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Dual Culture of Ri T-DNA Roots and Root-Inhabiting Parasites

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Abstract

The root diseases that limit crop production are not efficiently combated by chemical pesticides or by biological strategies. The knowledge of the early stages in root pathogenesis is needed to solve these problems. ***In vitro*** experiments with tissue grown in artificial environment can offer the means to simplify the complicated root-parasite interactions. Morel (1944), 40 years ago realized the possible advantage of growing pathogenes together with their host *in vitro*. Ingram (1967) and Helgeson et al., (1972) used the dual cultures as an approach in resistance breeding. However, the development of dual cultures using undifferentiated tissue has not been very rapid.

Root organ culture containing the T-DNA of the pRi of *Agrobacterium rhizogenes* are used here to establish the dual cultures of obligate parasites (i.e. vesicular — arbuscular mycorrhizas, *Plasmodiophora brassicae, Polymyxa betae*, nematodes) and to establish dual growth of transformed roots and non-obligate parasites (i.e. *Phytophythora, Pythium*).

The Ri T-DNA root dietetic, the trophic requirements of parasites, the life cycles of Myxomycetes, the recognition, penetration, and infection of the transformed roots by parasites are discussed.

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REFERENCES

Helgeson, J.P., Kemp., J.D., Haberlach, G.T., and Maxwell, B.P. 1972. A tissue culture system for studying disease resistance: The black shank disease in tobacco callus cultures. *Phytopathology* **62:** 1439–1443.

Ingram, D.S. 1967. The expression of R-gene resistance of *Phytophthora infestans* in tissue culture of *Solanum tuberosum*. *J. Gen. Microbiol.* **49:** 99–108.

Morel, S. 1944. Le développement du mildiou sur des tissus de vigne cultivés *in vitro*. *C.R. Acad. Sc. Paris* **208:** 50–52.