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# Protection The Winter Wheat From Pests In The South Of Russia.

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**ABSTRACT**

Pests of winter wheat are one of the main deterrents of crop productivity in the South of Russia. Protection of crop cultivation from a pest complex by tank mixtures of insecticides is carried out at the early stages of the appearance of phytophages from the earing phase to causing economically significant damage to the crop.

**Keywords:** winter wheat, insecticides, harmful bug (Erygaster integriceps Put.), Wheat thrips (Haplothrips tritici Kurd.), Large grass aphid (Sitobion avenae F.), common cereal aphids - Schizaphis graminum Rond., Borer sawfly (Cephus pygmaeus L.), black bread sawfly (Trachelus tabidus F.).

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## INTRODUCTION

Currently, on the fields of winter wheat, various types of bedbugs are widespread, among which the bug is the most harmful bug. This is one of the most dangerous and widespread types of pests of wheat [1-3].

In winter wheat sowings, this is the most harmful species from phytophagous so with a small number (2-3 specimens / $m^2$) significantly reduces not only the quantity but also the quality of the crop. In recent years, the Stavropol Territory has also noted an increase in the number and severity of wheat thrips, cereal aphids and grain sawflies [4-5].

## MATERIALS AND METHODS

Studies were conducted from 1997 to 2014 in the educational and experimental farm of the Stavropol State Agrarian University and the farms of the Stavropol Territory in winter wheat crops.

Due to our observations, we found that, in bulk, the main species of pests in agrocenosis of winter wheat in the South of Russia appear from the earing phase. From this period and on the ruminant ripeness inclusive, they actively undergo additional feeding mating and lay eggs, as well as the emergence of new generations of pests, causing significant economic damage to crops.

From the beginning of the earing phase to the beginning of the phase of wax ripeness of winter wheat grains in the climatic conditions of the Stavropol Territory passes from 28 to 35 days during this period, the culture needs protection from these pests. This is well observed on the average long-term dynamics of the abundance of these species during the ontogeny of winter wheat presented in Figure 1.

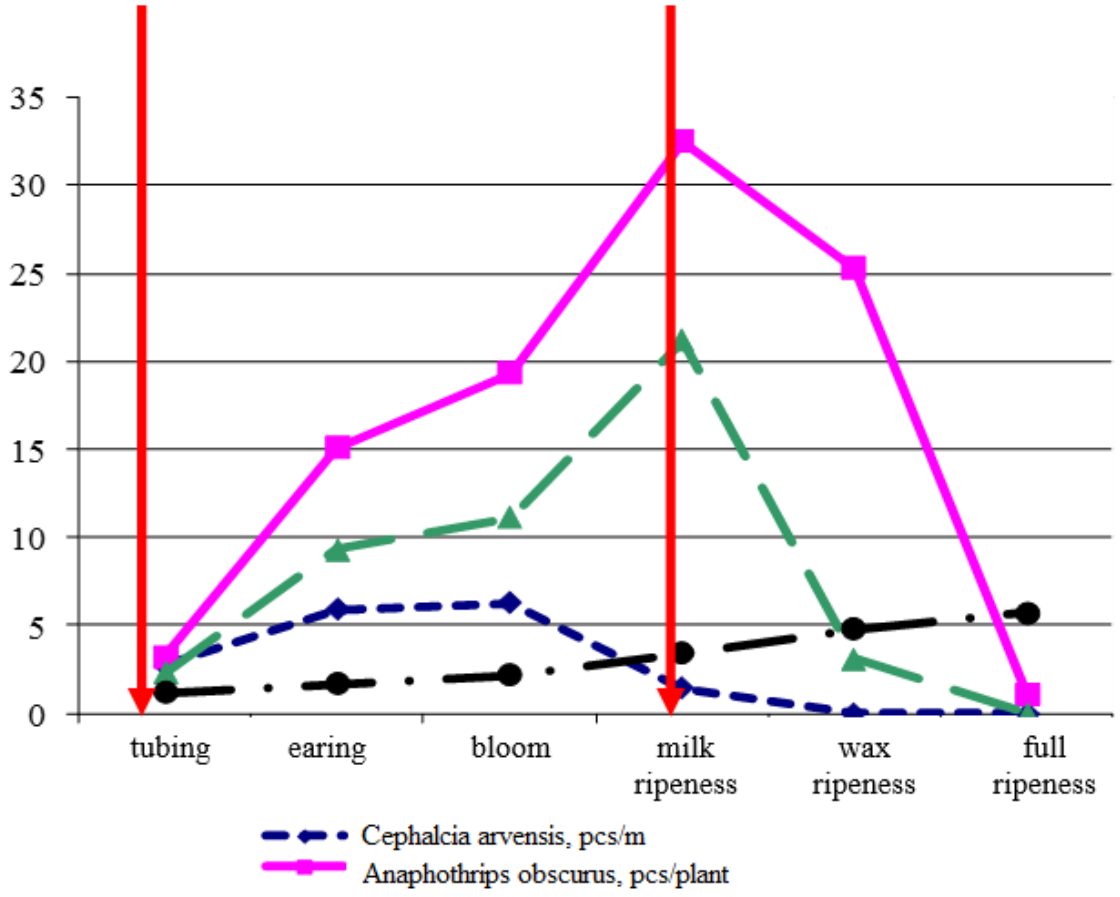


**Figure 1: Dynamics of the number the major pests in different periods of the ontogeny of winter wheat (average for 1998-2013) [6]**

From the graph shown, it is seen that winter wheat crops require protection in the time interval from the earing phase to the beginning of the wax ripeness phase of the grain.

At the end of the phase of wax ripeness, grains of winter wheat plants are coarsened and rendered unsuitable for feeding larvae of younger pest age. And the flight and laying of eggs at the grain sawflies last a maximum of three weeks.

That is, if you find an insecticide or a mixture that effectively protects winter wheat crops for four weeks, then it would be possible to solve the protection from the main pests of winter wheat in the South of Russia in one treatment.

Therefore, we laid down experiments to study the biological effects of insecticides in the fight against phytophagous for various periods of application and their effect on the yield of winter wheat in the conditions of the Stavropol Territory in winter wheat crops.

The first term of insecticide application in winter wheat crops was in the earing phase before the beginning of the summer of the sawflies and during the mass settlement of the agrocenosis with wheat thrips and a bug turtle and its mass egg laying.

The second term of insecticide application in winter wheat crops was in the flowering phase during the mass summer of sawfly grain and active supplementary feeding and propagation of cereal aphids, wheat thrips and the beginning of the emergence of larvae of the first age of the bug of a harmful turtle with the continuation of the egg imago laying.

The third term was standard, as many recommendations on protection against the bedbug of a harmful turtle write when 15% of the third-instar larvae appear in the climatic conditions of the Stavropol Territory, this coincides with the phase of milk ripeness of winter wheat grains. The scheme of the experiment is shown in the table. The size of one replication was 2 hectares, the repetition of the experiment was threefold. The insecticide application method is a one-time ground treatment with a John Deere self-propelled sprayer with a working fluid flow rate of 200 l/ha.

**Table: Scheme the experience and the rate of consumption the drugs**

| Option of experience | Drug consumption rates, kg, l / ha |
|---|---|
| Control (without treatment) | - |
| Ear of earing | |
| DecisProfi, VDG + Konfidor EHkstra, VDG (Del'tametrin 250 g/kg + Imidakloprid 700 g/kg) | 0,02 + 0,025 |
| EHforiya, KS (Lyambda-cigalotrin 106 + Tiametoksam 141 g/l) | 0,2 |
| Cezar', KEH +Binom, KEH (Al'fa-cipermetrin 100 g/l + Dimetoat 400 g/l) | 0,1 + 0,5 |
| The beginning of flowering | |
| Decis Profi, VDG + Konfidor EHkstra, VDG (Del'tametrin 250 g/kg + Imidakloprid 700 g/kg) | 0,02 + 0,025 |
| EHforiya, KS (Lyambda-cigalotrin 106 + Tiametoksam 141 g/l) | 0,2 |
| Cezar', KEH +Binom, KEH (Al'fa-cipermetrin 100 g/l + Dimetoat 400 g/l) | 0,1 + 0,5 |
| Beginning of milk ripeness of grain | |
| Decis Profi, VDG + KonfidorEHkstra, VDG (Del'tametrin 250 g/kg + Imidakloprid 700 g/kg) | 0,02 + 0,025 |
| EHforiya, KS (Lyambda-cigalotrin 106 + Tiametoksam 141 g/l) | 0,2 |
| Cezar', KEH +Binom, KEH (Al'fa-cipermetrin 100 g/l + Dimetoat 400 g/l) | 0,1 + 0,5 |

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## RESULTS AND DISCUSSION

The counts of phytophages and entomophages were carried out before the treatment and on days 14, 21, 28 after the use of tank mixtures of insecticides. By conventional entomological techniques, the bug was taken into account by a harmful turtle and its entomophages; wheat and striped thrips, grain sawflies and collies, as well as cereal aphids.

In general, the analysis of the average biological efficacy of the insecticide tank mixtures studied showed that they can reliably protect crops from the pest complex, both from adults and from larvae, when the beginning of the ear, insecticides Decis Profi + Konfidor EHkstra and EHforiya (Figure 2)

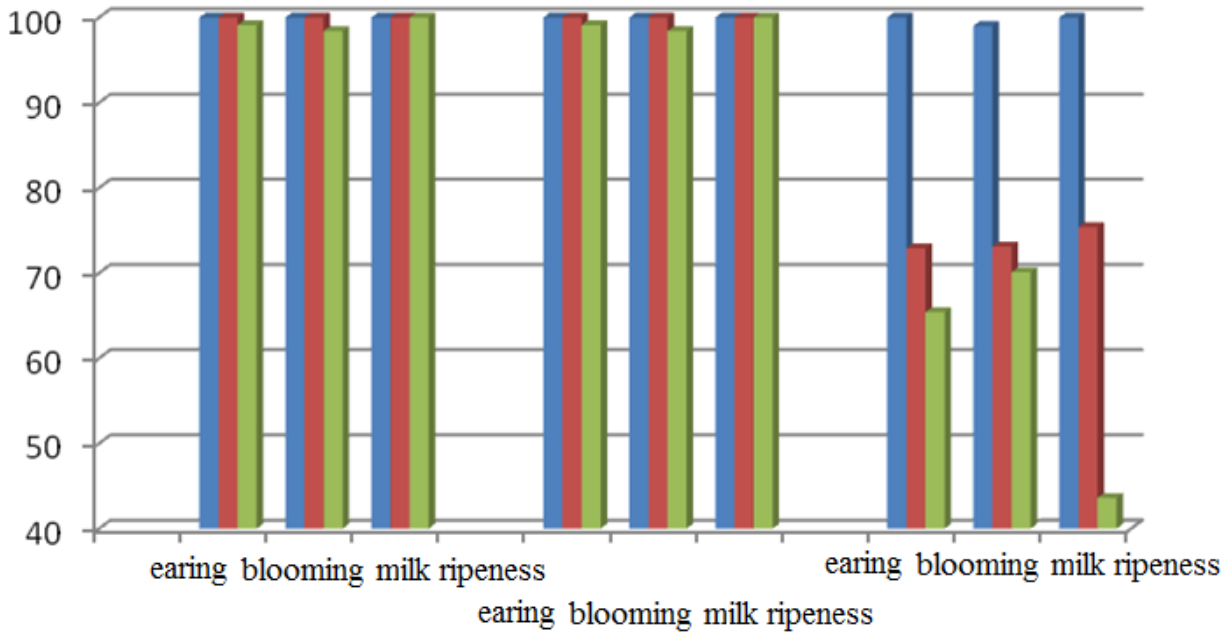


**Figure 2: Average biological effectiveness of tank mixtures of insecticides depending on the timing of application in winter wheat crops (Stavropol State University of Agricultural Practice, average for 2011-2013) (%)**

The tank mixture of insecticides Caesar + Binom with a rate of flow 0,1 + 0,5l / ha protects winter wheat from the main pests at an acceptable level of 82.6-87.1% when applied to the phase of milk ripeness of grain.

Thus, the results of the study showed that the variants with the use of tank mixtures of insecticides Decis Profi + Confidor Extra with a rate of flow of 0.02 + 0.025 kg / ha and Eforia with a rate of 0.2 l / ha have a prolonged protective effect on the main pests (bedbug of a harmful turtle, cereal aphids, wheat thrips and grain sawflies) and effectively protect winter wheat crops within 4 weeks after the application of the insecticide.

The use of a tank mixture of insecticides from such chemical groups as the synthetic pericidoid Decis Profi (Delta-cypermethrin 250 g / kg) in a mixture with Neonicotinoid Confidor Extra (Imidokloprid 700 g / kg) is similar to the finished Eforia plant mixture (Lambda-cyhalothrin 106 + Tiametoxam 141 g / l).

## CONCLUSIONS

The use of these mixed preparations in the phase of the beginning of the earing or in the pitting of winter wheat against pests has the following advantages for producers of agricultural products in the South of Russia:

- protection of winter wheat crops from pest complex by one treatment;
- reduction of the pesticide load on winter wheat crops due to reduction of the active ingredients consumption per 1 hectare by the active substance and reduction of the number of treatments. For example, when treated with a standard tank mixture of Binom + Caesar, 200 g / ha of dimethoate and 10 g / ha of Alfa-cypermethrin per hectare, while processing in a mixture with decanas Proci + Confodor Extra neo-dicatenoids, 5 g / ha of Delta-cypermethrin per hectare and 17.5 g / ha of Imidicloprid, and when treated with Eforia per hectare 21 g / ha of Lambda-cyhalothrin and 28.2 g / ha of Imidicloprid fall.
- conservation of entomophages in agrobiocenoses of winter wheat fields due to a decrease in the number of treatments and non-toxicity of neonicotinoids for neutral insect species not feeding on plants.

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