Section 6. Biotechnology

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BIOLOGICAL EFFICIENCY OF ENTOLICUR FUNGICIDE AGAINST YELLOW AND BROWN RUST OF WINTER WHEAT CROPS

Abstract. The biological effectiveness of the fungicide Entolicur 22.5% a.e. was determined. LLC "Ifoda Agro Kimyo himoya" (Uzbekistan) with active ingredients (tebuconazole, triadimefon) to combat rust diseases and fusoria on winter wheat crops in the conditions of irrigated lands of Andijan region in 2022. The effect of the fungicide on growth and development, as well as on the yield of winter wheat, was studied.

Key words: fungicide, yellow rust, leaf rust, winter wheat, entolicur, tebuconazole, triadimefon.

Introduction

The increase in grain production in Uzbekistan should be ensured, first of all, by increasing the yield. To do this, it is necessary to use all available reserves. In the conditions of modern intensive farming, weed control is one of the most important elements of the farming system, on which the increase in crop yields depends. The results of research and the best practices of practitioners show that none of the factors of intensification of agriculture, except for special ones, aimed directly at combating diseases and pests, does not help reduce the harmfulness and reduce the weediness of fields.

Agricultural production currently has a significant range of fungicides, insecticides and herbicides to combat diseases, pests and weeds in the cultivation of crops.

Materials and methods

The criterion for the effective use of plant protection chemicals is the achievement of a given degree of suppression of harmful objects with minimal danger to human health and the environment. However, world experience shows that the constant and large-scale use of narrow-spectrum chemicals leads to a sharp increase in resistant insects to insectoacaricides, phytopathogenic to systemic fungicides, weeds to constantly used herbicides.

A high and stable grain yield can be obtained through the intensification of its cultivation. The

essence of this technology lies in the placement of culture ac-cording to the best predecessors, balanced plant nutrition and an integrated plant protection system. In solving this global problem, an important place belongs to the search for and introduction of new selective pesticides. The economic justification for their use will be determined by the amount of increase in the yield of grain crops.

In increasing the yield of grain crops, an important place belongs to the pro-tection of plants from diseases, which often lead to a significant reduction in grain harvest and deterioration in its quality, and sometimes to the death of crops. The degree of harmfulness of diseases depends on the environmental conditions of cul-tivation and the characteristics of the culture. In some ecological and geographical zones of the country, some diseases are more harmful, in others, others.

Result and discussion

It should be noted that, in the experimental plot in 2022, no Fusarium disease was detected before and after wheat treatment. Until the time of treatment with the fungicide Entolicur 22.5% a.e. (05/05/2022) the average total infestation of winter wheat crops with yellow rust in the test area was 28.6–29.8%, and the developed intensity was 16.2–17.1% (Table № 1).

Table 1. — Yellow rust infestation of winter wheat and intensity of disease development before treatment (May 5, 2022)

№	Experience options	Consumption rate, l/ha	The total number of accounting plants per 1 sq.m.	Afflicted		The intensity of the development of diseases, %
				PCS.	%	
1.	Control	No	419	119,7	28,6	16,2
2.	Entolicur 22.5% a.e.	0,3	420	120,2	28,6	16,2
3.		0,5	415	123,7	29,8	17,1
4.	Kolosal 25% (reference)	0,5	423	119,5	28,3	16

According to the records and observations after treatment after 20 days with the fungicide Entolicur 22.5% a.e. in the control, where no fungicide treatment was carried out, the incidence of yellow rust reached 77.6% with a disease development rate of 90%. As a result of the treatment of diseased plants with the drug at a rate of 0.3 l/ha, the incidence was 17.5% and the intensity of disease development was 9.2%, in the variant where the drug was used at a consumption rate of 0.5 l/ha, the incidence was disease development 7.5%. In the reference variant, where the fungicide Colosal 25% a.e. was used. this indicator is 15.9–8.0%, which ensured the protection of the crop from losses due to the suppression of yellow rust.

The biological effectiveness of the fungicide Entolicur 22.5% a.e. in two test norms 0.3–0.5 l/ha was higher compared to the Colosal standard 25% a.e. drug Entolicur 22.5% a.e. in two test norms, it showed biological effectiveness (in terms of the intensity of the development of the disease) for yellow rust 77.4–80.4% and the standard 79.5%.

Infection and intensity of development of winter wheat brown rust were low compared to yellow rust before fungicide treatment, the infestation ranged from 17.9–18.4%, and the intensity of disease development was from 7.5–8.0%.

From the data of table 2 and 3, 20 days after treatment with the fungicide Entolicur 22.5% a.e. in the control variant without treatment, the incidence was 77.7%, and in the variants with the use of Entolicur 22.5% a.e. at a rate of 0.3 l/ha, the biological efficiency was 79.9%, and the intensity of the disease development was 7.2%. In the experimental vari-

ant, where Entolicur 22.5% a.e. was used. 0.5 l/ha biological efficiency was 83.5%, and the intensity of disease development was 6.7%. Almost on the same level with the reference variant, where Kolosal 25% a.e. was used. with a consumption rate of 0.5 l/ha, the biological efficiency was 80.9% and 7.0%.

Table 2. — Infection of winter wheat and the intensity of the development of the leaf rust disease before treatment with a fungicide (May 5, 2022)

№	Experience options	Consumption rate, l/ha	The total number of accounting plants per 1 sq.m.	Afflicted		The intensity of the development of diseases, %
				PCS.	%	
1.	Control	No	419	70	16,7	7
2.	Entolicur 22.5% a.e.	0,3	420	75,3	17,9	7,5
3.		0,5	415	76,2	18,4	8,0
4.	Kolosal 25% (reference)	0,5	423	71,7	17,0	7,2

Table 3. — Biological efficiency and intensity of development after treatment with a fungicide against leaf rust on winter wheat (May 25, 2022)

№	Experience options	Consumption rate, l/ha	The total number of accounting plants per 1 sq.m.	Afflicted		The inten-sity of the development of diseases, %	Biological efficiency, %
				PCS.	%		
1.	Control	No	419	325,5	77,7	89,2	
2.	Entolicur 22.5% a.e.	0,3	420	65,7	15,6	7,2	79,9
3.		0,5	415	53,2	12,8	6,7	83,5
4.	Kolosal 25% (reference)	0,5	423	62,7	14,8	7	80,9

Thus, the results of the production test give us reason to conclude that the drug Entolicur 22.5% a.e. has high fungicidal activity and high biological efficiency against a complex of leaf diseases on winter wheat crops, like yellow and brown rust.

Conclusions

1. Field trials of the fungicide Entolicur 22.5% a.e. LLC "Ifoda Agro Kimyo himoya" (Uzbekistan) against leaf diseases like yellow and brown rust on winter wheat crops in irrigated lands of Andijan region with a consumption rate of 0.3 and 0.5 l/ha contributed to a decrease in the number of diseased plants with yellow rust on average by 77.4–80.4%, and brown rust by 79.9–83.5% and gave an increase in yield on average 1.1–1.9 q/ha compared to the control variant without treatment.

2. We believe that the use of the fungicide Entolicur 22.5% a.e. LLC "Ifoda Agro Kimyo himoya" (Uzbekistan) with a consumption rate of 0.5 to 1.0 l/ha is effective against leaf diseases in winter wheat crops under irrigated conditions in the Andijan region.

3. Taking into account the biological effectiveness of the fungicide Entolicur 22.5% a.e. and analogy D.V. with fungicide in the studied standard variant fungicide Colosal 25% a.e. we recommend including it in the list of the State Chemical Commission for the protection of winter wheat crops on irrigated lands from yellow and brown rust in the studied norms of 0.3–0.5 l/ha.

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