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Occurrence and Management of White Rust in Rapeseed and Mustard Crops

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ABSTRACT

White rust is the most prevalent pathogen that infects the Brassicaceae family's rapeseed and mustard crops. With plant growth, illness symptoms become visible throughout the entire plant. *Albugo candida* is recognized to be a trigger for this illness. The above-ground portions of mustard plants are susceptible to infection by the pathogen, which results in the recognizable white blisters on the leaves, stems, and inflorescences. The white rust pathogen can spread both by air and soil. The weather has a significant impact on the pathogens; rainy seasons and regions with comparatively high rainfall have been linked to the highest disease incidence. This disease is usually control by using cultural, botanical, biological, and chemical methods. Fungicides are one of the most widely used methods but its adverse effect on human health as well as environment may restrict it to use carelessly. Some alternative approaches to this disease control are use of resistant cultivars, plant and natural products, bio-control agents, and changing agronomic practices.

Keyword words: White rust, Rapeseed-Mustard and Management.

INTRODUCTION

A destructive disease which impacting mustard crops in India as well as the world is white rust (*Albugo candida*). With plant growth, illness symptoms become visible throughout the entire plant. The disease has been reported not only on mustard but also on turnip, cauliflower, rape, arungula (*Eruca sativa*), and tick weed (*Cleome viscosa*) in India. The pathogen can infect mustard plant in all of its aboveground parts. There have been reports of yield losses from this

disease of up to 60% or more on rapeseed and mustard in India.

FAVOURABLE CONDITION FOR THE APPERANANCE OF THE DISEASE

- **Temperature and Relative Humidity:** A maximum temperature of 26–29°C and a relative humidity more than 65% encouraged the growth of the white rust illness. The most conducive factors for the formation of white rust on rapeseed-mustard were found to be temperatures above 15°C and relative humidity of above 65%, with sporadic rainfall. During the flowering period, stag head formation is promoted by prolonged rainfall (up to 161mm) and little sunlight (2–6 hours each day).

DISEASE SYMPTOMS

All of the plant's aerial portions are impacted by the illness, but the roots are spared. Two different types of infections can cause symptoms to manifest:

- **Local Infection:** This infection effects on leaves, stems, and inflorescences develop solitary dots or pustules. The pustules are elevated, glossy white spots with range in size from 1-2 mm in diameter. Usually, pustules on leaves are limited to their lower surface. The pustules typically have one or two centre zones and are arranged in a circular or concentric pattern.
- **Systemic Infection:** This infection effects on flowers or inflorescences by hypertrophy and hyperplasia. Due to this flower have unusual growth, deformity, and floral sterility. These anomalies are known as stagheads. The normal diameter of these peduncle and pedicel may be greatly thickened up to 12–15 times. Stamens and carpels are also transformed into enlarged leaf-like structures, and petals may take on a green, sepal-like appearance. Usually, both the pollen grains and the ovules atrophie, endearing the plant

completely sterile. It is possible for the inflorescence's stem and axis to twist, resulting in a zigzag pattern.

Local Infection

Systemic Infection

Local Infection

DISEASE MANAGEMENT

- **By Planting:** It is best to avoid planting susceptible kinds in fields where there are infectious crop residues left on the surface.
- **By Field Preparation:** The previous crop's leftovers ought to be grouped together. In addition, it is important to offer balanced crop nutrition, with a focus on potassium; use healthy seeds when sowing; and, once the crop is harvested, gather and burn any damaged plant components.
- **Search for Genetic Resistance:** The most effective and affordable way to control the plant disease has been proposed to be through the use of resistant cultivars.
- **Biological Governance:** White rust can be effectively managed by foliar applying soil-dwelling isolates *of Pseudomonas fluorescence* and *Trichoderma harzianum*.

  Utilising organic materials Treatments such as vermicompost, FYM, neem powder, bone meal, coir pith, VAM, and seaweed extract all markedly lessened the disease's severity.

CONCLUSION

White rust is the most devastating disease that affects mustard worldwide. No resistant varieties yet found against white rust disease. Fungicides are one of the most often utilized techniques to control white rust. If fungicides are used carelessly to eradicate infection of white rust, it may effect adversely on human health as well as environment even if they are more affordable for the human. Some other approaches to control this disease are use of resistant cultivars, plant and natural products, bio-control agents, and changing agronomic practices.

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