

**STEM OR STRIPE RUST DISEASE OF WHEAT****Sodikova Maftunakhon Bakhromjon kizi**

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Abstract

The article contains research conclusions about rust diseases of grain crops, including stem or stripe rust disease of wheat. The reasons for the origin, growth and spread of rust disease, as well as chemical control measures against them are presented.

Key words: wheat, rust disease, spike, leaf sheath, pad, stem, stripe rust, spore, stage

INTRODUCTION

Cereal rust diseases are widespread and affect all cereal crops. These diseases damage the above-ground parts of plants, including leaves, leaf sheaths, stems, spike shells, pods, and sometimes grains.

Symptoms of rust disease: yellow-reddish (depending on the type of rust disease) spot pads are formed on the affected organs, which turn dark brown or black by the time of grain ripening. These spot pads are placed on the diseased part of the plant irregularly or in a certain order (in the form of lines, dots). Infected leaves dry up prematurely, and the stems sometimes break and lie down. The grain is not fully ripened, it is not crushed, and the degree of germination remains low.

MATERIAL COLLECTION AND RESEARCH METHODS

Generally accepted methods of mycology were used in the conduct of scientific work. Samples were collected in the period from germination to ripening of plants. Determinants were used to identify fungi.

RESEARCH RESULTS

The earlier a plant is infected, the less its yield will be. If the plant is infected during flowering, it will not produce spikes at all. The harm of the disease is that it disrupts the water regime of the plant, it increases water evaporation, slows down the assimilation process, and consequently reduces the accumulation of plastic substances. The direct harm of the disease is that it reduces the plant's resistance to winter and drought.

Rust diseases are caused by fungi belonging to the class of basidia fungi. Rust fungi are true parasites with clearly expressed polymorphism in plants. Most of them are host-specific and plant-specific fungi, including biological races adapted to feed on specific plants and biotypes that infect certain plant varieties. Rust fungi produce different types of spores at all stages of their development, and these spores are unique to each type. These fungi produce spores of the basal type:

Spore production with pycnidia. In this case, pycnospores or pycnidia with spermatia, these spores serve as fertilization.

Spore production with ecidia. In this, a special place called ecidium is formed, and in this place ecidiospores mature into the spring stage of the fungus. In the summer, a place (cavity) is formed where rust fungi urediniospores mature, urediniospores give several generations.

Rust disease spreads widely in the urediniospora stage. More than 100, and 3-7 thousand uredin cavities are formed in one leaf, depending on the development of the disease. 250-400000 urediniospores grow in each cavity, and this type of generation is repeated in 2,5-7 days or 4-6 generations, depending on temperature and humidity. 1 bln. urediniospora. Urediniospores were caught at an altitude of 1500-3000 m, and in some cases even above 4 500 m with the help of special spore catching devices. Urediniospores spread 300-500 km in the direction of the wind. If exposed to strong air currents, urediniospores can spread up to 2500 km. 1250000 bln. urediniospores can be formed.

By the end of summer, rust fungi form a space (cavity) where the winter stage of teleitospores matures and winters in this stage.

Overwintered teleitospores germinate in early spring and produce four-celled basidiospores in basidia. Basidiospores infect intermediate plants and form new spermatia and ecidiospores in this plant.

0 and 1 stage of most of the fungi that cause rust disease in grain crops pass in intermediate plants, and II and III stage in the overwintered remains of plants.

More than 250 types of plants suffer from rust disease.

Harm. Along with the sharp decrease in productivity, the resistance to cold and drought decreases, the grain becomes light and stone-resistant. On average, 15-20 % of crops die every year.

If rust increases a lot, the yield of 25-30 s/ha drops to 5-6 s/ha.

Amount of damage caused by rust disease

Level of damage %	Absolute weight of seeds, gr.	One ear of grain weighs, gr.	The number of grains in one ear, pcs
10-25 %	29,03	0,839	29,87
75-100 %	11,58	0,252	20,39

A leaf of a plant infected with rust disease turns yellow and many epidermal tissues crack, 1 leaf can have up to 100 cracks. As a result of poor development of the root system, water absorption decreases.

Puccinia graminis

This disease is common everywhere and in some regions it is very harmful. It causes a lot of damage mainly in the Far East, northern Kazakhstan, the Baltic region, the northern Caucasus, Belarus, and Ukraine.

This disease infects all grain crops: wheat, barley, oats, rye, as well as many wild cereal plants. Diseased plants (under spikes, leaf sheaths, grain husks, axils, and sometimes in open areas of grain and leaf plates, stems) have spots. These pads join together to form tracks, which is why this disease is called "striped" rust. The lines are reddish brown (in the summer stage with urediniospores) and dark brown or black (in the winter stage with teleitospores) by the time

of ear ripening. The disease is caused by a fungus called *Puccinia graminis* belonging to the order of Uridinales, the intermediate plant of this fungus is barberry (*Barberis vulgaris*) and some of its species, as well as mahonia (*Mahonia aquifolium*). There are several species of this fungus that live on certain types of cereal plants, including: *F. tritici* on wheat, barley, wheat, *F. avenae* on oats, and most wild cereals, plants, *F. secalis* lives in rye, barley, wheat and some other plant species.

The fungus that causes stem rust is dioecious, the spermagonial and ecidial period occurs in intermediate plants, and the urediniosporic and teleitosporic period occurs in the main plant. In the period of spermagonia, single or small spherical spermagonia are formed on the upper side of a zirk or magonia leaf, rarely on the lower side. They are 120-130 μm in size, many small, light-colored, one-celled spermatozoa are formed inside them. It then forms an acidium on the back side of the leaves. Etsidiospores are spherical, conidiospores germinate at temperatures from 5 °C to -24 °C.

Etsidiospores grow and form a fungal body - mycelium, they enter the plant tissue and form urediniospores with uredinium. The temperature for the growth of urediniospores is 1-30 °C (the most favorable temperature is 18-20 °C). At a temperature of 18-20 °C, urediniospores reproduce several times and give birth.

At the end of the vegetation period, in the places where the symptoms of the disease appear, many teleitospores are formed, in which teleitospores are formed and winter during this period. Teleitospores germinate only in spring at a temperature of 9-29 °C (opt. 18-22 °C) and air humidity is 95-100 %, basidiospores are formed from teleitospores.

These spores spread and form spermagonium and ecidia in intermediate plants.

This disease of cereals is common in early-planted autumn and late-planted spring wheat.

Countermeasures:

Loss of intermediate plants. Phosphorous and potassium fertilizers increase the plant's resistance to rust. When rust disease appears a lot, impact 25 % - 0,25-0,5 l/ha, during the growth period, the plant is sprayed with a 0,1 % solution. Bumper 25 %. the plant is sprayed during the growing season at 0,25 l/ha. Folikur 25 emk 0,3 l/ha is sprayed during the growing season. Removal of plant residues, uprooting, plowing the land.

CONCLUSION

The earlier a plant is infected, the less its yield will be. If the plant is infected during flowering, it will not produce spikes at all. The harm of the disease is that it disrupts the water regime of the plant, it increases water evaporation, slows down the assimilation process, and consequently reduces the accumulation of plastic substances. The direct harm of the disease is that it reduces the plant's resistance to winter and drought.

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