

MONITORING OF THE SETTLER INSECTS IN THE “ENERGY WILLOW” (*SALIX VIMINALIS* L.) PLANTATIONS IN MÁTÉSZALKA

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REZUMAT. Biomasa, producția de plante, este intens folosită în întreaga lume. Poate (de asemenea) constitui o sursă de reînnoire a energiei pentru rasa umană. O proporție remarcabilă a acestei surse de energie regenerabilă poate fi folosită ei pentru a înlocui sursele de energie fosile. Deoarece ce țara noastră, de asemenea, este interesată de economisirea "energiei conservate" trebuie să fie examinate noi opțiuni. O perspectivă pentru această dilemă poate fi biomasa, care produce energie prin conversia energiei cosmice.

Cuvinte cheie: biomasa, economisire,

ABSTRACT. Biomass, the production of plants, is being richly reproduced all around the world. It can (also) be the renewing source of energy for the human race. An outstanding proportion of this renewable energy source can be used to replace fossil energy sources. Since our country, too, is concerned in saving up “preserved energy”, we have to look for new options. A perspective for this dilemma can be biomass, which produces energy through transforming cosmic energy.

Key words: biomass, saving up

1. INTRODUCTION

Willow species found in their natural environment are a source of nutrition for a wide range of zoological symbiosis. When man started to grow these plants, plenty of parasitic species were discovered and recorded. The release edited by Jermy and Balázs (1988–1996) in several volumes is a good source for identifying willow pests.

Small willow aphid (*Aphis farinosa* Gmelin /=*A. saliceti* Kaltenbach/) was identified at several spots in our country and described in its harmful action by Halmágyi (1974). Females are wingless, round and mottled light-green. Its abdomen pipe is yellowish-white. Colonies of the small willow aphid (*Aphis farinosa*) already appeared in midsummer, and later were sucking on the plants. As a consequence of the species' feeding habits, contagious symptoms were found on the leaves from the end of July. In some time plants shed off these symptoms, leaving the tip of the shoots stringy, however.

Giant willow aphid (*Tuberolachnus salignus* GMELIN), is a species of anholocyclic development, its spread is almost identical with that of the willow (*Salix*) spread (Börner et Heinze, 1957). Its presence was reported from several regions of the country (Horváth, 1897). Szalai-Marzsó (1963) recorded the same about bushes of *Salix cinerea* and *S. viminalis*, but experienced a widespread presence in Telkibánya. He considered it as a pest on the basket willow, as its damage decreases rod development and sets back shaving. It's a fairly sizeable (4-5 mm long) kind. They have a colour of metallic dark

brown. Its winged females' wing-span is 15-16mm. Quite obstructive is their curve tipped and hard chitin hump protruding on the back of the animal, on the half line of the abdomen, of which function is unknown (Szalai-Marzsó, 1989).

The nourishment plants of **willow-feeding leaf beetles brown willow beetles** (or brown willow beetles) (*Galerucella lineola* FABRICIUS) are mainly willows, but it subsists on poplars, black alder and on common hazel (Sáring 1990). It's a widespread species in the whole countryside (Kaszab, 1962). The length of the imago is 5-6 mm, its body elongated and a bit flat. Cover wings are yellowish red, on the centre of the head and neck, and also the prothorax a longish black spot can be seen. Cover wings are slightly haired. It's imagos winter in the dead fallen leaves. They appear in April and place their eggs on the back of willow leaves in clusters. One cluster approximately contains twenty eggs. Young dark brown larvae starts damaging on the top leaves, then move downwards. They have more generations annually (Györfi, 1957), there can be even four. Important feeding foliage for the (*Plagioderia versicolor*) and poplar (*Populus*) Sáring, Györfi there can be even four.

Important feeding foliage for the imported willow leaf beetle (*Plagioderia versicolor* LAICHARTING) are willow (*Salix*) and poplar (*Populus*) kinds. Young larvae groups are peeling the leaves in the beginning. As they grow, they leave irregular shaped holes and pits on the surface. Black defecation of larvae often contaminate the leaves. Fully developed imagos “lace” the leaf edges

primarily on sprouting “energy willows”, or often devastate the whole foliage. Fully developed beetles 2,5-4,5 mm long, with shades of blueish green, olive green, rarely cyan or dark purple, or copper with green, purplish red. Its ventral side is black. It is finely dotted on the dorsal side of the head and prothorax and roughly spotted of the cover wings (Sáring, 1990). Its eggs are yellowish, elongated. Larvae are greyish black (Gyórfi, 1957). It has an annual 3-4 generations. They winter as beetles and appear in early spring. Females lay eggs on the leaves. Their larvae grow into a pupal cocoon on the leaves, too.

2. MATERIALS AND METHODS

Our entomological samples were taken in the 50 acres willow (*Salix viminalis* L.) land in Mátészalka, Szalka Pig Ltd. During three occasions of supervisory outings in 2007 (24 April, 03 June and 25 July) we examined feral pests of the “energy willow”. We repeated our examinations four times on 25 one year-old, and 25 two year-old plants per occasions. On each outing we measured the rate of damaging and specified the species of pests.

We also ventured to observe and record imported species, in a perspective of a better professional overview to estimate forthcoming damages. We took photos and notes of the import species, and the damaged area on host plants.

3. RESULTS AND DISCUSSION

During our supervisory outings in 2007. we experienced that various types of pests plant themselves in our “energy willow” (*Salix viminalis* L.) plants, and damage it in the course of their feeding. Primarily polyphagous pests and willow-specific insects got planted, of which living is tightly related to it. We establish that this year dominant pests on 1 and 2 year-old offshoots and branches are the following:

- **Imported willow leaf beetle** (*Plagioder a versicolor* LAICHARTING) (figure 1.) It’s young larvae are peeling the leaves in groups between July and September. When grown, they chew irregular holes and pits on the leaf, contaminating it with their black droppings. Their imagos are lacing budding plants leaves mainly in springtime (figure 2.), sometimes to the extent of complete loss of foliage.



Figure 1. Willow leaf beetle



Figure 2. Damage of imported willow leaf beetle

- **Small willow aphid** (*Aphis farinosa* GMELIN /=*A. saliceti* KALTENBACH/) (figure 3.) Damages in early spring season after harvesting, at the start of the sprouting time. The loss it makes is not outstanding in terms of economy, however, is a virus-vector.



Figure 3. Small willow aphid in the end of the young shoot

- **The willow-feeding leaf beetles** (*Galerucella lineola* FABRICIUS) (figure 4.) Its larva damages all through the breeding season. According to our assumptions it is the most important pest in Szabolcs-Szatmár-Bereg county. The blackish-brown, young larvae start damaging on the end leaves, going downwards. It can even have four generations a year.



Figure 4. *The willow-feeding leaf beetles*

- **Giant willow aphid beetle** (*Tuberolachnus salignus* GMELIN) (figure 5.) They appear in the second half of the breeding season at the woody stem of the shoot. Due to their damage in the willow bark, growth of the shoots and twigs is retarded, peelability of the energy willow is declines.



Figure 5. *Giant willow aphid*

We give details on their frequency of occurrence in table 1. The most frequently appearing pest is imported willow leaf beetle with an average of 83% presence, the rarest appearing was that of the brown willow beetle.

Table 1. *Example Frequency of occurrence of newly settled insects in average of our three supervisory outings(%)*

date	<i>Plagiodera versicolora</i>	<i>Aphis farinosa</i>	<i>Tuberolachnus salignus</i>	<i>Galerucella lineola</i>
24 april	77	100	53	17
3 June.	82	70	66	25
25 July	91	55	79	36
average	83	75	66	26

4. SUMMARY

During the plantation process of the “energy willow” (*Salix viminalis* L.) we can establish that the first two production years already came with several willow-specific and polyphagous feral pests planting in the plantation. The nutrition of these pests causes economically significant damage, so it is practical to monitor their living habits, the pace and characteristics of their breeding and the rate of damaging. We can put forward an effective, on-the-purpose pest control on the technological level.

Professional pest control is going to be one important chain link in the growing technology of the plough land willow!

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