PROGRESS REPORT for PRT

August 2000

PATHOLOGICAL CHARACTERIZATION

AND

SELECTION OF LUPIN ANTHRACNOSE STRAIN(S)

TO BE USED IN RESISTANCE SCREENING

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EXECUTIVE SUMMARY

Pathological characterization and selection of lupin anthracnose causing strain(s) to be used in resistance screening – S H Koch, ARC-PPRI

Isolations and re-isolations from all lupin and weed samples collected since the outbreak of the disease in 1993 were made. Isolates were also obtained from five new samples collected during 2000 from different localities.

An international set of 16 lupin accessions, with various genetic backgrounds, was constantly multiplied to produce seed. These seeds are being used to distinguish pathogenic variability in the fungal isolates.

A more pathogenic reaction were observed in the international set when inoculated with a mixture of 1999 cultures, compared to results that were obtained in different parts of the world. Especially *Lupinus angustifolius* cvs tested more susceptible than before. Due to limited amounts of seed available of the international set a new set of cultivars was compiled representative of the accession being used in the local cultivar trials. The previously tested isolates and some of the new isolates (seven in total) are currently being compared separately on a set of 16 cultivars. Based on the statistical analysis of two sets of data no obvious differences in pathogenicity between isolates were recorded.

Over a period of six months *Lupinus albus* cv Esta (susceptible) and *L. angustifolius* cv. Merrit (less susceptible) were regularly inoculated with different concentrations of the fungus, different wetting agents and under different incubation conditions. Inoculated material was dissected, stained and destained with various stains and destains. The material was then mounted and observations were made by aid of a light microscope. Initially difficulties in

obtaining even germination of spores were encountered. This problem was overcome, but the fungus still did not develop past the appresoria formation stage. The spores showed a tendency to accumulate in and around the trichomes, especially on the stems. As information on the infection processes are of utmost importance in understanding the nature of resistance, this work is further continued in collaboration with the Departments of Botany and Plant Pathology, University of the Free State.

Additional to the 142 lupin accessions received from Kwazulu-Natal Department of Agriculture during 1999, 68 breeding-lines were received from ARC-GCI and 6 cultivars from PRT. The seed collection currently contains 250 lupin accessions. During the report period another 48 accessions from the Kwazulu-Natal collection were screened for resistance against the previously mentioned mixture. All the accessions still tested moderate susceptible to very susceptible.