral shoots as compared with mahaleb cherry and P-HL clones. In the second year of studies rootstocks F 12/1 and sweet cherry considerably differed with the length of lateral shoots in comparison with mahaleb cherry tree and P-HL 84. In 1999, on the other hand, considerably the smallest length of lateral shoots was found in clone P-HL 6. The statistical analysis for the years showed that in 1997 rootstocks P-HL and

Tabela 8. Wpływ podkładek na przyjęcia oczek wiśni odmiany ‘Łutówka’ w latach 1998–2000
Table 8. The effect of the stocks on cutting off the buds of the cherry cv. ‘Łutówka’ in the years 1998–2000

Stock Podkładka	1998	1999	2000	Mean Średnio	Differences between production cycles Różnice między cyklami produkcyjnymi			LSD NIR p = 0.05
Procentage of cut off the buds in relation to the budded stocks Procent przyjetych oczek w porównaniu do zaokulizowanych podkładek								
P-HL 84 (A)	91.6 a	91.6 a	86.8 ab	90.0	ns ni	ns ni	ns ni	ns ni
P-HL 6 (C)	81.4 ab	81.4 ab	94.6 ab	85.8	ns ni	ns ni	ns ni	ns ni
Colt	68.4 bc	62.2 b	91.4 ab	74.0	ns ni	ns ni	ns ni	ns ni
Prunus mahaleb L.	40.0 d	68.0 ab	90.8 ab	66.3	C	B	A	15.7
F 12/1	-	83.2 ab	96.6 a	-	-	ns ni	ns ni	ns ni
Prunus avium L.	52.2 cd	78.8 ab	81.0 b	70.7	B	A	A	14.3
LSD NIR p = 0.05	17.4	27.5	14.9	ns ni				

* For explanation: see table 1 – Objaśnienie: patrz tabela 1

sweet cherry had significantly longer lateral shoots than the plants in the two last production cycles. In the case of mahaleb cherry significant differences were observed between 1997 and 1999.

On average, no significant differences were found in cutting off the buds of cherry on the studied rootstocks (tab. 8). In 1998 clone P-HL 84 was characterized by a significantly higher percent of the cut off buds than seedlings mahaleb cherry or sweet cherry. In the second year significant differences were observed between rootstock P-HL 84 and Colt, while in 2000 between rootstock F 12/1 and sweet cherry. In the case of two rootstocks the studies found out significant differences between the production cycles. In 1998 sweet cherry had a significantly smaller number of cut off buds as compared to the following two years. On the other hand, mahaleb cherry differed in the number of cut off buds in all production cycles.

DISCUSSION

Fruit trees usually consist of two elements, namely the rootstock and the noble species grafted on the former. The interaction of those two components is a complex process, which lasts throughout the life of the trees and which has not been fully recognized as yet. The rootstocks differ between each other with a number of genetic properties which are reflected in various effects on the cultivated variety [Gruca 1995]. A different effect of the rootstock is observed on the growth of the bud in the nursery as compared to the effect on the growth of trees in an orchard. According to Poniedziałek et al. [1997] it is connected with a short production cycle as well as with different abilities of the rootstocks to overcome the stresses. So far, no universal rootstock has been selected, which would be ideal for all or for most cultivars [Tukey 1994].

The group of the best growing vegetative rootstocks used under the cherry and the sweet cherry includes Colt and F 12/1 [Sitarek 1995, Webster 1998, Grzyb 1999b]. This is confirmed by the results of the present paper. Among the evaluated rootstocks F 12/1 and Colt were definitely the best to grow. The worst growth in the period of three years was characteristic of clones P-HL (6 and 84), which were significantly thinner and shorter than the others. The Czech rootstocks P-HL are the best-known in Poland and they are considered to be dwarf stocks, limiting the growth to the largest extent [Grzyb et al. 1998, Kurkus et al. 1999, Ostrowska and Chełpiński 1999].

It is commonly believed that sweet cherry is the rootstock growing better than mahaleb cherry [Tylus et al. 1986, Czynczyk et al. 1988, Selwa et al. 1994, Grzyb et al. 1997]. The results do not confirm this opinion. Sweet cherry was significantly higher than mahaleb cherry in 1997 and 1998, while being considerably thinner in the last years of studies.

The increase of the stuck thickness may be related to the strength of the growth of rootstocks [Sosna et al. 1994, Słowiński and Sadowski 1996, Słowiński 2000] and their thickness at the time when they are planted in the nursery [Bielicki and Czynczyk 1992, Kiczorowski 2003]. In the years 1997-2000 the greatest increases of the trunk thickness in the period between the planting and the budding period as well as at the other dates were reached by mahaleb cherry seedlings, which were the thinnest at planting, and rootstock Colt, characterized by its strong growth in the nursery.

Three years of measurements of the branching of rootstocks showed very big, significant differences between particular types of rootstocks. Mahaleb cherry seedlings and clone P-HL 84 had significantly greater total length of lateral shoots and their number as compared to sweet cherry. Both these rootstocks also formed more numerous lateral shoots than the others. The accessible literature does not provide information on this issue.

One of the factors determining the usefulness of a rootstock is its influence on the result of budding [Singh 1973, Gąstoł and Poniedziałek 1998]. During the studies, the cutting off the buds of cherry 'Łutówka' was more related to the kind of rootstock than the course of the weather in a given year. The best cutting off the buds was observed on rootstocks P-HL 84, F 12/1 and P-HL 6, while the worst on mahaleb cherry seedlings. A high percentage of the cut off buds of cherry cultivars on rootstocks P-HL 84 and P-HL 6 was observed by Ostrowska and Chełpiński [1999]. Grzyb and Czynczyk [1975/76], on the other hand, achieved a higher number of cut off buds on the seedlings of sweet cherry than on mahaleb cherry. Maćkowiak [1993] achieved the best results budding sweet cherries on rootstocks F 12/1, Colt and SL-64.

CONCLUSIONS

1. In particular years the studied rootstocks differed with the thickness and the degree of branching in the nursery. The thickest rootstocks included Colt, F 12/1 and mahaleb cherry, while the smallest ones were P-HL 6. Significantly the best branching was typical of mahaleb cherry seedlings and clone P-HL 84.
2. The best growing rootstocks in the nursery are F 12/1 and Colt, while the worst P-HL 6 and P-HL 84.
3. The highest percentage of the cut off buds was observed on rootstocks P-HL 84, F 12/1 and P-HL 6, while the lowest on mahaleb cherry seedlings.
4. The comparison of the obtained results makes it possible to state that besides the genetic and morphological features, the course of the weather in the period of vegetation was of exceptionally great importance for the growth of the rootstocks in the studied conditions. This is reflected in significant differentiation of the examined properties of the rootstocks in particular years.

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OCENA WZROSTU I ROZGAŁĘZIANIA SIĘ SZEŚCIU PODKŁADEK POD WIŚNIE I CZEREŚNIE

Streszczenie. W latach 1997-2000 w Gospodarstwie Doświadczalnym Felin Akademii Rolniczej w Lublinie, przeprowadzono badania mające na celu ocenę wzrostu i rozgałęziania się 6 podkładek wykorzystywanych w produkcji drzewek czereśni i wiśni. Na podstawie uzyskanych wyników stwierdzono, że najsilniej rosły w szkółce podkładki F 12/1 i Colt, natomiast najsłabiej P-HL 6 i P-HL 84. Najlepszym rozgałęzianiem charakteryzowały się siewki antypki oraz podkładka P-HL 84. Największy procent przyjętych oczek wiśni odmiany 'Łutówka' stwierdzono na podkładkach wegetatywnych: F 12/1, P-HL 84 i P-HL 6.

Słowa kluczowe: szkółka, wiśnia, podkładka, wzrost, rozgałęzianie

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