



## ANALYSIS OF WHEAT YELLOW RUST MONITORING IN SOUTHERN REGIONS

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Article history:	Abstract:
<p><b>Received:</b> 6<sup>th</sup> January 2024 <b>Accepted:</b> 4<sup>th</sup> March 2024</p>	<p>In the article, in order to determine epidemiological areas and monitor rust diseases, using GPS (etrex GARMIN) device, depending on the location of wheat fields, the incidence level and coordinates of the presence or absence of rust diseases at a distance of 25-40 km were determined, and the data was sent to GRRC (Global Rust Reference Center). it was stated that it was filled out based on the form developed by the center.</p>
<p><b>Keywords:</b> Research, wheat, monitoring, epidemiological, coordinate, ecological, incidence rate, yellow rust, assessment, fungal disease, resistant, composition, gene, scale.</p>	

**INTRODUCTION:** Currently, in Australia, the USA, China, India, Turkey and many other countries with the world's largest grain industry, continuous monitoring of rust diseases and control of their development dynamics and the introduction of resistant varieties have been established. The most effective, inexpensive and environmentally friendly method of combating any disease in agriculture is to plant a resistant variety. In this regard, continuous monitoring of rust diseases and studying their virulence content is of great scientific and practical importance for grain production. This, in turn, provides an opportunity to identify rust disease genes and use effective genes in rust disease control based on observational and laboratory analysis.

**RESEARCH METHODOLOGY:** GPS (etrex GARMIN) device for determining epidemiological regions and monitoring of rust diseases, as well as a form developed by GRRC (Global Rust Reference Center) to determine the presence or absence of rust diseases at a distance of 25-40 km depending on the location of wheat fields during monitoring was filled based on. Evaluation of resistance to rust diseases in the field was carried out using the modified Cobb scale, based on Peterson's 0-100 percent (1948) assessment.

According to the researches of G. Prigge, M. Musaeva and others, the yellow rust (*Puccinia striiformis*) disease is considered a disease characteristic of the wet and cool weather conditions of the northern regions, and in some years, if the same weather and meteorological conditions are observed in other regions of the grain industry, it can affect the wheat crops in the fields. causes significant damage [1; 2].

According to Yu.V. Shumilov, G.V. Volkova, I.P. Mateeva, yellow rust disease of wheat (*Puccinia striiformis* f. sp. tritici) is caused by a fungus and develops very quickly in resistant varieties from 10% to 70% and during the entire growing season causing 100% yield loss. The emergence of new races of the pathogen causes the disease to develop again [3; 4].

In the studies of L.D.Gishechkina, A.I.Silaev, G.E.Russell, Yu.V.Shumilov, yellow rust (*Puccinia striiformis* West.) disease is considered the most common and harmful disease in wheat, taking into account the degree of disease damage 86, 5-100%. Phytosanitary monitoring with the creation of an electronic map of the spread and development of the causative agent of the disease revealed that in 2012, the average rate of infection by the pathogen was from 0.2 to 6.1% [5; 6; 7;]

**RESEARCH RESULTS.** Surkhandarya region: Yellow rust is the main rust disease, which has a negative effect on the growth and development of wheat and the production of high grain yield.

For this reason, on March 11 of this year, monitoring works were carried out in Shurchi and Jarkurgan districts of Surkhandarya region in order to determine the development of yellow rust from fungal diseases of different wheat varieties and the level of disease with the help of a special JPS-apparatus (Table 1).

According to the results of the monitoring and analysis of winter wheat fields in Shurchi district, the average index in the North longitude is 37°20.1430'N, 37°23.7290'N, 37°56.2590'N, 37°56.9780'N, 37°58.4920'N, and the average in the East latitude is 67°2 4.6120 'E, 67°26.1920'E, 67°42.3220'E, 67°42.3410'E, 67°43.7870'E, 67°43.7860'E, 67°45.4750'E indicators were known.

Table 1

Monitoring observations of the development of yellow rust disease in the tillering and tuber phase of different wheat varieties.

Region	District	Northern longitude	Eastern longitude	Height above sea level	dates	Development phase of vegetation	Disease	Rate of frequency of disease occurrence
Surkhandarya	Shurchi	37°20.1430'N	67°24.6120'E	265.6	11.03.2023	Germinatin	Yellow rust	20
		37°23.7290'N	67°26.1920'E	359.9	11.03.2023	Germinatin	Yellow rust	30
		37°56.2590'N	67°42.3220'E	407.3	11.03.203	Germinatin	Yellow rust	20
		37°56.2390'N	67°42.3410'E	412.4	11.03.203	Germinatin	Yellow rust	10
		37°56.9780'N	67°43.7870'E	422.7	11.03.203	Germinatin	Yellow rust	40
		37°56.9810'N	67°43.7860'E	420.8	11.03.203	Germinatin	Yellow rust	40
		37°58.4920'N	67°45.4750'E	448	11.03.203	Germinatin	Yellow rust	40
		37°58.4920'N	67°45.4760'E	447.5	11.03.203	Germinatin	No	0
		37°57.9680'N	67°46.7820'E	419.4	11.03.203	Germinatin	Yellow rust	30
		37°57.9680'N	67°46.7810'E	426.4	11.03.203	Germinatin	Yellow rust	20
		37°57.8980'N	67°46.7210'E	402.9	11.03.203	Germinatin	No	0
		37°57.9030'N	67°46.7250'E	416.4	11.03.203	Germinatin	Yellow rust	50
		37°57.5540'N	67°48.1040'E	416.7	11.03.203	Germinatin	Yellow rust	10
		37°57.5530'N	67°48.1060'E	418	11.03.203	Germinatin	Yellow rust	50
	Jarkurgan	37°58.2130'N	67°48.8920'E	411.2	11.03.203	Germinatin	No	0
		37°58.2130'N	67°48.8920'E	411.3	11.03.203	Germinatin	Yellow rust	10
		37°58.1940'N	67°48.8600'E	411.6	11.03.203	Germinatin	Yellow rust	30
		37°58.1950'N	67°48.8620'E	411.5	11.03.203	Germinatin	Yellow rust	10
		37°58.3810'N	67°49.0290'E	431	11.03.203	Germinatin	Yellow rust	20
		37°58.3820'N	67°49.0300'E	430.7	11.03.203	Germinatin	No	0
		37°59.5070'N	67°48.8880'E	434.8	11.03.203	Germinatin	No	0
		37°59.5060'N	67°48.8890'E	434.6	11.03.203	Germinatin	No	0
		37°59.1430'N	67°49.7820'E	430.1	11.03.203	Germinatin	No	0
		37°59.1460'N	67°49.7790'E	436.8	11.03.203	Germinatin	Yellow rust	10
		37°59.1460'N	67°49.7780'E	438.1	11.03.203	Germinatin	Yellow rust	20
		37°58.8640'N	67°49.9720'E	427.6	11.03.203	Germinatin	Yellow rust	30
		37°58.8640'N	67°49.9720'E	427.7	11.03.203	Germinatin	Yellow rust	20
		38°0.7020'N	67°50.5390'E	431.1	11.03.203	Germinatin	No	0
		38°0.7020'N	67°50.5390'E	431.2	11.03.203	Germinatin	Yellow rust	30
		38°3.0120'N	67°46.8320'E	475.5	11.03.203	Germinatin	Yellow rust	30
		38°3.0120'N	67°46.8320'E	473.7	11.03.203	Germinatin	Yellow rust	20
		38°2.8430'N	67°46.4630'E	457.5	11.03.203	Germinatin	No	0
		38°2.8420'N	67°46.4620'E	458.4	11.03.203	Germinatin	Yellow rust	20
		38°1.7570'N	67°44.9710'E	446.2	11.03.203	Germinatin	Yellow rust	10
		38°1.7570'N	67°44.9730'E	447.3	11.03.203	Germinatin	Yellow rust	10
		38°2.3630'N	67°44.0690'E	458.8	11.03.203	Germinatin	Yellow rust	10
		38°2.3640'N	67°44.0690'E	458.9	11.03.203	Germinatin	No	0
		38°3.4390'N	67°50.3590'E	436.2	11.03.203	Germinatin	No	0
		38°3.4390'N	67°50.3590'E	435.3	11.03.203	Germinatin	Yellow rust	10
		37°59.1460'N	67°49.7780'E	438.1	11.03.2023	Germinatin	Yellow rust	10

At an altitude of 266-448 km above sea level, it was found that on average 10-40% of wheat is affected by yellow rust during the tuber period.

It was found that the average indicators of 37°58.4920'N were observed in the northern longitude, while the average indicators were 67°45.4760'E in the eastern latitude. During the monitoring of yellow rust disease in the period of tuberting of wheat at an altitude of 448 km above sea level, it was found that no rust disease occurred in wheat.

According to the results of the monitoring and analysis of the winter wheat fields in the Zharkurgan district, the North longitude showed average values of 37°58.2130'N, 37°58.1940'N, 37°58.1940'N, 37°58.1950'N, 37°58.3810'N. It was shown that the average values of eastern latitude were 67°48.8920'E, 67°48.8600'E, 67°48.8600'E, 67°48.8620'E, 67°48.8600'E. When wheat was affected by yellow rust disease at an altitude of 432-459 km above sea level by the time of flowering, no yellow rust disease was detected in wheat plants at this coordinate point.

Summary. Continuous monitoring of fungal diseases in research is considered appropriate. Otherwise, the delay of these activities will seriously endanger the grain fields. Due to the spread and development of the yellow rust disease of wheat, it causes a sharp decrease in productivity. Therefore, it is better to identify prone areas and take preventive measures

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