

Effectiveness of Five Fungicides on Wheat

Zafar Nazari*

Department of Chemistry and Plant Protection, Stavropol State Agrarian University, Stavropol, Russia

*Corresponding author: Zafar Nazari, Department of Chemistry and Plant Protection, Stavropol State Agrarian University, Stavropol, Russia, Tel: 0093797444367; E-mail: nazarizafar@gmail.com

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Abstract

The article indicates the results of a research on the efficiency of the use of fungicides alto super, amistar extra, amistar trio, abacus ultra, azole against brown rust, root rot of fusarium and septoria on wheat. The use of fungicides in wheat in the Stavropol Territory provided biological effectiveness against brown rust at the level of 62.5%-80.3%, root rot of fusarium and septoria -22.5%, 50.0% there is an attitude to enhance damage to plants wheat brown rust. With increase in the amount of plant mineral.

Keywords: Wheat; Pathogens; Fungicides; Biological efficiency; Fungicides

Introduction

Significant damage to the wheat in the stavropol territory is usually caused by fungal diseases. The presence of pathogens in the soil and environment that cause root rot is background and invisible to the naked eye, but leads to the loss of up to 48% of the yield [1].

Wet and warm spring, the predominance of nitrogen nutrition create conditions for early infection and increased disease infestation of crops. If sufficient and excessive (above average long-term values) rainfall falls and is predicted in March-May, it will be necessary to protect plants in the period from budding to heading, without waiting for the achievement of the values of Economic damage Thresholds (ETL) of diseases, first of all, on

Table 1: Degree of leaf rust development on winter wheat, %.

Option	Control without fertilizer	N60P40K40	N120P80K80
Control without fungicides	9,9	12,1	16,7
Alto super	2,4	3,9	4,8
Amistar extra	2,1	3,5	4,7
Amistar trio	1,9	3,3	4,2

susceptible varieties. Therefore, treatment with fungicides is required on date to protect against *Fusarium* and other diseases [2].

Materials and Methods

A field experiment to evaluate the effectiveness of the use of fungicides in wheat was done on an experimental field of the stavropol research faculty of agriculture, located in the center of the city of stavropol. The climate of this area is continental and arid. The average annual temperature is 12.5 degrees. The duration of the warm period is 280-300 days. On average, 185-195 days are frost-free. The soil of the experimental plot is ordinary carbonate. The content of humus in the arable layer is 4.0%-4.2%, mineral nitrogen and mobile phosphates are low and the content of exchangeable potassium is increased. The reaction of the soil solution is neutral or slightly alkaline [3].

The experimental plan included the treatment of crops of alto super, amistar extra, amistar trio, abacus ultra, azole, as well as control, in which fungicides were not used. The wheat cultivation technology was accepted for these soil and climatic conditions. Soil cultivation in crop rotation plowing [4].

Results and Discussion

In the field experiment on the control without fungicides, wheat plants were affected by a dangerous disease of this crop leaf rust. Against a high background of mineral nutrition, the highest percentage of wheat plants affected by brown rust was noted -16.7% (Table 1). At the same time, the minimum damage of 9.9% was noted against the natural background of mineral nutrition [5].

Abacus ultra	1,8	3,4	3,9
Azole	2,8	4,5	5,9

In the variants where fungicides were used a significant decrease in the harmfulness of the pathogen was observed. The tendency to increase the infestation of plants with leaf rust with an increase in the level of mineral nutrition of plants has been observed [6].

The degree of brown rust development during the treatment of alto super plants was 2.4% against the natural background of nutrition, increasing to 3.9%-4.8% against the background of mineral fertilizers. The damage of plants by the pathogen when treated with amistar extra is comparable to Alto Super and amounted to 2.1% on a natural background of nutrition, 3.5%-4.7% when fertilizing [7].

The least infestation of wheat with leaf rust was noted when treated with fungicides amistar trio and abacus ultra. The degree of development of the pathogen when using these drugs was 1.9% and 1.8% on the natural background of nutrition,

3.3%-4.2% and 3.4%-3.9% when mineral fertilizers were applied [8].

A significant defeat of wheat with leaf rust was manifested when the fungicide azole was applied. The damage of plants against the background of this means of protection was 2.8% against the natural background of nutrition, 4.5% and 5.9%, respectively, at medium and high levels of mineral nutrition.

The biological efficiency of alto super was 76.7% on a natural background of nutrition, decreasing to 67.8%-71.3% when applying mineral fertilizers (Table 2). The efficiency of amistar extra is almost identical to the efficiency of alto super and amounted to 79.6% on a natural background of nutrition, decreasing to 71.1%-71.9% when applying mineral fertilizers.

Table 2: Biological effectiveness of fungicides against leaf rust (2019-2020).

Option	Control without fertilizer	N60P40K40	N120P80K80
Alto super	76,7	67,8	71,3
Amistar extra	79,6	71,1	71,9
Amistar trio	81,6	72,7	74,9
Abacus duo	80,3	71,9	76,6
Azole	72,8	62,5	62,5

The fungicides amistar trio and abacus ultra had the greatest protective effect on wheat plants. The biological effectiveness of these preparations was 81.6% and 80.3% on the natural background of nutrition, 72.7%-74.9% and 71.9%-76.6% with the application of mineral fertilizers.

The least protective effect against brown rust of wheat from this line of preparations has been shown by azole. The biological effectiveness of this remedy was 72.8% on a natural background of nutrition, decreasing to 62.5% at medium and high levels of mineral nutrition.

Conclusion

In the result of the experiment, it has showed that the use of fungicides in wheat crops in the conditions of Stavropol humidity region ensured biological effectiveness against leaf rust at the level of 62.5%-80.3%. A tendency to an increase in the infestation of wheat plants with brown rust have been recorded with an increase in the amount of nutrition and mineral of plants.

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