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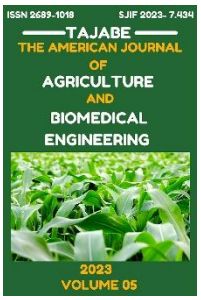

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Research Article

BIOLOGICAL EFFECTIVENESS OF THE APPLICATION OF NATURAL REFRIGERANTS IN PROTECTING POPLAR FROM PLANT PESTS

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ABSTRACT

In poplar groves, worms, false worms, calf-head beetles, leaf-eaters, glassworms, shieldworms and other pests cause the main damage. From coccinellids, which have been effective predators of pests in poplar groves; chilocorus (Chilocorus renipustulatus Scrib) and two-pointed chilocorus (Chilocorus bipustulatus L.), seven-pointed khan girl (Sossinella septempunctata L.). In addition, it is important to reduce the number of pests in this agrocenosis.

KEYWORDS

Chilocorus bipustulatus L., Chilocorus renipustulatus Scrib and two-pointed chilocorus.

INTRODUCTION

In poplar groves, worms, false worms, calf-head beetles, leaf-eaters, glassworms, shieldworms and other pests cause the main damage. From coccinellids, which have been effective predators of pests in poplar groves; chilocorus (Chilocorus renipustulatus Scrib) and two-pointed chilocorus (Chilocorus bipustulatus L.), seven-pointed khan girl (Sossinella septempunctata L.). In addition, it is important to reduce the number of pests in this agrocenosis.

Parasitic entomophages: Aphitis proclia Wlk, and (Aphitis Mytilaspidis Baron) were found to be parasitic. Prospaltella (Prospaltella perniciosi) parasite develops only inside the body of California shields.

In laboratory conditions, Aphitis reproduces very well, but lays very few, up to 10 eggs. Aphids affects not only female turtles, but also male turtles. Architis mytilaspidis Varon. this species is also very close to the previous species, but is less damaging to California shields.

In our studies, it was observed that this parasite kills up to 60-70% of thyroids.

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Chilocorus – Chilocorus: Kills aphids, mites, false shields. If it finds a colony of shields in a tree, it will welcome this shields colony. It was shown in our research that chylocorus gives birth twice during the season. Beetles hibernate in poplars, under fallen leaves, bark and other sheltered places. Some of them may fly to other protected areas for wintering. In the spring, when the temperature rises above 15°C, the beetles come out of the hibernation and start feeding. They feed only on hot days, and when it's cold, they hide between barks, soil, and under fallen leaves. The beetle can not completely destroy the colony of shields, some of the reserve pests are preserved for reproduction.

Nomolotilus flaminus Dalm. parasite, they develop in the larva and mushroom of chylocorus. The number of chylocorus is slightly reduced in places where insecticides have been applied. It mainly destroys the eggs of aphids, mites and insects.

Seven-spotted ladybug–(Coccinella septempunctata): This type of parasite develops only inside the body of tortoises. In some countries, it is used as a biological control against ticks. In our conditions, it was found that this parasite infects only 15-20% of thyroids.

10 saplings of each variant were selected in the poplar nurseries of the Scientific Research Institute of Forestry.

The effectiveness of aphidophages in the agrobiocenosis of poplar seedlings depends on their response to external environmental factors and the biological characteristics of the species, the density of the pest population in the plant, the amount of entomophages released into the cultivated fields, and the morphological characteristics of the plants.

Based on this, we used in our scientific research Chrysopa carnea Steph., Ch. septempunctata Wesm., species were obtained. According to generally accepted methods, release of predatory goldeneye larvae in the field is carried out in the following proportions, namely Chrysopa carnea Steph. (2nd and 3rd instar larvae) and Ch. septempunctata Wesm. (larvae and imago of 1–2 years) species were carried out in ratios of 1:15 and 1:10. At the time of release of predators, the average number of pests in one plant was 350-400 pieces. Counting of pests and entomophages was carried out on days 3-6 and 9 in the fields where larvae were released. Their activity, location, egg-laying and other characteristics, as well as air temperature and relative humidity were monitored every morning, midday and evening. Entomophagus was not used as a control option.

Figure 1.

Effectiveness of aphidophages against aphids in poplar nursery (Sakson Ota State Forestry, 2019-2021)

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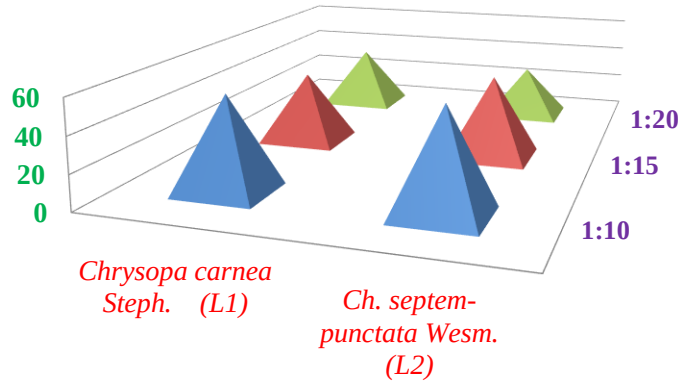

	Chrysopa carnea Steph. (L1)	Ch. septem-punctata Wesm. (L2)
1:10	54.1	58.5
1:15	41.7	48.3
1:20	36.2	31.1

Seven-spotted golden-eye larvae have high environmental adaptability, and larvae released into the field will feed in this place until they completely destroy the sap without leaving the plant if there is enough food. Despite the high air temperature (temperature 48°C), it was observed that this predator was found in all layers of the plant.

The results determined on the effectiveness of both types of goldenrod against cabbage aphids in cabbage agrobiocenosis are presented in the following table (see Fig. 4.16).

As can be seen from the data presented in the table, 64.1% of aphids were killed when 1-year-old larvae of common goldeneye were released to the nursery in a ratio of 1:10. When the number of Kushanda was increased by 5 times compared to the pest, i.e. in the ratio of 1:15, the reduction in the number of pests reached 51.7%. It was observed that 7-8% of goldeneye larvae remained, and to obtain the expected effect, re-release of predators was required. Only 1:20 pest control reduced the number of aphids below the economic damage criterion within three days, and the biological efficiency reached 46.2%.

When 2-year-old larvae of the seven-spotted goldeneye were released against aphids in a ratio of 1:10, the number of pests was reduced to 68.5%, when an entomophagus and a pest were released in a ratio of 1:15, the number of aphids was reduced to 58.5%. It was found that it can reduce the sap of the second generation of the plant by 95-96%. Only in the summer months, when we use 3-year-old larvae of common goldeneye against aphids, it can give the expected effect. 2- young larvae are highly effective against aphids when the air temperature is not higher than 30°C.

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