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INVASION *CYDALIMA PERSPECTALIS* (WALKER, 1859): HARMFULNESS AND CONTORL MEASURES IN THE CONDITIONS OF WESTERN UKRAINIAN FORESTSTEPPE PROVINCE

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Summary. We determine spread, harmfullness and control measures against *Cydalima perspectalis* (Walker, 1859) in terms of Western ukrainian forest steppe province. The research conducted on the base of Ukrainian science-research plant quarantine station IPP NAAS during 2023-2024. It was determined that boxwood spraying by chemical insecticide and fertilizers input favors pests number decrease. We recommend to use specified insecticides for control Cydalima perspectalis quantity.

Keywords: green plantings, boxwood, *Cydalima perspectalis*, biological insecticides, efficiency.

Introduction

Common box or boxwood (*Buxus semperviners* L.) is a species of flowering plant in the genus Buxus (Buxaceae). It uses in oriental gardening for creation green fences, edgings, and also grows in tubs or containers. It is widely used in topiary art. The most spread kinds uses for greening. Among them are boxwood (*Buxus sempervirens* L.), georgian boxwood (*Buxus colchica* Pojark.), Japanease box (*Buxus microphylla* Siebold & Zucc.). Box tree moth (*Cydalima perspectalis* (Walker, 1859)) belongs to family *Crambidae*, (Pyraloidea Latreille, 1802, Lepidotera Linnaeus, 1758).

Pest is far-east origin. It puts into the list of dangerous species in Europe. It's motherland is in Far East- Korea, China, Japan. The first boxwood was determined in 2006 in South Germany. It comes here with planting material from China. It was spread in area of Great Britain, Netherlands and Switzerland during 2008. Boxwood struck territories of France and Austria in 2009. It reached territories of Turkey, Romania and Hungary in 2011. The species met also in Belgium, Slovakia, Ukraine, Georgia [1, 3, 5].

The expansion in Ukraine started in 2016 from Zakarpattia and Odessa regions with boxwood's planting material. The situation is rather dangerous because pest has no natural enemies in our territory. Active spread of *Cydalima perspectalis* became ecological probles for boxwood plantations, because the insect is possible to eat all it's plants during one season. The insect lays its eggs on the underside of boxwood leaves. Eggs length consists of nearly 1mm. The larva came out of them every 3-4weeks. They came into the pupae stage. Puppae length is 2.5-3 cm. Butterflies release observed after 10-15 days. Pest may give 2-3 generations in Ukrainian terms. At the most favorable climatic conditions, identical to natural environment is possible 4 th generation. *Cydalima perspectalis* winters in puppa stage in cocon form, fixed in a dense web between boxwood leaves (Fig. 1).

Caterpillar *Cydalima perspectalis* feeds not only on boxwood. It may also damage other plants at the absence of necessary feed base. Among them are: European larch(Larix decidua), cherry laurel(Prunus laurocerasus), loquat (evergreen spindle Euonymus japonicus), maple(Acer). It also damages Euonymus plantings evergreen spindle (Euonymus japonicus) and winged spindle (Euonymus alatus) and holly (Ilex) at motherland.

Boxwood causes huge damage. Plants begin to loose their decorative effect and dry up as a result of pest plant bush colonization. Pest is possible to give 3 generations in Ukrainian conditions

[6, 7, 8]. The 4th generation is possible at the natural existing place at the most favorable climatic conditions. It is character for western regions of Ukraine.



Figure 1. Caterpillar external appearance *Sydalima perspectalis*

The purpose of the work is to determine the spread, harmfulness and control measures against *Sydalima perspectalis* (Walker, 1859).

Present symptoms *Cydalima perspectalis*

1. Leaves and shoots are covered with light webs, caterpillar excrement, and black shells;
2. A lot of yellow-green caterpillars appeared on branches and leaves plates;
3. The ground covered with insect waste: gnawed leaves, feces.

Control methods for boxwood

1. It is possible to control pest by mechanical way, when the defeating process starts or bushes grows separately;

2. Biological method. A number of experiments have proven that the pest is sensitive to endotoxin bacterium *Bacillus thuringiensis*. It locates in the soil. This bacterium is in the content:Actophyt. Guapsin, Bitoxbacyllin, Dendrobacellyn. So it is necessary to use the preparation at the beginning of defeating. The air temperature may fluctuate between 17-18 degrees. It is not good to use nitrogen-content fertilizers in soil during these preparations input;

3. It is necessary to use the chemical way, if bushes covered by web and a lot of caterpillars. It is optimal to use the following preparations: Ampligo, Actellic, (6ml/6l water) and Operkot (lambda-cyhalotrin). The systematic effect preparations showed good result. The systematic effect preparation joined with following drugs: Provanto Maxi, Actara, Koragen, Angio extend the protection effect. Protection continues 14-20 days spraying, but the pest life cycle runs nearly 40 days. Protection preparation activity continue 14-20 days, insects life cycle runs nearly 40 days. It is necessary to conduct 2-3 treating per month.

It is necessary to treat carefully and use leaf Prylypach during plants spraying.

It is useful to use preparations: Proclaim and Match for younger age caterpillars. These preparations add into the general tank mixture for fresh egg laying sterilization.

Materials and methods

Cydalima perspectalis was the researches object. Mass pest infestation of plantings *Buxus sempervirens* in territory of UkrSRPQS IPP NAAS caused the object's choice. The age boxwood is in scope 10-25. Plantings were represented by bushes from 0.5 to 2.2 m.

The researches conducted on the basis of UkrSRPQS IPP NAAS, by spraying boxwood bushes with a chemical insecticide: Aktara.

Results and discussion

The study period's weather condition were favorable for the development of caterpillars and butterflies *Cydalima perspectalis*. We sprayed operating solution Actary during the first spraying and watering (8g/l) bushes with watering root zone at the first symptoms appearing.

Nitrogen fertilizers did not use, but potassium sulfate (20 g/10l) and calcium nitrate added. This complex decreased the boxwood quantity. Technical efficiency consisted of 92%.

Conclusions

The results of the conducted studies found that the use of the chemical insecticide Aktara, together with the application of fertilizers, contributed to decrease the pests number.

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