

Public Abstract

First Name:Rainee

Middle Name:Lynn

Last Name:Kaczorowski

Adviser's First Name:Timothy

Adviser's Last Name:Holtzford

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:WS 2007

Department:Biological Sciences

Degree:PhD

Title:Nectar in *Nicotiana*: pollinator associations, sources of variation, and evolutionary consequences

Nectar is the primary floral reward offered by plants to attract pollinators. If pollinators select for certain nectar traits over others it could cause reproductive isolation. Nectar traits in *Nicotiana* could respond to selection if they exhibit variation, the variation is heritable, and the variation can affect plant fitness. Nectar traits were highly variable in the greenhouse, within and among *Nicotiana* species, and many traits varied in association with the pollination system. This variation was also demonstrated in plants growing in natural populations. Although nectar traits often differed between the greenhouse and natural population environments, associations between nectar traits and pollination system did not differ much between the two environments. Significant heritability was detected for nectar volume and energy, and corolla tube length, in an experimental population of *Nicotiana alata*. Although phenotypic correlations were significant for all measured traits, only two correlations had a genetic basis. However, some differences in trait means and genotype by environment interactions were detected between the novel environment in which the experiment was conducted (Missouri), and the native habitat of this species (Brazil). Nectar augmentation did not affect seed production (a fitness component) in an experimental population of *Nicotiana alata*. Although significant variation and heritability in nectar traits suggest that nectar traits have the potential to respond to selection, plant fitness was not affected by increased nectar quantities in this study, though results could differ with different methods or populations. Response to selective pressure on nectar traits could influence the evolution of *Nicotiana* species.