eISSN:2664-5211 | pISSN:2663-4988

Research Highlight

WHITE RUST OF RAPESEED-MUSTARD: A DEVASTATING DISEASE

Rida Zainab
Department of Eastern Medicine, Government College University Faisalabad, Pakistan

Key words:
White rust | *Albugo candida* | pustules | hypertrophy | hyperplasia | fruit shattering | systemic infection | rapeseed-mustard germplasm

Rapeseed (*Brassica nap*) and Mustard (*Brassica juncea*) have ranked third as an important oil seed crops which have been grown in many regions like Asia, China, South Africa, Europe and Canada. Among all diseases, White rust disease is a potential threat to cruciferous crops which deteriorates the quality of crop and significantly reduces the crop yield. It is reported that white rust causes 20-90% yield losses worldwide while in Pakistan this disease causes 60-90% yield losses[1,2].

White rust is caused by pathogen *Albugo candida* which belongs to the family Albuginaceae. *Albugo candida* is an obligate pathogen and has a relatively smaller genome as compared to other oomycetes[3]. It is reported that optimum temperature and relative humidity required for causing infection is 12-22°C and 60-90%, respectively[4].

This pathogen produces white or creamy pustules on cotyledons, true leaves as well as pods which ultimately decreases the photosynthetic activity and also cease the growth and development of plant. Systemic infection usually occurs in young leaves and also stimulates the hypertrophy and hyperplasia which results in malformation of affected organs. Lesions produced on foliage and cause wide distortion.

Considering this situation, previous study[5] conducted a research to generate a photographic disease assessment keys for White rust of Rapeseed-Mustard. To date, only diagrammatic or numerical assessment keys have been reported to screen Rapeseed-Mustard germplasm against White rust disease but none of them is available on the basis of their real photographs.

Previous study[5] conducted the photographs of plant regarding disease severity on transparent graph paper. Afterwards, images of disease free cotyledons and leaf, less than 5, 5-10, 11-25, 26-50 and above 50% area covered by White rust pustules were examined for assessment key.

Scientists found that disease severity scoring keys are probably beneficial to estimate White rust and some other diseases of Rapeseed-Mustard including Alternaria blight caused by *Alternaria brassicae* and white leaf spot caused by *Pseudocercosporella capsellae*.

eISSN:2664-5211 | pISSN:2663-4988

Conclusively, this investigation can help to assess the level of disease and can assist farmers to control this by employing managing practices on time.

REFERENCES

1. James, W.C., 1971. An illustrated series of assessment keys for plant diseases, their preparation and usage. *Can. Plant Dis. Surv., 51: 39-65*
2. Kumar, S. and C.S. Kalha, 2005. Evaluation of rapeseed-mustard germplasm against white rust and Alternaria blight. *Ann. Biol. (India), 21: 73-77*
3. Links, M.G., E. Holub, R.H. Jiang, A.G. Sharpe and D. Hegedus *et al.*, 2011. *De novo* sequence assembly of *Albugo candida* reveals a small genome relative to other biotrophic oomycetes. *BMC Genomics, Vol. 12, No. 1.*
4. Mishra, K.K., S.J. Kolte, N.I. Nashaat and R.P. Awasthi, 2009. Pathological and biochemical changes in Brassica juncea (Mustard) infected with *Albugo candida* (White rust). *Plant Pathol., 58: 80-86*
5. Sullivan, M.J., J.P. Damicone and M.E. Payton, 2002. The effects of temperature and wetness period on the development of Spinach white rust. *Plant Dis., 86: 753-758*