Endophytic Rhizobia in Cereal and Oilseed Crops. (S03-lupwayi101435-Poster)

Authors:

- N.Z.Lupwayi - *Agriculture and Agri-Food Canada*
- G.W.Clayton - *Agriculture and Agri-Food Canada*
- W.A.Rice - *Agriculture and Agri-Food Canada*

Abstract:

Endophytic rhizobia have been observed in nonlegume crops. We investigated the effects of including field peas in crop rotations on endophytic rhizobia in roots of barley, wheat and canola. Populations of rhizobia were in the order: crop following uninoculated peas > crop following inoculated peas > crop grown continuously. The reasons for more endophytic rhizobia in nonlegumes that followed uninoculated peas than in those that followed inoculated peas include the possibility that: (a) indigenous rhizobia, stimulated by growing a legume crop, are better endophytic colonizers than inoculant rhizobia, or (b) the inoculant Rhizobium strain used in this experiment was a poor endophytic colonizer. Nitrogen accumulation and grain yields of crops grown after peas were significantly greater than N and yields of crops grown continuously. Correlations between endophytic rhizobia and N accumulation or grain yields were not significant, probably indicating that the rhizobia did not fix nitrogen in the nonlegumes. Furthermore, populations of rhizobia correlated better with grain yields than with N accumulation, which is usually the reverse when rhizobia fix nitrogen in legumes. However, the positive direction of the correlations indicates that the rhizobia act as plant growth promoting (PGP+) microorganisms that contribute to rotational benefits of legumes to nonlegumes.

Corresponding Author Information:

Newton Lupwayi
Agriculture and Agri-Food Canada
Box 29
Beaverlodge, AB T0H0C0
Canada

phone: (780) 354-5111
fax: (780) 354 8171
e-mail: LupwayiN@em.agr.ca

Presentation Information:

Presentation Date: Monday, November 11, 2002

Presentation Time: 10:00 am-12:00 pm
Poster Board Number: 1810

Keywords:
Microbial processes, Plant growth-promoting microorganisms, Rhizobium, Nitrogen uptake