

*Rhopalosiphum padi* (Linnaeus, 1758) /Hemiptera,  
Aphidoidea/ anholo- and holocyclic forms' caught  
in yellow water traps

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## Introduction

In Poland, bird cherry aphid (*Rhopalosiphum padi* Linnaeus, 1758) is a common aphid species on crop plants, including maize production for grain. Until recently its harm was considered mainly in terms of damaging the plant by directly sucking out the plant juice. Climate changes in the past few decades have caused the species to become an effective plant virus vector, especially of the BYDV. This disease is one of the most dangerous virus diseases affecting cereals and grasses in Poland (RUSZKOWSKA, 1990). The transmitting of viruses takes place mainly by anholocyclic forms of the bird-cherry aphid (RUSZKOWSKA, 2002).

The aim of the research was to determine the number of anholo- and holocyclic forms of *R. padi* flying into yellow traps.

## Research site and methods

The research was carried out from 2002 through 2005 in the Provincial Agricultural Extension Center in Opole, the Station based at Łosiów. The research was concerned with aphid catches to two yellow traps (20x21x10 cm size). The dishes were placed in black ground near a maize plantation. The caught material was selected twice a week.

The following three aphid species that were recorded on cereals in Poland were identified in a laboratory: the bird cherry-oat aphid *R. padi*, the rose-grain aphid *Metopolophium dirhodum* (Walker, 1849) and the grain aphid *Sitobion avenae* (Fabricius, 1775). In the case of *R. padi*, after the selection, holo- and anholocyclic forms were determined. Embryo colouring in ethyl alcohol served as a basis for the identification. Lighter embryos were typical for holocyclic forms, whereas the darker ones (dark brown) for anholocyclic ones (LOWLES, 1995).

## Results and discussion

The following three aphid species were identified in yellow traps placed near the maize plantation in Łosiów: *R. padi*, *M. dirhodum* and *S. avenae* (Fig. 1). The composition and percentage share of particular species was very similar in each year of the research. To illustrate this phenomenon the results from 2003 were presented. The *R. padi* was a dominating species and it amounted to 84% of all the cereal aphids. *S. avenae* was less numerous (13%) and *M. dirhodum* occurred only occasionally (3%).

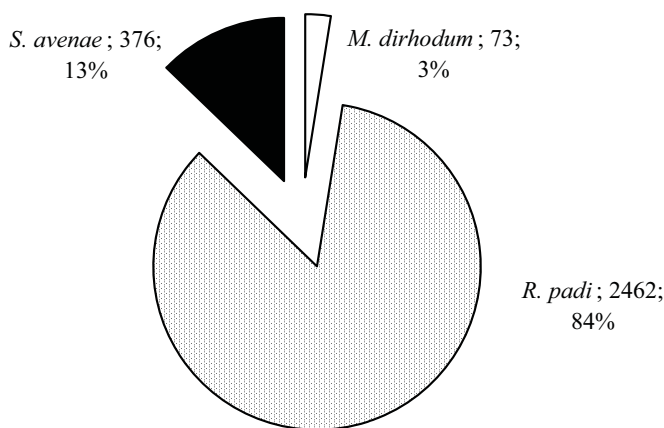


Figure 1. Structure of cereal aphid species caught in yellow traps (2003)

Both, holo- and anholocyclic forms of *R. padi* were identified in the yellow traps (Tab. 1). Holocyclic forms dominated. The greatest percentage share of anholocyclic forms through the entire season was registered in 2002, i.e. 44% of all the winged specimens of *R. padi*. The smallest – in 2004, only 4.5%. It was the high temperature that influenced the changes in *R. padi* development.

When for three subsequent days the average daily temperature is 25°C or above, permanent changes in the development of this species population take place (RUSZKOWSKA, 2002; 2007). In our research in 2002 there were mostly days with an average daily temperature of 25°C or above (Tab. 1). In the same year the highest percentage of anholocyclic forms of *R. padi* was registered. Reversely, in 2004 the number of days when the average daily temperature was 25°C or above was the smallest hence, the number of anholocyclic forms was also the smallest.

Table 1. Number of days with the daily mean temperature 25°C and percentage share holo- and anholocyclic forms *Rhopalosiphum padi*

Year	Months			% of anholocyclic	% of holocyclic
	VI	VII	VIII		
2002	3 (2 following)	4 (3 following)	0	44	56
2003		3 (2 following)	1	29	71
2004			2	4.5	95.5
2005		3 (3following)	0	22	78

Winged anholocyclic specimens of *R. padi* were caught to yellow traps usually only in late summer and in autumn (Figs. 2-5). Only in 2003 were the first anholocyclic specimens of this species identified in the second half of July. In each year of the research anholocyclic forms were practically present until the end of the catches.

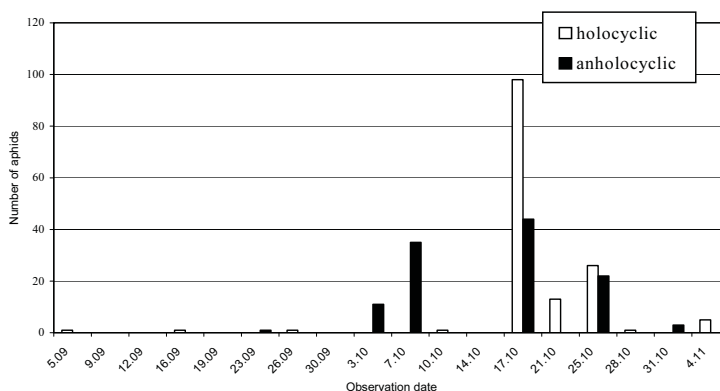


Figure 2. Seasonal dynamics of holo- and anholocyclic forms of *R. padi* in 2002

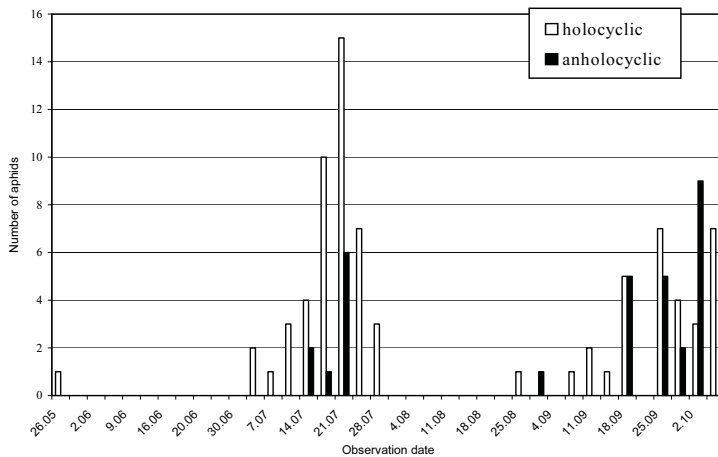


Figure 3. Seasonal dynamics of holo- and anholocyclic forms of *R. padi* in 2003

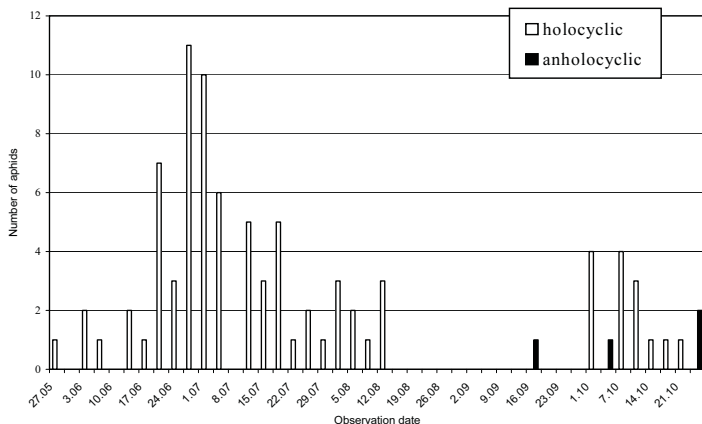
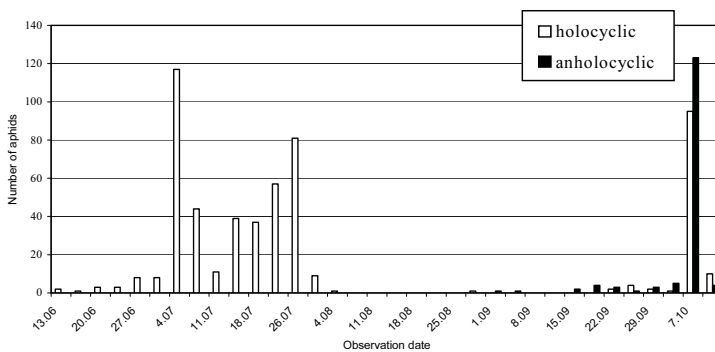


Figure 4. Seasonal dynamics of holo- and anholocyclic forms of *R. padi* in 2004



## Conclusions

In yellow water traps placed near the maize plantation the following three cereal aphid species were identified: *R. padi* (dominating species), *M. dirhodum* and *S. avenae*.

Both, holo- and anholocyclic forms of *R. padi* were identified in yellow traps. Holocyclic forms were dominating. Anholocyclic forms appeared usually in the period of late summer and autumn.

Because of the occurrence of *R. padi* anholocyclic forms it was likely that these aphid forms transmitted BYDV in the Opole region.

## References

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### **Naloty do naczyń żółtych form anholo- i holocyklicznych mszycy czeremchowo-zbożowej *Rhopalosiphum padi* (Linnaeus, 1758) /Hemiptera, Aphidoidea/**

#### **Streszczenie**

Badania prowadzono w latach 2002-2005 w Wojewódzkim Ośrodku Doradztwa Rolniczego w Łosiu (woj. opolskie). Badania obejmowały odłow mszyc do dwóch naczyń żółtych. Celem badań było określenie liczebności form anholo- i holocyklicznych *Rhopalosiphum padi* nalatujących do naczyń żółtych wystawionych w pobliżu plantacji kukurydzy.

W naczyniach stwierdzono trzy gatunki mszyc zbożowych: *Rhopalosiphum padi* (dominujący), *Metopolophium dirhodum* i *Sitobion avenae*. Wśród oznaczonych *R. padi*, do-

minujące były formy holocykliczne. Formy anholocykliczne tego gatunku pojawiały się z reguły w okresie późnego lata i jesieni. W województwie opolskim, z uwagi na występowanie form anholocyklicznych *R. padi*, istniała możliwość przenoszenia wirusa żółtej karłowatości liści jęczmienia przez ten gatunek mszycy.