

MYCORRHIZAS IN SOME NATIVE AND EXOTIC GRASSES  
(Ph.D. Thesis)

J. R. CRUSH

*Department of Botany, University of Otago*

TUSSOCK GRASSLAND SOILS contain abundant coarse and fine VA endophytes. *Rhizophagus tenuis* is more prominent in high-altitude soils. This species is an efficient symbiont with a variety of grasses but only under extreme phosphate deficiency; otherwise this endophyte may depress growth, probably by competing with its host for phosphorus.

The range of available phosphorus over which grasses are mycotrophic is small, and much lower than that over which coarser-rooted families are mycotrophic". Soil temperature may influence the availability of phosphorus to the extent that temperature can govern a grass's response to inoculation.

*Festuca novae-zelandiae*, *Poa laevis*, *Poa colensoi* and *Chionochloa rigida*, but not *Chionochloa macra*, were mycotrophic in soils so phosphorus-deficient that non-mycorrhizal growth was severely inhibited. Of these grasses only *P. colensoi* and *C. rigida* are likely to experience such soil conditions and be mycotrophic in the field.

The results and their implications are discussed and suggestions made of possible similarities between ectotrophic and endotrophic mycorrhizas .

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\*In this thesis, the term mycotrophic is used in the restricted sense of being wholly or partially dependent on mycorrhizal infection for growth.

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