

# EFFICACY OF INSECTICIDES AGAINST

## wheat thrips *Haplothrips tritici* Kurd. in winter wheat crops

**Goal.** To develop an effective system of winter wheat protection against wheat thrips *Haplothrips tritici* Kurd. Determine the technical effectiveness of insecticides Karate Zeon 050 CS, SC (lambda-cyhalothrin, 50 g/l); Match 050 ES, CE (lufenuron, 50 g/l); Engio 247 SC, CS (thiamethoxam, 141 g/l + lambda-cyhalothrin, 106 g/l); Talstar, 10% CE (bifenthrin, 100 g/l); Mospilan, VP (acetamiprid, 200 g/kg); Inazuma, VG, (acetamiprid, 100 g/kg + lambda-cyhalothrin, 30 g/kg) in the Southern Steppe of Ukraine. **Methods.** The experiment was set up on winter wheat crops in 4-, 5- and 8 replications in 4x replication. The plots were arranged by the method of randomized blocks. The pest was counted by sampling 20 ears of wheat, which were placed in paper bags, tightly closed, delivered to the laboratory and counted live and dead adults by analyzing each ear for all samples from each experiment. Larvae were counted by the method of distillation using selectors. **Results.** To control the number of thrips, the effectiveness of the insecticide Engio 247 SC, CS at four application rates (0.05, 0.1, 0.15 and 0.2 l/ha) and Karate Zeon 050 CS, SC; Inazuma, VG; Match 050 ES, CE; Mospilan, VP; Talstar, 10% CE was studied. As a result of observations of changes in the number of thrips during 2017–2019, it was found that its appearance on winter wheat crops occurs from May 08 to 24. Peculiarities of weather conditions influenced the dynamics of thrips numbers. The duration of individual phases of wheat thrips development by years depending on the GTC was studied. The studies revealed the main patterns of wheat thrips population development and showed the possibility of controlling its number with the help of various insecticides. **Conclusions.** The use of insecticides Match 050 ES, CE; Karate Zeon 050 CS, SC; Talstar, 10% CE; Mospilan, VP; Inazuma, VG at consumption rates of 0.3 l/ha, 0.2, 0.1, 0.075, and 0.24 l/ha, respectively, on winter wheat crops against wheat thrips in the phase — «beginning of earing» (VVSN 51) effectively controls

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the number of thrips and provides technical efficiency of 93.7–96.1%. The use of the insecticide Engio 247 SC, KS at consumption rates of 0.05 l/ha, 0.1, 0.15 and 0.2 l/ha provides technical efficiency of this drug against pest larvae at the level of 90.2%, 94.7, 95.9 and 96.4%, respectively.

### wheat thrips; winter wheat; protection; insecticides

According to the FAO (Food and Agriculture Organization of the United Nations), humanity fails to harvest an average of 34% of the potentially possible crop yield. These losses are estimated at \$75 billion, including \$30 billion in pest losses. The loss of potential winter wheat harvest is 24%.

What pests are most commonly encountered during the ripening period of winter wheat ears? In the last decade, a dangerous pest of winter wheat, wheat thrips (*Haplothrips tritici* Kurd.), has become extremely widespread in our country, and its harmfulness is often underestimated [1]. The pests cause the greatest damage in the Steppe zone, but the insect is widespread in grain crops throughout Ukraine. The biological characteristics of wheat thrips are already well understood [2]. The

pest's developmental phenology allows it to quickly adapt to new conditions. There are several stages of pest development [3], namely:

**Adults.** The mass emergence of adults coincides with the beginning of earing of spring and winter crops. The average life expectancy of an adult insect is 30–40 days. The pests are transported to the fields by air at a height of 1.5–2 meters. On plants, adult insects concentrate in the area of the penultimate leaf or penetrate directly under it to suck juices from the most delicate part of the ear wrapper. Females outnumber males 2–3 times in the population.

**Mating.** After the formation of a crack in the wrapper, the pests penetrate the ear and begin to lay eggs. One female can lay 23–28 eggs within 4–5 weeks. The most intensive oviposition occurs before the earing phase. Then the female moves to late crops or plants that are lagging behind in development.

**Eggs.** Embryo formation takes place within 8 days.

**Larvae.** Newborn larvae eat little, molt in 2–4 days, usually during mass flowering of the crop. High summer temperatures and low precipitation contribute to the active spread. The highest number is observed during the period of grain formation, and at the stage of waxy ripeness, the second instar larvae leave the ears. At the time of harvest, most of the pests are located in the root part of the stubble and on the soil surface. The larvae overwinter under plant residues on the soil surface or directly in the soil at the depth of the tilling layer, waking up when the soil warms up to a temperature of + 8°C.

**Pronymph and nymph.** The sequential transformation takes place in plant residues and soil. Nymph



development lasts 7–13 days, after which it turns into an adult.

This rapid reproduction of the phytophage was caused by a violation of crop rotation, simplification of the main tillage system, and a decrease in the use of plant protection products. Abnormally warm weather with moderate precipitation in the fall and the absence of significant cold snaps in winter create conditions for good overwintering of these insects. In addition, their mass reproduction is facilitated by the hot, dry weather observed in recent years in the summer [4]. In addition to winter wheat, wheat thrips host plants include winter rye, barley, oats, corn, wild cereals, buckwheat, cotton, tobacco, and some wild herbaceous plants. Every year, 45–62 million UAH are spent on protecting wheat crops in Ukraine [5].

It is important to find new ways to reduce the harmfulness of wheat thrips and study its local population [6]. One of these ways is to use winter wheat varieties with resistance to the pest, but genetic resistance factors do not provide complete protection of plants from wheat thrips, and therefore chemical protection products continue to be one of the main ones in controlling the pest population [7].

**Objective of the research.** In today's agricultural export structure, winter wheat grain is one of the leading exports, accounting for about 30% of Ukraine's sown area and ensuring food security. Throughout time, and especially over the past two centuries, grain growing technology has been constantly evolving and improving. New, more productive varieties have been created, crop rotation systems, soil cultivation, fertilization, plant protection against pests, etc. have been improved, and the results have been positive. And it has paid off.

Today, winter wheat yields of 80–100 cwt/ha have become a reality, and in some regions in certain years they have reached 120 cwt/ha and even more. In order to achieve such productivity, it is necessary to balance all the factors important for plant growth and development. An important factor in increasing winter wheat production is the scien-

tific justification and application of biological and chemical systems to protect seeds, seedlings, and vegetative plants from a complex of insect phytophages, which is regulated by the new EU scientific position. In particular, obtaining high yields of spiked cereals is impossible without an effective system of protection against weeds, diseases and pests as one of the most important elements of technology. After all, without reliable control, losses from them today can be 30–40% and even reach 50–70% [8, 9].

Therefore, the purpose of our research was to develop an effective system of winter wheat protection against wheat thrips *Haplothrips tritici* Kurd., to determine the technical effectiveness of insecticides Karate Zeon 050CS, c.s., Match 050 ES, c.e., Engio 247 SK, KS, Talstar, 10% CE, Mospilan, VP, Inazuma, VG in the conditions of the Southern Steppe of Ukraine.

**Study methods.** The research was conducted on crops of winter wheat of Slavna variety in CAE «Victory» Ovidiopol district of Odessa region, during 2017–2019. The soil of the experimental plots is southern chernozem, low-humus in loess, humus content 3.2%, soil pH — 6.9–7.0. The experiment was based on 4 (2017), 5 (2018) and 8 (2019) variants in 4-fold repetition. The size of the plots is 3 × 6 m, the total area of the plot is 18 m<sup>2</sup>, the registration area is 15 m<sup>2</sup> [10]. Placement of plots — by the method of randomized blocks To control the number of thrips studied the effectiveness of insecticides at different consumption rates: Karate Zeon, ISS (DR — 50 g/l lambda-cyhalothrin), Inazuma, VG (DR — acetamiprid, 100 g/kg + lambda-cyhalothrin, 30 g/kg), Match 050 EC, k.e., (dr — 50 g/l lufenuron), Enzo 247 SK, KS (dr — thiamethoxam, 141 g/l + lambda-cyhalothrin, 106 g/l), Mospilan, VP, (dr — acetamiprid, 200 g/kg). Talstar, 10% KE (DR — bifenthrin 100 g/l) [11]. Schemes of experiments by years of research are given below.

The pest was counted by sampling 20 ears of grain, which were placed in paper bags, tightly closed, delivered to the laboratory and

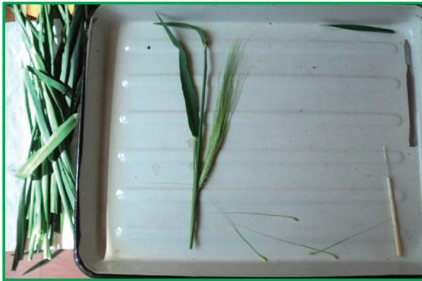
counted live and dead adults by analyzing each ear for all samples from each experiment (Fig. 1).

### 1. Schemes of experiments

Nº	Experimental variants	Cost norm
<b>2017</b>		
1	Control	without processing insecticides
2	Enzio 247 SK, KC	0.1 l/ha
3	Enzio 247 SK, KC	0.15 l/ha
4	Enzio 247 SK, KC	0.2 l/ha
<b>2018</b>		
1	Control	without processing insecticides
2	Enzio 247 SK	0.05 l/ha
3	Enzio 247 SK	0.1 l/ha
4	Enzio 247 SK	0.15 l/ha
5	Enzio 247 SK	0.2 l/ha
<b>2019</b>		
1	Control	without processing insecticides
2	Enzio 247 SK	0.1 l/ha
3	Enzio 247 SK	0.2 l/ha
4	Match 050 EC	0.3 l/ha
5	Karate Zeon 050CS	0.2 l/ha
6	Talstar, 10% EC	0.1 l/ha
7	Mospilan, WP	0.075 kg/ha
8	Inazuma., WG	0.24 l/ha

The plots were monitored for the increase in the number of wheat thrips adults until they reached the threshold of harmfulness. The level of 1.0–1.1 adults/spike was reached during the surveys on 08.05–24.05 in 2017–2019, so the treatment with drugs according to the experimental schemes was carried out when the pest reached the EHL (economic damage threshold) of 1.3 adults/spike according to the ERRO method (PP1/237(1)). Thrips On Cereals. 2004). Subsequently, the number of adults was counted 1 day after treatment and 3 days later [12].

Starting from the time of transition of adults to the larval stage, samples were taken in the same way, but in the amount of 40 ears per plot. Samples for inoculation into selectors were taken 7, 10, 14, 16 and 21 days after treatment. The larvae were counted by the method of distillation using selectors (Fig. 2). The selected samples were placed in separate collectors and



*Fig. 1. Counting of imago from the ear (Source: made by the author on the basis of his own research)*



*Fig. 2. The use of electors for wheat thrips distilling (Source: made by the author on the basis of his own research)*



*Fig. 3 Thrips larvae after distillation from the electors (Source: made by the author on the basis of his own research)*

heated with a 40 W electric lamp for 7 hours. Under the influence of high temperature, thrips larvae leave the ear and move downward away from excessive heat, and when they hit the hot internal surfaces of the selector, they fall through the funnel into a glass with a 48% alcohol solution. Subsequently, the contents of the beaker with the alcoholized thrips larvae are poured onto a filter paper of 10 × 10 cm, where they remain, which allows them to be counted (Fig. 3).

The weather conditions during the study period were characterized by some peculiarities. Comparison of specific weather conditions in 2017–2019 with long-term averages shows that climate change has been observed in recent years due to global warming [13].

Thus, the average annual air temperature over the years of research exceeded the long-term average by 1.0–1.5°C. The amount of annual precipitation in two of the three years of the study (2017, 2019) was 7–36 mm less than the long-term average. The average air humidity for all years of the study fluctuated at the level of long-term averages. The calculation of the sum of average daily air temperatures over 10°C per year showed that in all years of the study there was an increase in this indicator by 279.0–653.5°C. The hydrothermal coefficient over the years of research decreased by 0.04–0.27 compared to the average long-term level. These peculiarities of weather conditions influenced the dynamics of the pest population (Table 1).

In the 2017–2019 studies, the number of wheat thrips larvae in control (untreated) plots was compared by year depending on the sum

of average daily temperatures for the period when they were above 10°C and the amount of precipitation for the same period. The ratio of these indicators, known as the hydrothermal coefficient (HTC), was used to determine its effect on wheat thrips fecundity. The duration of individual phases of wheat thrips development by year was also studied depending on the HWC. The results showed that there is an inverse relationship between these indicators: the lower the GTC, the longer the duration of individual phases of pest development. In 2018, when the lowest GTC was observed — 0.43, the number of wheat thrips larvae in the control plots was the highest — 255 specimens. An increase in the GTC in 2019 to a value of 0.57 led to a decrease in the number of larvae — 246 units. In 2017, the GTC index was 0.66, which reduced the number of larvae to 195 (Table 2).

According to I. Katerynychuk [3], the pest is a hidden pest and is localized in places that are difficult to reach for contact insecticides. Therefore, to control wheat thrips, systemic insecticides should be used or combine products that contain active substances with contact and systemic action. It is allowed to combine insecticides with fungicides. Moreover, in crops intended for seed, spraying with insecticides to control wheat thrips is a mandatory measure. After all, damage by wheat thrips larvae negatively affects the seed quality of the grain: it causes flattening and also causes diseases. Damaged grains have reduced germination and germination energy.

In 2017, the technical effectiveness of the systemic contact preparation Engio 247 SK, CS was studied at consumption rates of 0.1 l/ha, 0.15 l/ha and 0.20 l/ha, which were quite effective, so in 2018 a variant with a half consumption rate of 0, 05 l/ha to control a small number of thrips, and in 2019, the technical effectiveness of the Enjio 247 SK, CS at consumption rates of 0.1 and 0.2 l/ha was studied to control medium and large numbers of pests, respectively. The studies revealed the main regularities of the population development processes and showed the possibilities of controlling its number with the help of various insecticides. Observations of the number of adults of the pest show that its appearance on winter wheat crops occurs depending on the weather conditions of the year of research, in the period from 08.05 to 24.05. The number of adults at this time is 1.0–1.1 specimens/ear. Further increase in the number of thrips adults on the control variants is observed up to the phase «end of flowering — beginning of milk ripeness of grain». At this time, the number of adults ranges from 1.7–2.0 per ear. Subsequently, after mating, adults lay eggs and hatching of larvae occurs on 24.05–04.06.

Counting the number of larvae on the control variants in the period from 24.05–04.06 showed that their number is 3.8–4.8 specimens/ear. Subsequently, their number varies depending on weather conditions: in hot, dry years it increases, and in moderate years it slowly decreases.

## 2. Weather conditions 2017–2019 (for the period of research)

Months of the year	2017			2018			2019			Average perennial norma		
	t°C air	precipitation, mm	air humidity %	t°C air	precipitation, mm	air humidity %	t°C air	precipitation, mm	air humidity %	t°C air	precipitation, mm	air humidity %
January	-3.3	35	85	1.0	86	86	-0.2	55	87	-0.5	34	83
February	0.3	19	83	0.4	71	80	2.7	16	84	-0.2	37	81
March	6.7	9	76	1.2	91	75	6.7	10	77	3.5	32	78
April	8.4	58	72	13.1	3	71	9.8	40	78	9.6	27	74
May	15.5	43	69	18.6	28	68	16.6	48	70	15.6	35	71
June	21.3	47	67	22.3	30	65	24.8	31	72	20.0	49	70
July	22.7	58	64	23.7	61	63	23.3	11	68	22.6	46	66
August	24.3	36	64	25.4	0	68	23.6	63	69	22.3	39	65
September	19.5	23	69	18.5	59	70	19.2	8	74	17.2	42	72
October	12.0	45	75	14.0	5	73	12.8	60	79	11.6	35	77
November	7.1	27	81	4.4	27	84	5.8	40	85	5.7	41	82
December	5.4	44	83	0.9	30	87	1.2	33	87	1.1	35	84
In a year	aver.=11.7	Σ=444	aver.=74.0	Cep.=11.9	Σ=491	aver.=74.1	aver.=12.2	Σ=415.0	aver.=76.0	aver.=10.7	Σ=451	aver.=75.0
Σ average daily t° > 10°C in a year	3789.6			4119.2			3744.7			3465.7		
HTC	0.66			0.43			0.57			0.70		

## 3. Duration of separate phases of development of wheat thrips, depending on the HTC

	Development stages	Years of research			
		2017	2018	2019	
1	Settlement on a plant — the formation of nymph	date	19.04—02.05	15.04—29.04	26.04—08.05
	duration of days	13	14	12	
2	Formation of nymph — formation of imago	date	02.05—14.05	29.04—08.05	08.05—19.05
	duration of days	12	9	11	
3	The formation of imago — laying eggs	date	14.05—24.05	08.05—22.05	19.05—27.05
	duration of days	10	14	8	
4	Topping eggs — formation of larvae	date	24.05—01.06	22.05—01.06	27.05—04.06
	duration of days	8	10	8	
5	Formation of larvae — winter Ticker	date	01.06—15.06	01.06—19.06	04.06—17.06
	duration of days	14	18	13	
6	Number of larvae on control of pcs./40 kol.	195	255	246	
7	Σ average daily t° > 10°C in a year	3789.6	4119.2	3744.7	
8	Σ precipitation for the period t° > 10°C, mm	251.9	117.1	212.5	
9	HTC (hydrothermal coefficient)	0.66	0.43	0.57	

Counting the number of larvae in the experimental plots 7–10 days after pesticide treatment showed that their number decreased by 4.1–5.3 times compared to the control, depending on the weather conditions of the year of research (Table 4–6).

In the phase «end of flowering — beginning of milk ripeness of grain» the number of larvae in the studied variants was only 1.5–7.6% of the control variants. A higher number of larvae was observed in drier years,

respectively. In the process of grain filling, the number of larvae on all variants slightly increased, but by the end of waxy ripeness of grain their number decreased to almost zero.

The effect of Enjio 247 SK, KS was studied at different consumption rates during 2017–2019 [14]. The use of the insecticide at a consumption rate of 0.1 l/ha in these years showed a technical efficiency of 92.2–97.3%. Reducing the consumption rate to 0.05 l/ha

in 2018 ensured a technical efficiency of 90.2%. A gradual increase in the application rate to 0.15 l/ha in 2017–2018 naturally increased the technical efficiency to 93.9–97.9%. Further increase in the consumption rate to 0.2 l/ha in 2017–2019 also showed a slight increase in the technical efficiency of Engio 247 SK, CS 94.5–98.2% (Table 5, 6).

The effect of the preparations Match 050 ES, c.e., Karate Zeon 050CS, μ.s., Talstar, 10% c.e., Mospilan, VP, Inazuma, VG was studied during 2019 at consumption rates of 0.3 l/ha, 0.2 l/ha, 0.1 l/ha, 0.075 l/ha and 0.24 l/ha, respectively. Their technical efficiency is 93.7–96.1% (Table 6).

## CONCLUSIONS

The number of wheat thrips largely depends on the temperature and precipitation of the year of research. The higher the sum of average daily air temperatures exceeding 10°C and the lower the amount of precipitation during this period, the higher the number of adults and larvae of the pest in natural conditions.

The use of insecticides Karate Zeon 050CS, Match 050 ES, c.e., Talstar, 10% CE, Mospilan, VP, Inazuma VG in the studied consumption rates on winter wheat

**4. Technical efficiency of Enzhio Insecticide 247 SK, COP against wheat thrips on winter wheat crops, 2017**

№	Experimental variants	The rate of consumption, l/ha, kg/ha	The number of trips by days of accounting, pcs.										Technical efficiency, %
			Imago, ivz / 20 ears					larvae, ivf/40 ears					
			before processing 12.05	after processing									
				18.05	24.05	29.05	02.06	06.06	09.06	12.06	16.06	20.06	
1	Control	without processing insecticides	21.3	24.5	35.7	195.5	168.5	152.7	126.7	109.5	50.5	28.8	-
2	Enzio 247 SK, KC	0.1	21.5	18.4	8.5	19.7	28.7	37.8	22.4	18.7	12.3	1.0	92.4
3	Enzio 247 SK, KC	0.15	20.1	18.3	8.1	16.5	26.4	34.2	20.1	16.1	9.7	0.8	93.9
4	Enzio 247 SK, KC	0.2	19.8	18.1	7.7	14.0	24.3	31.0	18.8	15.4	8.4	0.7	94.7
<b>HIP<sub>0.05</sub></b>			<b>1.25</b>	<b>0.98</b>	<b>0.44</b>	<b>1.02</b>	<b>1.37</b>	<b>1.74</b>	<b>1.17</b>	<b>0.92</b>	<b>0.57</b>	<b>0.03</b>	-

crops against wheat thrips in the «beginning of earing» phase (VVSN 51) effectively controls the number of adults of this pest when they reach the pie number and contributes to a further reduction in the number of larvae.

The use of the insecticide Engio 247 SK, KS at consumption rates of 0.05 l/ha, 0.1 l/ha, 0.15 l/ha and 0.2 l/ha on winter wheat crops against wheat thrips provides tech-

nical efficiency of this preparation at the level of 90.2%, 94.5%, 95.9% and 96.4%, respectively. It is advisable to apply the product consumption rates in proportion to the number of thrips adults and larvae per 1 ear of wheat, focusing on the established EPI.

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**Conflict of interest:** the authors

**5. Technical efficiency of Enzhio Insecticide 247 SK KC, against wheat thrips on winter wheat crops, 2018**

№	Experimental variants	The rate of consumption, l/ha, kg/ha	The number of trips by days of accounting, pcs.											Technical efficiency, %	
			imago, ivz / 20 ears					larvae, ivf/40 ears							
			before processing 08.05	after processing											
				12.05	14.05	17.05	24.05	29.05	01.06	05.06	08.06	12.06	15.06		19.06
1	Control	without processing insecticides	15.3	22.5	28.9	39.8	255.0	250.1	203.2	158.1	84.3	53.4	25.1	13.1	-
2	Enzio 247 SK, KC	0.05	19.4	16.4	11.9	7.8	7.5	5.5	2.5	3.8	4.3	1.2	1.0	2.8	90.2
3	Enzio 247 SK, KC	0.1	24.2	20.5	14.8	9.7	3.8	1.8	1.5	3.3	1.6	0.7	1.0	0.7	97.3
4	Enzio 247 SK, KC	0.15	22.4	18.9	13.7	8.9	3.7	3.5	2.5	3.3	3.8	1.7	0.2	0.6	97.9
5	Enzio 247 SK, KC	0.2	22.1	18.6	13.5	8.8	1.5	1.3	1.0	2.3	4.3	2.0	0.2	0.5	98.2
<b>HIP<sub>0.05</sub></b>			<b>1.37</b>	<b>1.01</b>	<b>0.74</b>	<b>0.53</b>	<b>0.21</b>	<b>0.10</b>	<b>0.08</b>	<b>0.18</b>	<b>0.23</b>	<b>0.09</b>	<b>0.01</b>	<b>0.03</b>	-

**6. Technical efficiency of Insecticides Karate Zeon 050CS, Match EC, Enzio 247 SK, KC, Talstar EC, Mospilan, WP, INASUA, WG against wheat thrips on winter wheat crops, 2019**

№	Experimental variants	The rate of consumption, l/ha, kg/ha	The number of trips by days of accounting, pcs.								Technical efficiency, %
			imago, ivz / 20 ears				larvae, ivf/40 ears				
			before processing 20.05	after processing							
				29.05	31.05	4.06	7.06	11.06	13.06	18.06	
1	Control	without processing insecticides	20.3	23.5	34.5	246.8	192.0	55.0	32.5	12.8	-
2	Enzio 247 SK, KC	0.1	19.5	16.8	7.8	29.5	38.0	19.5	18.5	1.0	92.2
3	Enzio 247 SK, KC	0.2	18.0	16.5	7.0	25.0	35.0	16.5	12.8	0.7	94.5
4	Match 050 EC	0.3	16.6	15.7	7.8	20.8	24.0	17.5	13.8	0.7	94.5
5	Karate Zeon 050CS	0.2	14.4	13.5	6.7	18.0	32.8	8.5	4.3	0.8	93.7
6	Talstar, 10% EC	0.1	11.5	10.8	5.4	14.3	23.7	19.0	8.0	0.5	96.1
7	Mospilan, WP	0.075	15.6	14.8	7.3	19.5	36.5	24.3	11.8	0.6	95.3
8	Inazuma, WG	0.24	14.6	13.9	6.9	18.3	26.3	8.8	1.5	0.5	96.1
<b>HIP<sub>0.05</sub></b>			<b>1.14</b>	<b>0.92</b>	<b>0.36</b>	<b>1.32</b>	<b>2.16</b>	<b>1.01</b>	<b>0.69</b>	<b>0.04</b>	-



declare that they have no conflict of interest.

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**Ефективність інсектицидів  
проти пшеничного трипса  
*Haplothrips tritici* Kurd. у посівах  
пшениці озимої**

**Мета.** Розробити ефективну систему захисту пшениці озимої від пшеничного трипса *Haplothrips tritici* Kurd. Визначити технічну ефективність дії інсектицидів Карате Зеон 050 CS, СК (лямбда-цигалотрин, 50 г/л); Матч 050 ЕС, КЕ (люфенурон, 50 г/л); Енжіо 247 SC, КС (тіаметоксам, 141 г/л + лямбда-цигалотрин, 106 г/л); Талстар, 10% КЕ (біфентрин, 100 г/л); Моспілан, ВП (ацетаміпрід, 200 г/кг); Іназума, ВГ, (ацетаміпрід, 100 г/кг + лямбда-цигалотрин, 30 г/кг) в умовах Південного Степу України. **Методи.** Дослід закладали на посівах пшениці озимої, в 4-, 5- та 8-ми варіантах у 4-разовій повторності. Розміщення ділянок — методом рендомізованих блоків. Облік шкідника проводили методом відбору проб по 20 колосів, які закладали в паперові пакети, щільно закривали, доставляли в

лабораторію та підраховували живих і мертвих імаго методом розбору кожного колосу по всіх зразках з кожного варіанта досліду. Личинок підраховували методом вигонки з використанням еклекторів. **Результати.** Для контролю чисельності трипсів вивчали ефективність інсектициду Енжіо 247 SC, КС в чотирьох нормах застосування (0,05; 0,1; 0,15 і 0,2 л/га), і препаратів Карате Зеон 050 CS, СК; Іназума, ВГ; Матч 050 ЕС, КЕ; Моспілан, ВП; Талстар, 10% КЕ. В результаті спостережень за зміною чисельності трипсів впродовж 2017—2019 рр. виявили, що його поява на посівах пшениці озимої відбувається з 08 по 24 травня. Особливості погодних умов впливали на динаміку чисельності трипсів. Досліджували тривалість окремих фаз розвитку пшеничного трипса за роками залежно від ГТК. Проведені дослідження виявили основні закономірності процесів розвитку популяції пшеничного трипса та показали можливості контролю його чисельності за допомогою різних інсектицидів. **Висновки.** Застосування інсектицидів Матч 050 ЕС, КЕ; Карате Зеон 050 CS, СК; Талстар, 10% КЕ; Моспілан, ВП; Іназума, ВГ у нормах витрати 0,3 л/га, 0,2, 0,1, 0,075, і 0,24 л/га відповідно на посівах пшениці озимої проти пшеничного трипса у фазі — «початок колосіння» (ВВСН 51) ефективно контролює чисельність трипса і забезпечує технічну ефективність 93,7—96,1%. Застосування інсектициду Енжіо 247 SC, КС в нормах витрати 0,05 л/га, 0,1, 0,15 та 0,2 л/га забезпечує технічну ефективність дії даного препарату проти личинок шкідника на рівні 90,2%, 94,7, 95,9 і 96,4%, відповідно.

**пшеничний трипс; пшениця озима; захист; інсектициди**

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