Root fungi in wild strawberry: root colonization depends on host inbreeding

Carine L. Collin and Tia-Lynn Ashman

Department of Biological Sciences, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

ABSTRACT

Question: What is the effect of level of host inbreeding on fungal root colonization?

Hypothesis: Selfed plants are poorer hosts than outcrossed ones and should be less intensively colonized.

Organism: Hermaphroditic individuals of the self-compatible wild strawberry *Fragaria virginiana* (Rosaceae).

Methods: Selfed and outcrossed progeny were grown at three resource levels. Plants were scored for vegetative size, leaf disease, and root fungi in semi-natural conditions.

Results: Hyphal colonization was greater in outcrossed than in selfed plants, but the effect was marginal for vesicular colonization. Neither resource level nor maternal genotype influenced the effect of plant inbreeding on colonization. But fungi associated with plants in high resources produced more vesicles. Inbreeding depression in plant vegetative size was positively correlated with cross differential root colonization.

Keywords: *Fragaria virginiana*, inbreeding depression, root fungi, Rosaceae, vesicular arbuscular mycorrhizal (VAM) fungi.

INTRODUCTION

Recent studies have emphasized the links between above- and belowground communities (Huhta, 2007), and the fact that the outcome of species interactions is likely influenced by the ecological context of interacting partners. The type of an interaction may indeed change depending on ecological conditions [e.g. a mutualism may become an antagonism (Bronstein, 1994)], and species interactions are better described as a continuum. Associations with root fungi fall into this continuum for the plant host. Under some conditions, well-characterized root pathogens can be of no effect or even become beneficial to their plant host [which may change the evolutionary outcomes of these interactions (Salvaudon et al., 2007)], whereas well-known root mutualists such as mycorrhizal fungi, which contribute to plant mineral...
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