The frequencies and spatial distribution of mating types in *Stagonospora nodorum* are consistent with recurring sexual reproduction

Rubik J. Sommerhalder[1], Bruce A. McDonald[1], and Jiasui Zhan[2]

[1]Institute of Plant Sciences, Phytopathology Group, Federal Institute of Technology, ETH-Zentrum, LFW, CH-8092 Zürich, Switzerland,

[2]Scottish Crop Research Institute Invergowrie, Dundee DD2 5DA, Scotland, UK

E-mail: jiasui.zhan@scri.ac.uk

Scottish Crop Research Institute

Introduction

Stagonospora nodorum is a heterothallic fungus causing Septoria nodorum glume blotch on wheat (*Triticum aestivum* L.). The fungus can undergo both sexual and asexual reproduction and the primary inoculum leading to the epidemics of the disease could be air-borne ascospores and/or seed-borne pycnidospores.

The objective of the study is to understand the role of sexual reproduction plays in the population genetic structure of the pathogen and the epidemiology of the disease.

Materials and Methods

- 1207 isolates from 18 fields, 12 regions, six countries, five continents
- 2-3 pycnidia from 24 lesions
- 2-3 lesions from 55 leaves
- 5-10 isolates from 104 1m^2 plots
- PCR amplification of mating type idiomorphs

Results

Both mating types found in

4 out of 24 (17%) lesions

12 out of 55 (23%) leaves

3 out of 15 (20%) heads

91out of 104 (88%) 1 m^2 plots

Equal mating type frequency found in

Within 17 out 18 (95%) field populations

Within all regional, national and continental populations

Among field, regional, national and continental populations

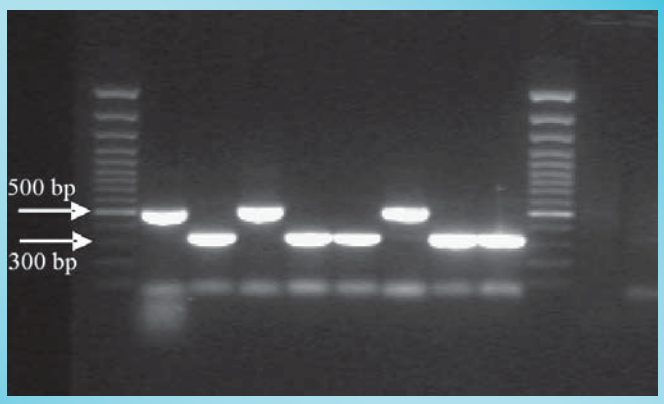

Fig. 1. PCR amplification of *S. nodorum* isolates with MT specific primers: MAT1-2 (~510 bp), MAT1-1 (~360 bp)

Conclusion

- Regular cycle of sexual reproduction
- Primary inoculum is likely to be ascospores