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PESTS OF CEREAL CROPS

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Abstract: This article discusses the main insect species that damage grain crops grown in Uzbekistan , their biological characteristics, distribution areas, stages of damage, and methods of their control. In particular, scientifically based information is provided on thrips, grain borers, grain borers, and other dangerous species that threaten wheat and barley crops. The importance of integrated approaches to pest control, including biological and agrotechnical measures, is emphasized.

Key words: Cereal crops, Insect pests, Thrips, Biological control, Agrotechnical control, Entomological monitoring, Damage stage, Pesticide resistance, Integrated pest management (IPM).

observed to cause damage to grain in grain fields to date . The main pests that are most widespread and cause serious damage to cultivated areas are the aphid, aphids, thrips, slime mold, Swedish and Hessian flies, weevil beetles, cicadas, stem borers, etc. In some years, when favorable conditions arise for harmful insects, they multiply massively, spread to large areas, and significantly damage crops.

Plants that are significantly, sometimes severely, damaged by grain pests include the following (Table 1).

Table 1

Description of field crops - I. Cereal crops		
Farm groups Cereal crops	**Biological groups**	**Crops**
	1. Real grain crops	Wheat, rye, barley, oats
	2. Grain crops	Millet, corn, barley , rice, sorghum
	3. Cereals and legumes	Peas, lentils, chickpeas, beans, native peas, soybeans, lupins and beans.
	4. Other non-cereal crops	Buckwheat and so on.

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It has been observed that wheat yield is lost by 30-50% when infected with these pests. In order to effectively combat these pests in the climatic conditions of our republic, it is necessary to monitor the spread of pests every week, starting from the period of grass emergence, when the average daily air temperature is 8-10°C.

In 2020, out of 1,077.6 thousand hectares of grain fields in our Republic , 877.7 thousand hectares were damaged by harmful insects and other pests[1].

1. Type – Wheat thrips – (Haplothrips tritici.) (Family – Thripidae. Order of thrips – Thysanoptera.)

The length of the thrips is 1.47-2.2 mm. The last segment of the larval abdomen is elongated in the form of a tube, and the posterior end is slightly narrowed. The wing is veinless, the middle part of the forewing is slightly narrowed, the edges of the wing have long bristles, and the antennae are 8-jointed. Wheat thrips are brown or black in color.

Thrips larvae are up to 2 mm long, with 7-segmented antennae, light red in color. The second-instar nymph has 7-segmented antennae; body length 1.7 mm . Adult females have 8-segmented antennae; body length 1.5-1.8 mm, dark brown to black.

Wheat thrips overwinter in the soil as young larvae, in cracks in the ground , and in wheat ears. In spring, when the air temperature reaches an average of +8 ° C, the larvae emerge from hibernation. Thrips multiply during the wheat earing period.

lays eggs singly or in clusters on the ear and grain husk. She begins laying large numbers of eggs in mid-May. The adult beetle damages the stem tip and upper leaf sheath by sucking.

When the larvae hatch, they enter the ear husk and feed by sucking the husk and flower sap, eventually sucking the grain sap (Figure 1).

Egg.	Second stage nymph.	Adult female.

Figure 1. Wheat thrips[2].

Wheat thrips develop once a year, producing one generation.

2. Type - Large grain weevil - (Amphorophora avenae fabr.) Grain weevil - (Toxoptera graminium Rond.) (Family – Aphididae. Order – Hemiptera.)

The large grain louse is 2-2.8 mm long , green in color, with a reddish-brown thorax, antennae longer than the body, a sucking tube equal to one-third of the body length, and antennae, tube, paws, upper thighs, and shins are black.

The grain louse is 1.2-2 mm long , green in color, with 2-3 brown thorax segments. Its antennae are longer than half its body. The sucking tube is smaller, and can be from one-sixth to one-tenth of its body length (Figure 2).

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The large grain louse is yellow in color, 1.3-3.3 mm long.	The winged black beetle is 1.6-2.9 mm long.	Brown lice	Large grain lice on wheat ears.
			
Adult mating.	Ovaries and eggs.	Grain weevil (Toxoptera graminium Rond.)	

Figure 2. Large grain lice.

These two species of grain aphids are non-migratory aphids. They live openly on the leaves, stems , and ears of cereal plants. Sometimes grain aphids are found together with barley aphids.

All non-migratory grain aphids overwinter in the egg stage. Root aphids overwinter in the larval and adult stages on the roots of cotyledons. Grain aphids produce more than 10 generations per year.

3. Species – Harmful scutes – (Eurygaster integriceps Put.) (Family – Scutelleridae. Order – Hemiptera.)

The adult is 10-12 mm long. The body color is yellow or yellowish gray. There are two whitish spots at the base of the shield. The tip of the shield is oval-shaped and extends to the end of the abdomen. The height of the head is equal to its width.

The caterpillar is distinguished from the adult by its lack of wings, small size , and rounded shape. The caterpillar begins to develop wings and a shield on the middle thorax in its fifth instar. It reaches a size of 8-10 mm.

The eggs are green and spherical in shape. If the parasite infects the eggs, they turn black.

The harmful fungus overwinters under plant debris at the age of 1 year. The majority of them fly to the mountains for wintering. In spring, it emerges from hibernation when the air temperature reaches 17-20 °C (Figure 3).

			
The height of the imago is 10-12 mm.	If the parasite damages its eggs,	The egg is green and spherical in shape.	From an egg The caterpillar is

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	they turn black.		emerging.

Figure 3 . Harmful khasva [3].

Harmful khasva air cool in the period wheat and barley stem and ear of corn juice sucking feeds . Khasva asked from the place juice flowing out hardens and around white colored substance appearance it will be , this khasva that there is obvious is a symbol .

Eggs leaf to the surface put it . Every trip 14 2 rows of eggs as places . One 98-182 syllables , sometimes up to 294 and from it also more egg put The pest produces one generation per year .

4. Species – Hessian fly – (Mayetiola destructor.) (Family – Celidomyiidae. Order – Diptera.)

The adult is 2.5-3.5 mm long. The body is brown, the female has red or brown spots on the abdomen. The chest is black, the lateral whiskers are brownish-yellow, the female has 16-18 and the male 16-20 segments (Figure 4).

		
The Hessian fly imago is 2.5-3.5 mm.	Many Hessian fly larvae feeding on wheat.	The seed is 1 mm in diameter, similar to a flax seed.

Figure 4. Hessian fly[4].

The wing tip is blunt, with long hairs on the edges, and the legs are long. The female's abdomen is thicker than that of the male, and the male has two paddle-like growths at the end of its abdomen. The eggs are elongated, reddish, small, rusty orange , and elliptical in shape. The larva reaches 4 mm before pupating, and is spherical in shape, with a slightly flattened head that is slightly bent downwards.

The larva is white, while the young larva is pinkish yellow.

The Hessian fly overwinters in winter wheat in a pseudo-cocoon or open larval stage.

In early spring, the adult caterpillar turns into a cocoon, which is about 1 mm long, similar to a flax seed. In the second half of March - early April, flies emerge from the cocoon (this is observed when the apple tree is blooming).

The female fly lays from a few dozen to 500 eggs on the body of wheat.

In the climatic conditions of Uzbekistan, it reproduces in 2 or more generations.

The Hessian fly (Mayetiola destructor) is one of the most destructive pests of wheat worldwide, hence its name. It attracts much attention from wheat geneticists and breeders.

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5. Species – Swedish fly – (Oscinosoma frit.) (Family – Oscinella. Order – Diptera.)

The adult is 1.5-2 mm long . The anterior thorax is very convex and resembles a hump. The body is shiny black, the underside of the abdomen is light yellow, the abdomen of the female is thicker.

The egg is white, 0.5 mm long . The larval body is 4.5-5 mm long, shiny yellow, with a blunt posterior end and two appendages.

The pseudo-cocoon is brown, 1.75 -3 mm long (Figure 5).

		
Imago 1.5-2 mm.	The larva is 4.5-5 mm.	The pseudo-cocoon is brown, 1.75-3 mm.

Figure 5 . Swedish fly [5].

Swedish fly big old larval stage at the age of autumn in crops and plants in the remainder It overwinters . In the spring, it turns into a mushroom and the fly emerges during the apple blossom season.

The female lays several dozen eggs on young plant leaves, stems , and during the flowering period, on the leaf sheaths and leaf sheaths of plants.

The caterpillar enters the leaf sheath and gnaws the outer, often inner, soft part of the stem, resulting in the plant's third leaf turning yellow and drying out. In Uzbekistan, the Swedish fly produces 3 or more generations.

6. Species – Corn Moth – (Pyrausta nubilalis Hb.) Family – Pyraustidae. Order – Lepidoptera.

The butterfly's wingspan is 27-28 mm. The male's forewings are brownish-gray, while the female's are yellowish. The next pair of wings is light yellow in the female, darker in the male.

The eggs are flat, and they are laid thousands of times on top of each other. The caterpillar is up to 25 mm long, light yellow, with a dark stripe running along its shoulder. There are 4 black spots on the anterior joints, and 2 on the posterior joints.

The larva is brown, 20 mm long, with 4 hooks at the tip of its wing. The pest overwinters in the stems of the plants on which its larvae feed (thorn, wormwood, corn, white oats). In early spring, the caterpillars pupate, and in 2-3 weeks the butterflies emerge. Butterflies lay 250-300 eggs, and even up to 1250. The corn borer butterfly produces 2-3 generations in Uzbekistan .

The larvae of the pest first damage the corn stalk and then the cob. The damaged stalk and cob break (Figure 6).

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When writing the butterfly's wingspan, it is 27-28 mm .		The length of the worm is 25 mm.		The worms are feeding on corn kernels.

Figure 6. Corn borer .[6]

Conclusion

Insects that damage grain crops - thrips, pyrillia, tube borers and other species - have a significant negative impact on productivity. A thorough study of their biology, developmental stages and distribution characteristics is important for their effective control. Modern approaches, in particular, the coordinated use of agrotechnical, biological and , if necessary, chemical methods through an integrated pest management (IPM) system, ensure environmental safety and preserve beneficial insects.

Therefore, it is necessary to use scientifically based, ecologically and economically effective methods to protect grain crops from pests. This will not only ensure crop stability, but also guarantee sustainable development in agricultural production.

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