

**“ATTRACT AND KILL” STRATEGY IN PROTECTION OF PINE PLANTATIONS AGAINST  
THE PINE SHOOT MOTH *RHYACIONIA BUOLIANA* (DEN. ET SCHIFF.)**

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The attempts to apply „attract and kill” strategy in pest management of the pine shoot moth, *Rhyacionia buoliana* (Den. et Schiff.) were made in Poland in 2001 and 2002. In 2001, the experimental enterprise “Chemipan” (of the Institute of Physical Chemistry and the Institute of Organic Chemistry by Polish Academy of Science) prepared two formulations, called Rhykil and Rhytest, containing the contact insecticide and *R. buoliana*’ pheromone. The field trials were conducted in 3-year Scots pine plantation in Jablonna forest district (Warsaw Regional Directorate of State Forests). There were 2 treated and 2 control plots of about 0,3 ha each. Rhykil and Rhytest were applied at 3000 and 2500 droplets per ha, respectively. Five pheromone-baited traps were installed in each area. In winter, 100 Scots pine trees in each area were checked to estimate the percentage of the damaged buds on the main shoots. The treatment efficacy was evaluated taking into account both the male catches into the traps and the damage levels. The efficacy evaluated on the basis of the male catches was 100% and 94% for Rhykil and Rhytest, respectively, while the efficacy determined by comparing damage levels in treated and control plots was 79 and 68%, respectively. The low values in the latter case is probably due to that the attracticides were applied after the mating flight had begun, so that a portion of females could already be mated at the moment of application.

In 2002, Rhykil was tested at different treatment rates: 3000, 2000 and 1000 droplets/ha. In addition, two other versions of this formulation were tested: Rhykil-2, which contained another UV radiation protector, and Rhykil-3, which contained no insecticide. Both versions were applied at the rate of 3000 droplets/ha. All formulations were tested at 2 different locations in Pultusk forest district (Warsaw RDSF). At each location replicate, 5 treated (with Rhykil-1 at three treatment rates, Rhykil-2 and Rhykil-3 formulations) and 1 control plots were established. In each area, 5-6 pheromone-baited traps were installed. The catches were compared with Kruskal-Wallis test. It showed that at both locations the catches to the traps in treated plots were significantly lower than in control plots [ $H_1(5, N=36)=14,62$ ,

$p=0,0121$ ;  $H_2(5, N=30)=19,59$ ,  $p=0,0015$ ], while there were no differences among treated plots. The treatment efficacy was 95,1 and 98,3% for Rhykil-1 at 3000 droplets/ha, 100% for Rhykil-1 at 2000 droplets/ha, 92,7 and 98,3% for Rhykil-1 at 1000 droplets/ha, 94,8 and 100% for Rhykil-2 and 87,9 and 97,6% for Rhykil-3.

The results of the field tests suggest that the application of both formulations (with insecticide and without insecticide) causes mating disruption at rather sufficient level and may be used in pest management of the pine shoot moth at low population density. In the field, in low-density populations it would be rather difficult to prove the effects of insecticide on the pine shoot moth males. In 2003, the studies will be continued and focused on testing of the formulations at the treatment rates lower than 1000 droplets/ha.

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