BIOLOGICAL CONTROL OF *HYALOPTERUS PRUNI* GEOF. /HEMIPTERA:APHIDIDAE/

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INTRODUCTION

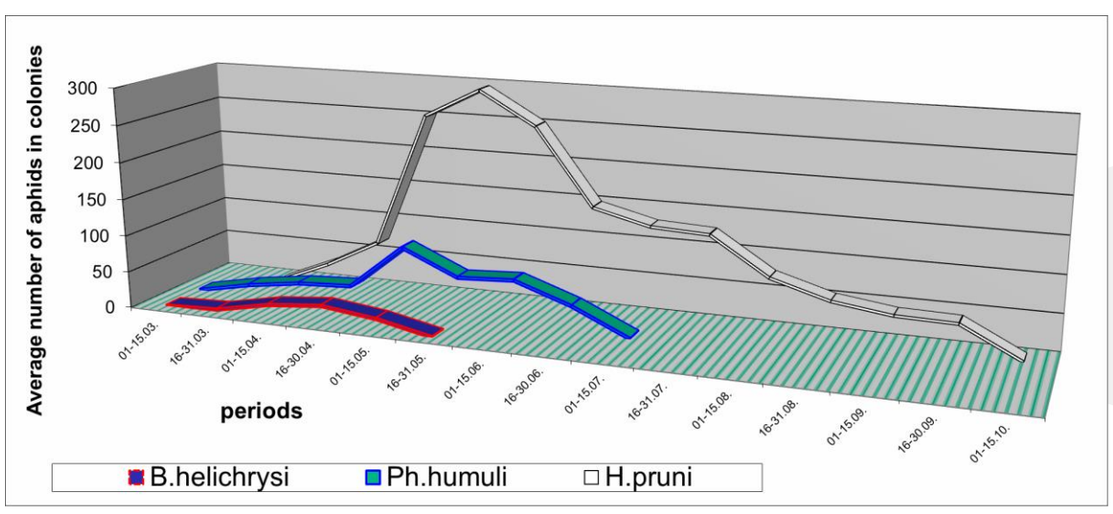
H. pruni **is a holocyclic facultative migratory species with main hosts *Prunus domestica*, *P.instititia*, *P.cerasifera* and *P.spinosa*. Secondary hosts are *Phragmites communis* *Calamagrostis*, *Elymus* and *Arundo donax*. The species is most dangerous aphid on plum in Bulgaria, because it damages the shoots during almost the entire growing season and its density is the highest, compared to the other aphids in these orchards -** *Brachycaudus helichrysi*, *Phorodon humuli* and other**. The aim of the study was to establish the efficacy of non-chemical insecticides, from different groups, for effectively control of this pest in organic farming systems.**

H. pruni colony

Strongly infested shoot

MATERIALS AND METHODS

The experiments were conducted in the laboratory. Three botanical insecticides with active ingredients pyrethrum (Pyretrum FS EC), nicotine (NikoTab) and azadirachtin (Neem Azal T/S) were used, as well as two microbial products based on *Beauveria bassiana* (Naturalis^{R}) and *Paecilomyces fumosoroseus* (Preferal WG). All insecticides are registered in Bulgaria for other pests, except for NicoTab (nicotine), which is to be registered. Natural colonies of nymphs and wingless adults were treated with botanical and microbial insecticides. Five medium-sized colonies were used for each treatment, including control, treated with water. The shoots with aphids were cut and placed in water containers in a laboratory. The number of surviving individuals was recorded – one, three, five and seven days after treatment.

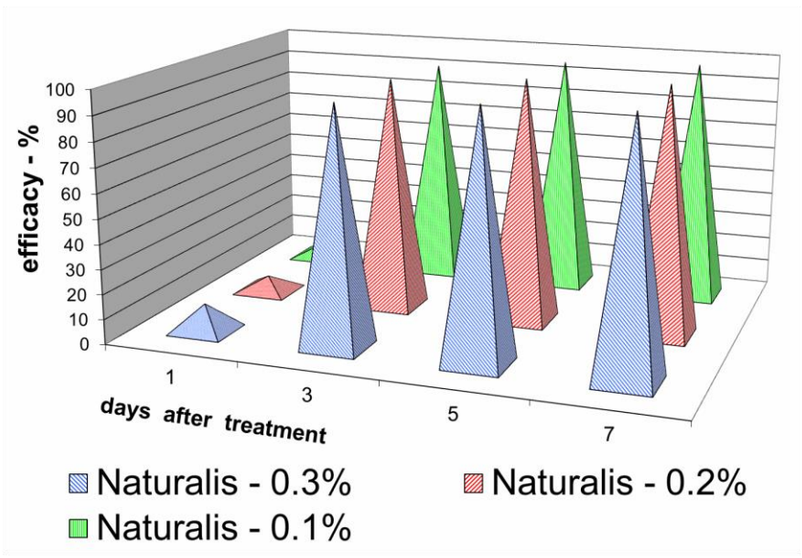


Population dynamic of the most common aphids on plum in Bulgaria

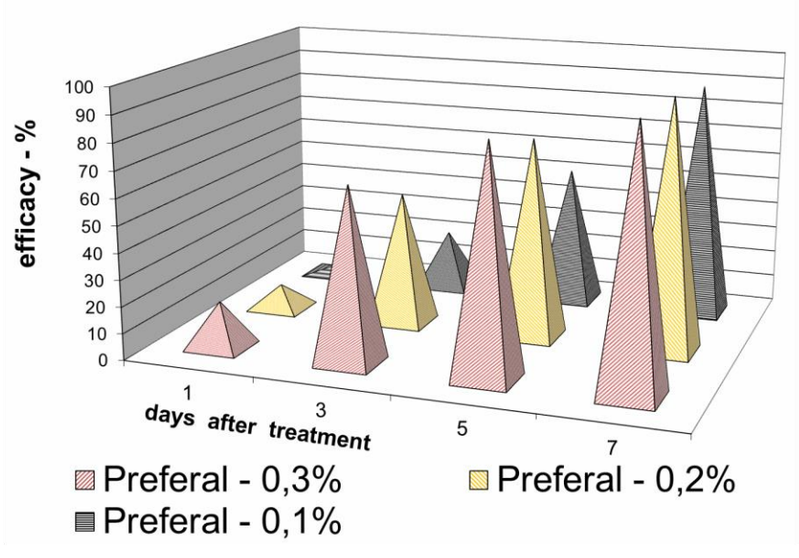
RESULTS

The microbial insecticides had a delayed initial effect. High mortality of aphids was observed after 3 days. Naturalis^{R} (*Beauveria bassiana*) showed the best results from the tested insecticides. At a concentration of 0.3% and 0.2% on the third day the efficacy exceeds 95%, and on the seventh day it reached 100%. The insecticides was very effective at its lowest concentration (0.1%) - efficacy over 90% on the third and 98.6% on the seventh day. The action of Preferal WG (*Paecilomyces fumosoroseus*) was also good, but even at higher concentrations (0,3%) the efficacy did not reach 100%.

Treated shoots in laboratory

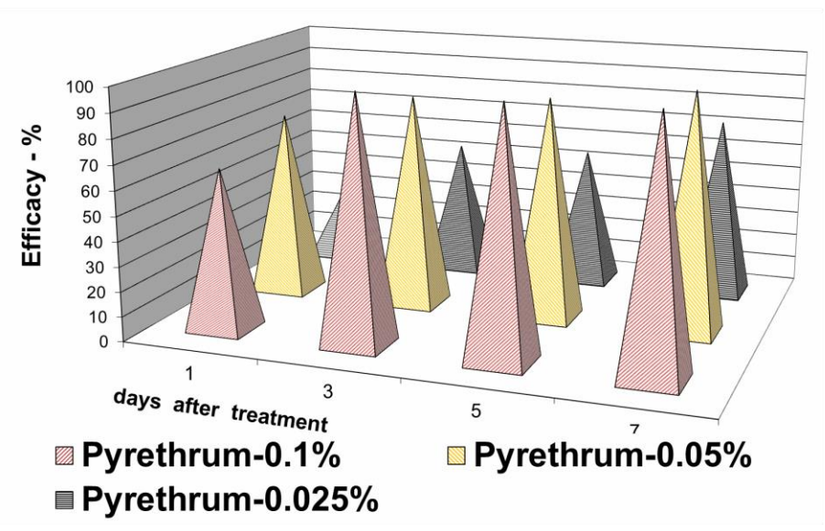


Efficacy of Naturalis^{R} against H.pruni

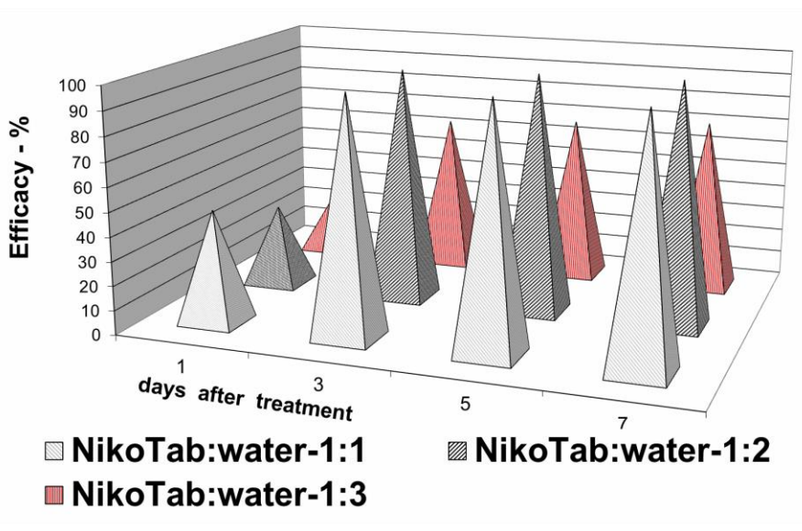


Efficacy of Preferal WG against H.pruni

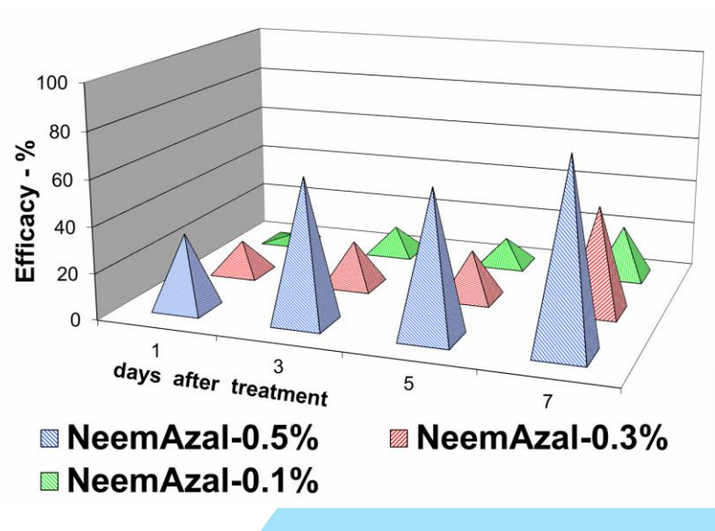
Among the insecticides based on plant extracts the best performer was Pyrethrum. At a concentration of 0.1% even at the 3rd day efficiency reached 99% and 100% on the fifth day. At 0.05% efficiency was also high, and on the 7th day reached 96.6%. The effect of this insecticide at the concentration 0.025% was significantly lower. Similar results were also found with nicotine-based insecticide NikoTab. At a dilution of 1:1 and 1:2 with water efficacy of 3th day was respectively 98.1% and 97.3%, and on the 7th day - 100%. Less was the action of the insecticide at a ratio of 1:3 with water. Unsatisfactory were the results for the azadirachtin (Neem Azal T/S). At the highest concentration (0.5%) the efficacy of the insecticide did not exceed 80%. At 0.3% and 0.1% the efficacy was even worse.



Efficacy of Pyrethrum against H.pruni



Efficacy of NikoTab against H.pruni



Efficacy of NeemAzal against H.pruni

CONCLUSIONS.

Microbial insecticides based on *Beauveria bassiana* (Naturalis^{R}) and *Paecilomyces fumosoroseus* (Preferal WG) as well as botanical insecticides with active ingredients pyrethrum (Pyretrum FS EC) and nicotine (NikoTab) in a suitable concentration have high efficacy against *H. pruni* and are suitable for its control in organic orchards. The insecticides based on azadirachtin are not suitable for controlling this aphids

ACKNOWLEDGEMENTS.

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