LEAF, STEM AND STRIPE RUST DISEASES OF WHEAT

Dr. Aruna Kumari

Gandhi NagarMotihari, Bihar, Ramna,-845401

Rust diseases of wheat are the oldest plant disease. Rust disease destroy entire wheat crops.

There are three rust diseases that occur on wheat: stem rust, leaf rust and stripe rust. Thease disease are each caused by a particular species of the "rust" fungus, Puccinia. Rust fungi all produce, similar disease symptoms on the host plants and similar requirements for infections. The diseases get their name from their appearance on the plant. Infection can occur on any above ground plant part, leading to the production of pustules give the appearance of "Rust" on the plant.

Stem rust is caused by Puccinia Graminis Tritici:-

These rust occurs primarily on stems but can also be found on leaves, sheaths, glumes, awns and even seed.

Symptoms begin as oval to elongate lesions that are generally reddish brown in colour. In the late stage of disease erumpent pustules produce numerous black sooty spores.

LEAF RUST IS CAUSED BY PUCCINIA RECONDITA TRITICI

Leaf rust is generally found on leaves but may also infect glums and awns. Symptoms begin as small circular to oval yellow spots on infected tissue of the upper leaf surface. As the disease progresses, the spots develops into orange

coloured pustules. The pustules produce a large number of spores that are easily dislodged from the pustule, resulting in an "Orange dust" on the leaf surface As the disease progresses black spores may be produced. Tiny orange lesions may pe present on seed heads but these lesions don't develop into erumpent pustules.

This difference helps to distinguish leaf rust from stem rust.

Stripe rust is caused by puccinia striiformis. These rust is distinguished by the presence of light yellow, straight sided pustules that occur in stripes on leaves and heads. These elongate postules ae narrow and vary in length. As the pustules mature, yellow-orange spores are produced. As the disease progresses, tissue around the pustules turn brown and dry. Resulting in a scorched appearance. The arrangement of pustules into stripes. It is an important distinguishing characteristic of this disease.

Stem rust is a warm temperature disease that develops optimally between 65° and 85°F; However the disease can occure at temp. between 59° to 104° F.

Leaf rust develops optimally at temp between 59° to 71°F, and the disease will progress until temperatures are above 80°F.

Stripe rust is a lower temperature disease that is generally found at highter elevations and in cooler climates. The optimal temperature for the development of this disease 50 to 59^0 F.

When condition are optimal for disease development, infection is completed in 6-8 hours and uredospore capable of causing.

Secondary spread of the disease are produced in 7-10 days. They are extremely efficient in spreading disease because they are produced in a large quantities and

are easily spread by wind. In mild winters, uredospores have been found to survive year round. Therefore alternate hosts and some spore stage are required to complete the pathogen's life cycle but are not needed for the initiation of new infections each year.

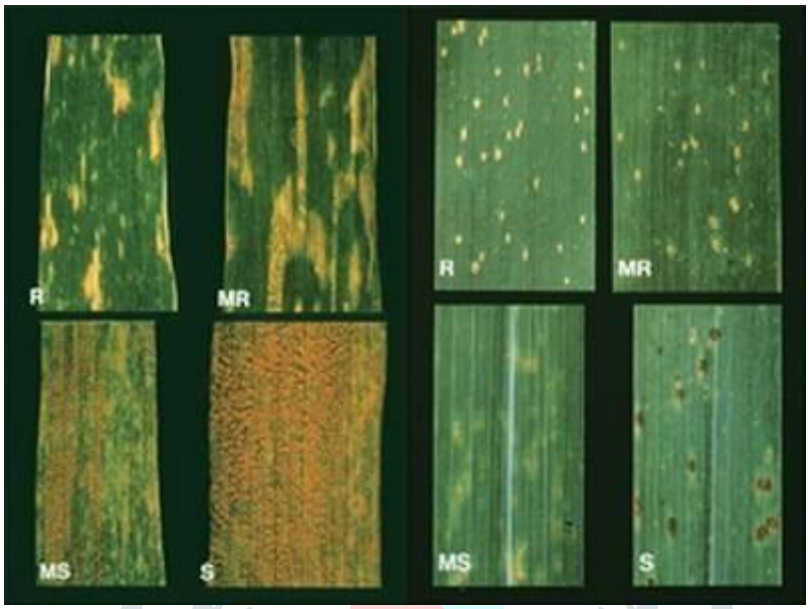

Figure -1 Relative resistance of wheat to stripe (left) and leaf rust (right) : R=resistant, MR= moderately resistant, ms= moderately susceptible, and S=susceptible.

Figure -2 – Chlorosis of leaves caused by leaf and stripe rust infection

Figure-3- Variety of wheat susceptible to leaf and stripe rust, with noticeable severe leaf Chlorosis compared to tolerant variety in adjacent plots with little or no leaf Chlorosis.