

## ORIGINAL PAPER

**RESEARCH CONCERNING THE CHEMICAL CONTROL AGAINST *PSEUDOCOCCUS ADONIDUM* L.****ECOBICI Maria Monica\*, BIRÓ Tomas, ALINA Popa**

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**ABSTRACT**

*Pseudococcus adonidum* is a polyphag pest, which attacks different species of plants belonging to many genus and families, as: *Citrus*, *Ficus*, *Cactaceae*, *Cycas*, *Dracena*, *Phoenix*, *Mimoza*, *Asparagus*, *Camellia* etc. It is localized in large colonies on leaves, stems, branches, offshoots, and roots.

The experiments were performed in solarium conditions during 2001-2002. Testing the efficiency of an insecticide sort was the aim of our experiment. During 2 experimental years, 9 products were tested: Confidor 200 SL, Calypso 400 SC; Pyrinex 25 EC, Vydate 10 G, Fastac 10 CE – RV, Sumithion 50 EC, Mospilan 20 SP, Decis 2,5 EC, Actellic 50 EC.

**KEY WORDS:** chemical control, *Pseudococcus adonidum*, test

**REZUMAT**

*Pseudococcus adonidum* este o specie polifagă, care atacă diferite specii de plante din numeroase genuri și familii, printre care: *Citrus*, *Ficus*, *Cactaceae*, *Cycas*, *Dracena*, *Phoenix*, *Mimoza*, *Asparagus*, *Camellia* etc., se localizează în colonii masive pe frunze, tulpini, ramuri, lăstari și rădăcini, dăunând prin înțeparea și sugerea sucului celular al plantei. În cazul cactușilor, păduchii se localizează pe rădăcini, eventual pe tulpini sau în zona coletului. În cazul unui atac puternic păduchii se răspândesc în toată masa solului din ghiveci. În urma atacului organele dăunate se îngălbenesc, iar plantele își reduc foarte mult ritmul de creștere, nu diferențiază muguri floral și în final se usucă. În cazul localizării păduchilor pe tulpini daunele sunt amplificate și prin instalarea fumaginei pe dejecțiile foarte abundente.

Experiențele au fost efectuate în condiții de solar și au cuprins experiențe privind eficacitatea unui sortiment de insecticide au fost efectuate într-un izolator special construit în acest scop, unde plantele supuse testărilor au fost menținute în aceleași condiții ecologice cu plantele din colecție.

La începutul perioadei de vegetație s-a efectuat infestarea artificială la trei specii: *Mammillaria pringlei* (Coult.) Brand, *M. wildii* Dietr., *Notocactus mammulosus* (Lem.) Berg., cu porțiuni de rădăcină puternic atacate, care au fost depuse la coletul plantelor sănătoase. Timp de 4 săptămâni au fost ținute în condiții normale de vegetație ținând cont de faptul că o generație se dezvoltă în 30-40 zile, la temperatura de 25-30°C și 50-60% umiditate relativă.

În perioada 2002 – 2003 în cadrul solarului, anual au fost verificate unele pesticide în experiențe care au fost organizate în 3 repetiții a câte 10 plante pe repetiție cu așezare lineară, după metoda blocurilor randomizate. Am folosit în experimentare 3 specii (*Mammillaria pringlei* (Coult.) Brand, *M. wildii* Dietr., *Notocactus mammulosus* (Lem.) Berg.), 9 insecticide (variante) și un martor netratat. Tratamentele au fost aplicate cu ajutorul unei pompe manuale. În experiențe s-a aplicat un volum normal de 1 l soluție/repetiție.

Tratamentele au fost efectuate după 4 săptămâni de la infestarea artificială a speciilor cu păduchele lănos. Pentru evaluarea eficacității biologice în cei doi ani experimentali s-au făcut observații, evaluându-se frecvența și intensitatea atacului atât la variantele în care s-au aplicat tratamente chimice cât și în varianta martor netratat.

Pe parcursul celor 2 ani au fost testate 9 produse, respectiv: Confidor 200 SL, Calypso 400 SC; Pyrinex 25 EC, Vydate 10 G, Fastac 10 CE – RV, Sumithion 50 EC, Mospilan 20 SP, Decis 2,5 EC, Actellic 50 EC

**CUVINTE CHEIE:** combatere chimică, *Pseudococcus adonidum*, teste

### DETAILED ABSTRACT

*Pseudococcus adonidum* is a polyphag pest, which attacks different species of plants belonging to many genus and families, as: *Citrus*, *Ficus*, *Cactaceae*, *Cycas*, *Dracena*, *Phoenix*, *Mimoza*, *Asparagus*, *Camellia* etc.

Three species were artificial infested in the beginning of the vegetation period.

The efficiency of some pesticides was studied yearly in experiments organized by 3 series with 10 plants each, using a linear positioning and the method of randomized blocks. Results were statistically tested using ANOVA test.

The experiments were performed in solarium conditions during 2001-2002. Testing the efficiency of an insecticide sort was the aim of our experiment. During 2 experimental years, 9 products were tested: Confidor 200 SL, Calypso 400 SC; Pyrinex 25 EC, Vydate 10 G, Fastac 10 CE – RV, Sumithion 50 EC, Mospilan 20 SP, Decis 2,5 EC, Actellic 50 EC. A control untreated variant (fig. 5) was used together with a control variant treated with Mospilan 20 SP.

### INRODUCTION

*Pseudococcus adonidum* is a polyphag pest, which attacks different species of plants belonging to many genus and families, as: *Citrus*, *Ficus*, *Cactaceae*, *Cycas*, *Dracena*, *Phoenix*, *Mimoza*, *Asparagus*, *Camellia* etc. It is localized in large colonies on leaves, stems, branches, offshoots, and roots. It has a harmful action by biting and suckling the sap of attacked plant. The louse is localized

on roots, steams or colet area of cactuses. When the attack is strong, louses are spread in soil. The injured organs became yellow, plants have a reduced rhythm of growth, buds are not differentiated, and finally droop. When louses are localized on stems all harmful effects are amplified by installation of fumagine on very abundant dejection (Copăcescu, 2001; Copăcescu and contributors, 1984; Debreczy, 1976; Fronty, 1995; Hewitt, 1993; Pizzetti Mariella, 1993; Porca and Biró, 2004; Vandecaveye, 1994).

### MATERIAL AND METHOD

The experiments were performed in solarium conditions during 2001-2002. Testing the efficiency of an insecticide sort was the aim of our experiment. The treatments were performed in a special isolating space where studied plants were maintained in the same ecological conditions as collection plants.

Three species were artificial infested in the beginning of the vegetation period. These species were: *Mammillaria pringlei* (Coul.) Brand, *M. wildii* Dietr., *Notocactus mammulosus* (Lem.) Berg. (fig. 1, 2, 3, 4). They had the parts of the root strong attacked and deposited on the colet of healthy plants. Considering the time necessary for development of a generation being of 30 – 40 days at 25-30°C and 50-60% relative moisture, they were maintained in normal conditions of vegetation during 4 weeks. Treatments were performed after this period.



Figure 1: The experiments organization



Figure 2: The artificial infested



Figure 3: The artificial infested



Figure 4: The artificial infested

The efficiency of some pesticides was studied yearly in experiments organized by 3 series with 10 plants each, using a linear positioning and the method of randomized blocks. Results were statistically tested using ANOVA test.

During 2 experimental years, 9 products were tested: Confidor 200 SL, Calypso 400 SC; Pyrinex 25 EC, Vydate 10 G, Fastac 10 CE – RV, Sumithion 50 EC, Mospilan 20 SP, Decis 2,5 EC, Actellic 50 EC. A control untreated variant (fig. 5) was used together with a control variant treated with Mospilan 20 SP.

#### RESULTS OBTAINED DURING 2001

The synthesis of the results obtained after testing performed during 2001 is presented in table 1.

As table 1 shows, the highest mortalities (96.30%) were recorded in treatment with PYRINEX 25 EC, followed in decreasing order by treatments with: CONFIDOR 200 SC (94,30%), VYDATE 10 G (93,0%), CALIPSO 480 (90,7%), MOSPILAN 20 SP (83,30%), ACTELIC 50 EC (83.30%). Weak results, low mortalities respectively, were recorded for treatments with: SUMITHION 50 EC (37,60%), FASTAC 10 CE-RV (32,70%) and DECIS 2,5 CE (30,70%) (fig. 6.).

All variants of treatment had higher values as compared to untreated control, being statistically very significant.

The values recorded for variants of treatment as compared to control treated with Mospilan 20 SP show that the treatment with: CONFIDOR 200 Sc, CALIPSO 480 SC, PYRINEX 25 Ec and VYDATE 10 G had very significant



Figure 5: The plants untreated variants

positive differences, statistically assured.

The values obtained for variant of treatment with ACTELLIC 50 EC were not statistically assured, and for variants with FASTAC 10 CE-RV, SUMITHION 50 EC and DECIS 2,5 EC recorded very significant negative differences, statistically assured.

**RESULTS OBTAINED DURING 2002.**

The synthesis of the results obtained after testing performed during 2002 is presented in table 2.

Analyzing data from table 2 we found higher mortalities (98,30%) for treatment with VYDATE 10 G, followed by those with PYRINEX 25 EC (96,30%), CONFIDOR 200 SC (93,0%), CALIPSO 480 (90,3%), ACTELLIC 50 EC (83,70%), MOSPILAN 20 SP (82,00%). Low mortalities were recorded in treatments with: SUMITHION 50 EC (36,70%), DECIS 2,5 CE (35,30%) and FASTAC 10 CE-RV (33,70%).

All variants of treatment had higher values as compared to untreated control, differences being statistically very significant.

The differences between values recorded for variants of treatment as compared to control treated with MOSPILAN 20 SP, were statistically very significant for treatments with: CONFIDOR 200 SC, CALIPSO 480 SC, PYRINEX 25 EC and VYDATE 10 G.

The variant of treatment with ACTELLIC 50 EC was not statistically assured, and variants with FASTAC 10 CE-RV, SUMITHION 50 EC and DECIS 2,5 EC had high negative differences, statistically very significant.



Figure 6: The treated variants

Table 1: Efficiency of some insecticides used in fight against louse (*Pseudococcus adonidum* L) (year 2001)

No. crt.	Product	Concentration %	Efficacy %	±d as compared to untreated control	Significance of Difference	±d as compared to treated control	Significance of Difference
1	CONFIDOR 200 SC	0.07	94.3	+94.3	***	+11.0	***
2	CALIPSO 480 SC	0.013	90.7	+90.7	***	+7.4	***
3	PYRINEX 25 EC	0.4	96.3	+96.3	***	+13	***
4	VYDATE 10 G	1 g	93.0	+93.0	***	+9.7	***
5	FASTAC 10 CE-RV	0.015	32.7	+32.7	***	-50.6	000
6	SUMITHION 50 EC	0.1-0.2	37.6	+37.6	***	-45.7	000
7	MOSPILAN 20 SP (Mt.)	0.02	83.3	+83.3	***	-	-
8	DECIS 2,5 CE	0.05	30.7	+30.7	***	-52.6	000
9	ACTELLIC 50 EC	0.2	83.3	+83.3	***	0	-
10	Untreated control	-	0	-	-	-	-
	DL 5%			3.3		3.3	
	DL 1%			4.5		4.5	
	DL 0.1%			6.1		6.1	

Table 2: Efficiency of some insecticides used in fight against louse (*Pseudococcus adonidum* L) (year 2002)

No. crt.	Product	Concentration %	Efficacy %	±d as compared to untreated control	Significance of Difference	±d as compared to treated control	Significance of Difference
1	CONFIDOR 200 SC	0.07	93.0	+93.0	***	+11.0	***
2	CALIPSO 480 SC	0.013	90.3	+90.3	***	+8.3	***
3	PYRINEX 25 EC	0.4	96.3	+96.3	***	+14.3	***
4	VYDATE 10 G	1 g	98.3	+98.3	***	+16.3	***
5	FASTAC 10 CE-RV	0.015	33.7	+33.7	***	-48.3	000
6	SUMITHION 50 EC	0.1-0.2	36.7	+36.7	***	-45.3	000
7	MOSPILAN 20 SP (Mt.)	0.02	82.0	+82.0	***	-	-
8	DECIS 2,5 CE	0.05	35.3	+35.3	***	-46.7	000
9	ACTELLIC 50 EC	0.2	83.7	+83.7	***	+1.7	-
10	Untreated control	-	0	-	-	-	-
	DL 5%			2.6		2.6	
	DL 1%			3.6		3.6	
	DL 0.1%			4.9		4.9	

## CONCLUSION

During the year 2001, the best efficiency was recorded in variants of treatment performed with Pyrinex 25 EC (96,3%), Confidor 200 SC (94,30%), Vydate 10 G (93,0%) and Calipso 480 SC (90, 7%). Relatively satisfactory results were also obtained in treatments performed with Mospilan 20 SP (83,3%) and Actellic 50 Ec (83,3%). Weak results, reduced mortalities, respectively were obtained when treatments were performed with Sumithion 50 EC (37,60%), Fastac 10 CE-RV (32,70%)

and decis 2,5 CE (30,70%).

During the year 2002, the best efficiency was recorded in variants of treatment performed with cu Vydate 10 G (98,3%), Pyrinex 25 EC (96,3%), Confidor 200 SC (93,0%), and Calipso 480 SC (90, 3%). Good results were obtained when treatments were performed with Mospilan 20 SP (82,0%) and Actellic 50 EC (83,7%). Weak results, reduced mortalities, respectively were obtained when treatments were performed with Sumithion 50 EC (36,70%), Decis 2,5 CE (35,30%) and Fastac 10 CE-RV

(33,70%).

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