

## ASSESSMENT OF BIG BUD MITE (*Cecidophyopsis ribis* Westw.) INFESTATION LEVEL OF BLACKCURRANT GENOTYPES IN THE FIELD

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### A B S T R A C T

The big bud mite (*Cecidophyopsis ribis* Westwood) is one of the most harmful pests of blackcurrant in countries where this crop is cultivated. It has been the biggest threat to blackcurrant plantations for many years. It causes bud malformation and reduces the yield. It is also known to be a vector of the very dangerous blackcurrant virus disease – *Blackcurrant reversion virus* – BRV. The aim of the study was to estimate the level of infestation on 21 blackcurrant genotypes (16 cultivars and 5 breeding clones) by big bud mite in the field. All tested cultivars were divided into 5 groups, depending on the level of big bud mite infestation: 1. – fully resistant (no damaged buds); 2. – resistant (0.1-1.0% damaged buds); 3. – moderately resistant (1.1-5.0% damaged buds); 4. – moderately susceptible (5.1-10.0% damaged buds); 5. – susceptible (> 10.0% damaged buds). On the basis of the results from a three year experiment (2008-2010), 5 genotypes: the English cultivars: ‘Farliegh’ and ‘Foxedown’, and the new Polish breeding clones: PC-1/4, PC-7/9 and PC-7/13, were classified as fully resistant to gall mite (first group). Two other Polish genotypes: ‘Ores’ and clone No. 138x76/69A/12 as well as the Lithuanian cultivar ‘Vakariai’ were classified as resistant (second group). In the group of moderately resistant were: the Polish cultivar ‘Tisel’ and Scottish ‘Ben Gairn’ (third group). Six cultivars: the Polish ‘Ruben’, ‘Tines’ and ‘Tiben’, as well as the Lithuanian ‘Kupoliniai’ and ‘Vyčiai’ and the Swedish ‘Ojebyn’ were put into the fourth group (moderately susceptible). The most susceptible to gall mite (fifth group) were five genotypes: the Scottish cultivars: ‘Ben Hope’, ‘Ben Lomond’ and clone No. 14-1-9 and the Lithuanian: ‘Laimiai’ and ‘Gagatai’. These two Lithuanian cultivars: ‘Laimiai’ and ‘Gagatai’ were the most susceptible to the pest during all three years of the experiment.

**Key words:** big bud mite, *Cecidophyopsis ribis*, blackcurrant, blackcurrant cultivar resistance, breeding clones

## INTRODUCTION

The big bud mite, also called the gall mite (*Cecidophyopsis ribis* Westwood), is one of the most harmful pests of blackcurrant in many countries, including Poland (Niemczyk et al., 2000; Jones et al., 2008; Brennan et al., 2008, 2009). In Poland this pest has been the biggest problem for blackcurrant growers for many years. It causes galling of blackcurrant buds. The blackcurrant gall mites also infest new buds. Infestation takes place during migration time, mainly during the flowering period, but also later in the vegetation season. This small pest spreads quickly within bushes on plantations (Smolarz, 1993). Adults and larvae feed mainly inside blackcurrant buds (in the summer, also on leaves) and damage them. As a result of the mite's feeding, the fruit yield is considerably reduced. Damage depends on the percentage of malformed buds. In addition, the big bud mite is a vector of a very serious virus disease – *Blackcurrant reversion virus* – BRV (Jones, 1992, 1993; Ravkin and Chertovskikh, 1989; Pluta et al., 2000; Pluta and Żurawicz, 2002; Lemmetty et al., 2004).

Blackcurrant cultivars which are actually grown on commercial plantations are susceptible to gall mite and *Blackcurrant reversion virus* – BRV. The yield loss caused by both pest and disease in different countries, including Poland, are very high (Ravkin and Chertovskikh, 1989; Wood, 1991; Brennan, 1992; Brennan et al., 1993; Jones, 1993, 2002;

Trajkovski and Anderson, 1993; Cieślińska and Malinowski, 2002; Zielanov, 2002; Pribylova et al., 2004). Two active ingredients: endosulfan and amitraz were used to control the big bud mite for a long time (Gajek and Olszak, 2004), but these compounds were withdrawn from the EU countries a few years ago. They cannot be used anymore in the blackcurrant protection program. Therefore, control of this pest has become a considerable problem.

The efficacy of natural enemies – predatory mites (*Phytoseiidae*) and a predator (*Tetrastichus eriophyes* – Eulophidae), in the control of big bud mite has been very low (Gajek, 2000). The blackcurrant cultivars also show different susceptibility to *C. ribis* (Gajek et al., 1996; Gajek et al., 2000a; Gajek et al., 2000b; Gwozdecki, 2000; Rubauskis et al., 2006; Jones et al., 2008; Sasnauskas et al., 2009). For some time the cultivar 'Ben Hope' (bred at the SCRI, Scotland), described as resistant to gall mite, was suggested for use in the Integrated Blackcurrant Production in the UK (Cross and Easterbrook, 1998). However, in recent years, bud damage by the big bud mite was observed on bushes of 'Ben Hope' and reported by growers from different countries, including Poland. It means that the resistance of this cultivar was probably broken down by this pest.

Breeding of new cultivars, with comprehensive resistance to both pest and disease, seems to be the most effective method to reduce the infestation. Releasing such cultivars

would limit the application of chemicals, and reduce production costs as well as protect the natural environment. Additionally, these cultivars could be valuable planting material for commercial plantations and those maintained with the organic or integrated method (IPM).

The aim of this study was to estimate the blackcurrant cultivars and breeding clones infestation level by big bud mite in the field.

## MATERIAL AND METHODS

**Plant material.** The study was carried out in the three consecutive years of 2008-2010 in the cultivar trial located at the Experimental Orchard Station at Dąbrowice near Skierniewice, in central Poland. Bushes of new blackcurrant cultivars and clones bred at the Research Institute of Pomology and Floriculture in Skierniewice and a few foreign cultivars were included in the study. A total of 21 genotypes were evaluated (Tab. 1). The field experiment was established in autumn 2002.

**Experimental design.** The experiment was established in a completely randomized block design, in 3 replications with 3 plants on each plot. Planting density was 3.5 x 0.75 m with a space of 1.25 m between plots. Plants received no chemical protection against the big bud mite and other pests as well as against fungal diseases. Fertilizing of plants was applied according to recommendations for commercial plantations. Weeds were controlled with soil and contact herbicides according to the actual Program of Fruit Plant

Protection, If needed, weeds were additionally destroyed mechanically and manually.

**Measurements and observations.** In early spring (beginning of April), when the vegetation period started, the buds malformed by the big bud mite were counted (once a year). On each plant a 100 bud sample (300 buds per replication) was examined. The percentage of malformed buds on each plot was calculated. In addition, all damaged (big) buds on each bush were counted. Later, the average number of malformed buds by the big bud mite was calculated per bush.

According to the percentage of big bud mite infestation, all tested blackcurrant genotypes were divided by the authors into five groups: **1. – fully resistant** (no malformed buds), **2. – resistant** (0.1-1.0 % malformed buds); **3. – moderately resistant** (1.1-5.0% malformed buds), **4. – moderately susceptible** (5.1-10.0% malformed buds), **5. – susceptible** (> 10.0 % malformed buds)

**Statistical analyses.** Data were subjected to analysis of variance (ANOVA), separately for each year. Before analysis, the percentage of damaged buds was transformed using Bliss formula, but the number of malformed buds was transformed using the logarithmic function:  $y = \log(x + 1)$ , where  $x$  – number of malformed buds per shrub. Differences between means were determined using Newman-Keuls' multiple range t-test at  $p = 0.05$ .

The percentage of malformed buds and the total number of damaged buds

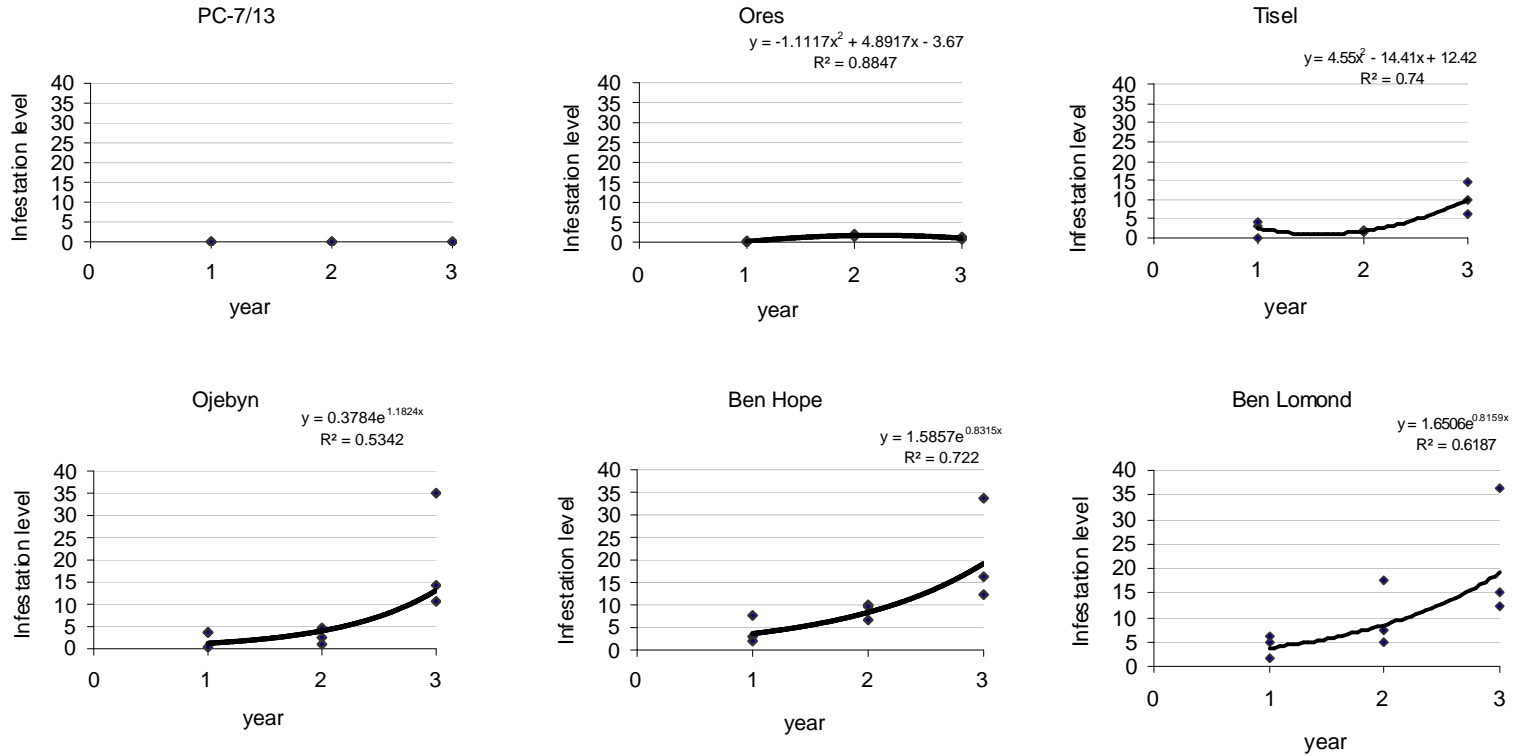
Table 1. List and the origin of blackcurrant cultivars evaluated in the experiment

No.	Cultivar /clone	Country of origin	Parental forms
1	Ojebyn	Sweden	Unknown
2	Ben Lomond	Scotland	(Consort x Magnus) x (Brodtorp x Janslunda)
3	Ben Gairn	Scotland	Ben Alder x Golubka
4	Ben Hope	Scotland	Westra x (238/36 x EM21/15)
5	No. 14-1-9 (SCRI)	Scotland	P10/9/13 x Ben Alder
6	Foxendown	England	Ben Lomond x (BC <sub>3</sub> from gooseberry x BC <sub>2</sub> <i>R. glutinosum</i> )
7	Farliegh	England	BC <sub>2</sub> <i>Ribes bracteosum</i> x BC <sub>3</sub> from gooseberry
8	Gagatai	Lithuania	Minaj Shmyriov x Ojebyn
9	Kupoliniai	Lithuania	'Minaj Shmyriov' x No. 67-59-6
10	Lamiai	Lithuania	'Minaj Shmyriov' x No. 65-59-7
11	Vakariai	Lithuania	Stachanovka Altaya' x Obilnaya'
12	Vyciai	Lithuania	Minaj Shmyriov x self pollinated
13	Tisel	Poland	Titania x self pollinated
14	Tiben	Poland	Titania x Ben Nevis
15	Ores	Poland	(Ojebyn x S <sub>24</sub> ) x Ceres
16	Ruben	Poland	Bieloruskaja Słodkaja x Ben Lomond
17	Tines	Poland	Titania x Ben Nevis
18	PC-1/4	Poland	(C2/1/62 x Ben Alder) x EM B1834/145*
19	PC-7/9	Poland	S12/3/83 x EM B1834/113*
20	PC-7/13	Poland	S12/3/83 x EM B1834/113*
21	No. 138 x 76/69A/12	Poland	7/72 x Ceres

\*Clones marked EM B1834 originated from East Malling, UK (BC hybrids of blackcurrant and gooseberry, inherited resistant gen *Ce* to gall mite)

per shrub are shown in Tables 2 and 3. Degree of increase of damaged buds in percentages, during the three years of

the observations, was calculated on some cultivars with different levels of infestation (Fig. 1).



**Figure 1.** Change of infestation level in subsequent years (1- 2008; 2-2009; 3-2010) on selected blackcurrant cultivars

## RESULTS AND DISCUSSION

In the first year (2008) of observation, the number (percentage) of damaged buds by big bud mite ranged from 0% to 18.2% and depended on the genotype (Tab. 2). Seven blackcurrant genotypes were classified into the first group (fully resistant, no malformed buds). These were the cultivars: 'Farliegh' and 'Foxedown', 'Vakariai' and the new Polish breeding clones – PC-1/4, PC-7/9, PC-7/13 and clone No. 138x76/69A/12. The second group (resistant, 0.1-1.0% malformed buds) included the cultivars: 'Ores', 'Ben Gairn' and 'Kupoliniai'. The cultivars: 'Tisel', 'Ruben', 'Tines', 'Ben Hope', 'Ben Lomond' and 'Ojebyn' were classified into the third group (moderately resistant, 1.1-5.0% malformed buds) according to the percentage of infestation level by the pest. The fourth group (moderately susceptible, 5.1-10.0% malformed buds) consisted of 3 genotypes: 'Vyciai', 'Tiben' and clone No. 14-1-9. Two cultivars: 'Laimiai' and 'Gagatai' had the highest number of malformed buds (12.2% and 18.1%, respectively) and were classified into the fifth group (the most susceptible, > 10.0% malformed buds).

In 2009 the number of buds damaged by gall mite on plants of the checked blackcurrant genotypes was slightly higher than those observed in 2008. However, it is important to emphasize that on the 2 cultivars, 'Farliegh' and 'Foxedown' and on 3 breeding clones marked PC-1/4, PC-7/9 and PC-7/13, no malformed

buds were recorded in the field experiment. A very low level of damaged buds (below 1.0%) was also noted on plants of 2 genotypes: 'Vakariai', 'Ben Gairn' and breeding clone No. 138x76/69A/12. The following 5 cultivars: 'Ores', 'Tisel', 'Ojebyn', 'Tines' and 'Ruben' were moderately resistant with a low number of damaged buds (no more than 5 %). Five cultivars: 'Tiben', 'Kupoliniai', 'Vyciai', 'Ben Hope' and 'Ben Lomond' were classified into the next group of the moderately susceptible with a medium level of infestation (5-10% damaged buds). Among the tested genotypes, the Scottish clone No. 14-1-9 and 2 cultivars: 'Laimiai' and 'Gagatai' were the most susceptible, with the highest number of damaged buds; 10.1%, 13.4% and 18.1%, respectively.

In the third year of the study (2010) the infestation level by big bud mite on blackcurrant genotypes was much higher than in the two previous years (2008-2009). The average percentage of damaged buds ranged from 0 to 25.5% and depended on the genotype. Six genotypes were still fully resistant (no malformed buds). These 6 included the 3 cultivars: 'Farliegh', 'Foxedown', 'Vakariai' and 3 breeding clones: PC-1/4, PC-7/9, PC-7/13. The Polish cultivar 'Ores' was classified as resistant, with no more than 1.0% of malformed buds observed on bushes. The cultivar 'Ben Gairn' and Polish clone No. 138x76/69A/12 were included into the third group – moderately resistant (below 5.0% malformed buds were observed).

Table 2. Infestation level of 21 blackcurrant cultivars and clones by the big bud mite (*Cecidophyopsis ribis* Westw.), Experimental Orchard at Dąbrowice, 2008-2010

Cultivars and clones	Malformed buds [%]*			Average
	7.04.2008	2.04.2009	1.04.2010	2008-2010
<b>1. Fully resistant genotypes</b>				
Foxedown	0.00 a	0.00 a	0.00 a	0.00 a
Farliegh	0.00 a	0.00 a	0.00 a	0.00 a
PC-1/4	0.00 a	0.00 a	0.00 a	0.00 a
PC-7/9	0.00a	0.00 a	0.00 a	0.00 a
PC-7/13	0.00 a	0.00 a	0.00 a	0.00 a
<b>2. Resistant genotypes</b>				
Vakariai	0.00 a	0.11 a	0.00 a	0.04 a
No. 138x76/69A/12	0.00 a	0.78 ab	1.23 a	0.67 a
Ores	0.11 ab	1.67 abc	1.00 a	0.93 a
<b>3. Moderately resistant genotype</b>				
Ben Gairn	0.22 ab	0.89 ab	2.10 ab	1.07 a
Tisel	2.55 abcd	1.78 abc	10.10 cd	4.81 b
<b>4. Moderately susceptible genotypes</b>				
Kupoliniai	0.67 abc	8.11 cde	8.10 bc	5.63 b
Ruben	2.76 cde	5.00 bcd	9.80 cd	5.86 bc
Tines	3.55 cde	4.11 bcd	10.87 cd	6.18 b-d
Ojebyn	2.56 bcde	2.72 abc	20.00 cd	8.43 b-e
Tiben	7.00 def	6.78 cde	12.57 cd	8.78 c-f
Vyciai	6.56 def	8.78 cde	14.43 cd	9.92 c-f
<b>5. Susceptible genotypes</b>				
Ben Hope	4.22 cde	8.78 cde	20.77 cd	11.26 d-f
Ben Lomond	4.22 cde	10.00 cde	21.20 cd	11.81 ef
No. 14-1-9 (SCRI)	8.89 ef	10.11 cde	17.67 cd	12.22 f
Laimiai	12.33 fg	14.67 de	21.13 cd	16.04 g
Gagatai	18.22 g	18.33 e	25.47 d	20.67 h
<i>Average</i>	<b>3.52</b>	<b>4.89</b>	<b>9.35</b>	

\*Big bud mite infestation level as the percentage of damaged buds on plants:

1. – fully resistant (no damaged buds)
2. – resistant (0.1-1.0% damaged buds)
3. – moderately resistant (1.1-5.0% damaged buds)
4. – moderately susceptible (5.1-10.0% damaged buds)
5. – susceptible cultivars (> 10.0% damaged buds)

The three cultivars: ‘Kupoliniai’, ‘Ruben’ and ‘Tisel’ were classified into the fourth group of moderately susceptible, with an infestation level between 5.1% to 10.0% of malformed buds. The remaining 9 genotypes: ‘Tines’, ‘Tiben’, ‘Vyciai’,

clone No. 14-1-9, ‘Ojebyn’, ‘Ben Hope’, ‘Ben Lomond’, ‘Laimiai’, and ‘Gagatai’ were all susceptible. The highest percentage of malformed buds (between 10.8% and 25.5%) was observed on plants in the natural infestation environment. The most

infested by the gall mite were 'Ojebyn', 'Ben Hope', 'Ben Lomond', 'Lamiai' and 'Gagatai' (20.0-25.5%).

The average percentage taken of the big bud mite damaged buds of tested blackcurrant cultivars and breeding clones, in three years of observations (2008-2010), are presented on Table 2. These results took into account the final classification of all genotypes into five separate groups of infestation level caused by the big bud mite: 1. fully resistant, 2. resistant, 3. moderately resistant, 4. moderately susceptible and 5. susceptible cultivars. On the basis of these results, tested genotypes could be divided as follows:

1. fully resistant: 'Farliegh', 'Foxedown', PC-1/4, PC-7/9 and PC-7/13;
2. resistant: 'Vakariai', No. 138x76/69A/12 and 'Ores';
3. moderately resistant: 'Ben Gairn' and 'Tisel';
4. moderately susceptible: 'Kupoliniai', 'Ruben', 'Tines', 'Ojebyn', 'Tiben' and 'Vyciai';
5. susceptible cultivars: 'Ben Hope', 'Ben Gairn', No. 14-1-9, 'Lamiai' and 'Gagatai'.

Our results concerning some blackcurrant cultivars and clones were confirmed by earlier investigations carried out in the field experiments. For example, in the first experiment no symptoms of the big bud mite were noted on bushes of the clones (PC-1/4, PC-7/9 and PC-7/13) originated from the Polish breeding program (Gajek et al., 2000b). Our results for the Lithuanian cultivar 'Vakariai' were slightly different

from those obtained by Rubauskis and others (2006). Their results showed that 'Vakariai' had full resistance to the big bud mite. Our results showed that 'Vakariai' fell into second group – as resistant. According to Jones et al. (2008) the English cultivar 'Foxedown', containing the gene *Ce* that confers an apparent immunity to *C. Ribis*, was free from galls and failed to develop distinctive BRD (reversion) symptoms. According to Gajek et al. (2000b), cultivars 'Ojebyn' and 'Tisel' were moderately susceptible, but 'Ben Lomond' was heavily infested by the big bud mite. Also according to Jones et al. (2008), cultivars 'Ben Lomond' and 'Ojebyn' were susceptible to *C. ribis*, but 'Ben Gairn' showed some galls (big buds). These results are in agreement with our data obtained in the field evaluation. The Lithuanian cultivar 'Laimiai' was quite resistant to the pest, in the experiment in Latvia (Rabauskis et al., 2006). These results were incompatible with our observations, in which cultivar 'Lamiai' was classified as the most susceptible to gall mite during the years of the investigation in the field experiment. However, results for the cultivar 'Ojebyn', from our studies in Poland, were the same as the results from Latvia (Rabauskis et al., 2006).

The total number of malformed buds by gall mite counted on one shrub per replication of tested blackcurrant genotypes, in the years of the investigations (2008, 2009 and 2010), and average results for three years are presented in Table 3. Detailed analysis showed that a lower



Table 3. Infestation level of 21 blackcurrant cultivars and clones by the big bud mite (*Cecidophyopsis ribis* Westw.) expressed as number of damaged buds, Experimental Orchard at Dąbrowice, 2008-2010

Cultivars and clones	Average number of malformed buds per 1 shrub			
	7.04.2008	2.04.2009	1.04.2010	2008-2010
<b>1. Fully resistant genotypes</b>				
Foxedown	0.0 a	0.0a	0.0 a	0.0
Farliegh	0.0 a	0.0 a	0.0 a	0.00
PC-1/4	0.0 a	0.0 a	0.0 a	0.00
PC-7/9	0.0 a	0.0 a	0.0 a	0.00
PC-7/13	0.0 a	0.0 a	0.0 a	0.00
<b>2. Resistant genotypes</b>				
Vakariai	0.0 a	0.8 b	0.0 a	0.27
No. 138x76/69A/12	1.2 b	0.7 ab	8.6 b	3.50
Ores	2.3 b	2.4 b	6.2 b	3.63
<b>3. Moderately resistant genotypes</b>				
Ben Gairn	1.3 b	0.9 b	0.2 b	0.80
Tisel	14.9 c	5.8 c	54.6 d	25.10
<b>4. Moderately susceptible genotypes</b>				
Kupoliniai	4.3 b	19.0 cd	26.9 c	16.73
Ruben	14.0 c	10.0 cd	59.7 d	27.90
Tines	25.2 c	14.2 cd	100.1 de	46.50
Ojebyn	13.7 c	10.3 cd	103.3 de	42.43
Tiben	55.7 cd	13.0 cd	90.2 de	52.97
Vyciai	26.9 c	16.5 cd	95.5 de	46.30
<b>5. Susceptible genotypes</b>				
Ben Hope	27.9 c	16.8 cd	103.2 de	49.30
Ben Lomond	26.3 c	23.1 d	122.0 de	57.13
No. 14-1-9 (SCRI)	58.9 cd	19.2 cd	137.6 de	71.90
Laimiai	67.6 cd	26.8 d	153.9 de	82.77
Gagatai	138.0 d	35.3 d	201.5 e	124.93

infestation level by big bud mite was recorded in the first year of investigation (2008) and increased in the following years. The highest number of damaged (big) buds by this pest on the tested genotypes was noted in the last year of the observation (2010). It was a rapid increase. The results are in agreement with the percentage of malformed buds presented in Table 2.

Figure 1 shows the increase in the percentage of the malformed buds, during the three year period, on chosen cultivars with different level of infestation by the big bud mite. It confirmed earlier observations (Smolarz, 1993), that on the bushes of susceptible cultivars the pest spreads quickly.

For almost all cultivars, an increase of infestation level in subse-

quent years was observed. Regression functions such as exponential and polynomial were well fitted to these changes in years. Coefficient of determination ranged between 0.53 (53%) and 0.88 (88%). For the Polish breeding clone (PC-7/13), infestation level for all years was equal to null.

### CONCLUSIONS

1. During the three years of the investigation, five genotypes were classified into the first group; fully resistant. These were English cultivars: 'Farliegh' and 'Foxedown' as well as the new Polish breeding clones: PC-1/4, PC-7/9 and PC-7/13.
2. Polish cultivar 'Ores' and clone No. 138x76/69A/12 as well as the Lithuanian cultivar 'Vakarai' were classified as resistant.
3. The Polish cultivar 'Tisel' and the Scottish 'Ben Gairn' were classified into the third group; moderately resistant.
4. Three Polish cultivars: 'Ruben', 'Tines' and 'Tiben', two Lithuanian: 'Kupoliniai' and 'Vyciai' and one Swedish cultivar: 'Ojebyn' were classed into the fourth group; moderately susceptible.
5. The Scottish genotypes: 'Ben Hope', 'Ben Lomond' and No. 14-1-9 and two Lithuanian cultivars: 'Gagatai' and 'Laimiai', were the most susceptible to gall mite during the years of the investigation in the field experiment.
6. The new Polish breeding clone PC-7/13 was named as 'Polares'. In 2010 it was submitted for the final evaluation at the COBORU

(Research Centre for Cultivar Testing) before its registration on the National List of Cultivars and protection by the Plant Breeding Rights.

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## OCENA STOPNIA ZASIEDLENIA GENOTYPÓW PORZECZKI CZARNEJ PRZEZ WIELKOPĄKOWCA PORZECZKOWEGO (*Cecidophyopsis ribis* Westw.) W WARUNKACH POŁOWYCH

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### STRESZCZENIE

Wielkopąkowiec porzeczkowy (*Cecidophyopsis ribis* Westwood) jest jednym z najgroźniejszych szkodników porzeczkii czarnej w krajach uprawiających tę roślinę. W Polsce od wielu lat jest największym zagrożeniem w uprawie porzeczkii czarnej. Powoduje on deformację pąków porzeczkii czarnej i redukuje plon owoców. Ponadto jest on wektorem bardzo groźnej choroby wirusowej – rewersji porzeczkii czarnej (*Blackcurrant reversion virus* – BRV). Celem niniejszej pracy była ocena stopnia zasiedlenia roślin 21 genotypów porzeczkii czarnej, w tym 16 odmian i 5 klonów hodowlanych przez wielkopąkowca porzeczkowego w warunkach polowych.

W zależności od stopnia zasiedlenia pąków porzeczkii przez wielkopąkowca porzeczkowego oceniane odmiany zostały podzielone na 5 grup: 1. – w pełni odporne (0% uszkodzonych pąków); 2. – odporne (0,1-1,0% uszkodzonych pąków); 3. – średnio odporne (1,1-5,0% uszkodzonych pąków); 4. – średnio wrażliwe (5,1-10,0% uszkodzonych pąków); 5. – odmiany wrażliwe (> 10,0% uszkodzonych pąków). Na pod-

stawie wyników z trzyletnich badań (2008-2010) pięć genotypów: angielskie odmiany: 'Farliegh' i 'Foxedown' oraz nowe polskie klony hodowlane: PC-1/4, PC-7/9 i PC-7/13 zostały uznane jako całkowicie odporne na tego szkodnika (pierwsza grupa). Do drugiej grupy (oporne) zostały zaliczone dwa polskie genotypy: odmiana 'Ores' i klon hodowany Nr 138x76/69A/12 oraz litewska odmiana 'Vakarai'. Polska odmiana 'Tisel' i szkocka 'Ben Gairn' zostały zakwalifikowane do trzeciej grupy (średnio odporne). Czwarta grupa (średnio wrażliwe) składała się z sześciu odmian, 3 polskich: 'Ruben', 'Tines' i 'Tiben', 2 litewskich: 'Kupoliniai' i 'Vyciai' oraz szwedzkiej – 'Ojebyn'. Do piątej grupy odmian wrażliwych na zasiedlenie przez wielkopąkowca porzeczkowego zaliczono pięć genotypów: szkockie odmiany: 'Ben Hope', 'Ben Lomond' i klon Nr 14-1-9 oraz litewskie odmiany: 'Laimiai' i 'Gagatai'. Przez cały okres trzyletnich obserwacji najbardziej wrażliwe na zasiedlenie przez wielkopąkowca porzeczkowego były odmiany 'Laimiai' i 'Gagatai'.

**Słowa kluczowe:** wielkopąkowiec porzeczkowy, *Cecidophyopsis ribis*, porzeczką czarna, odmiany odporne, klony hodowlane