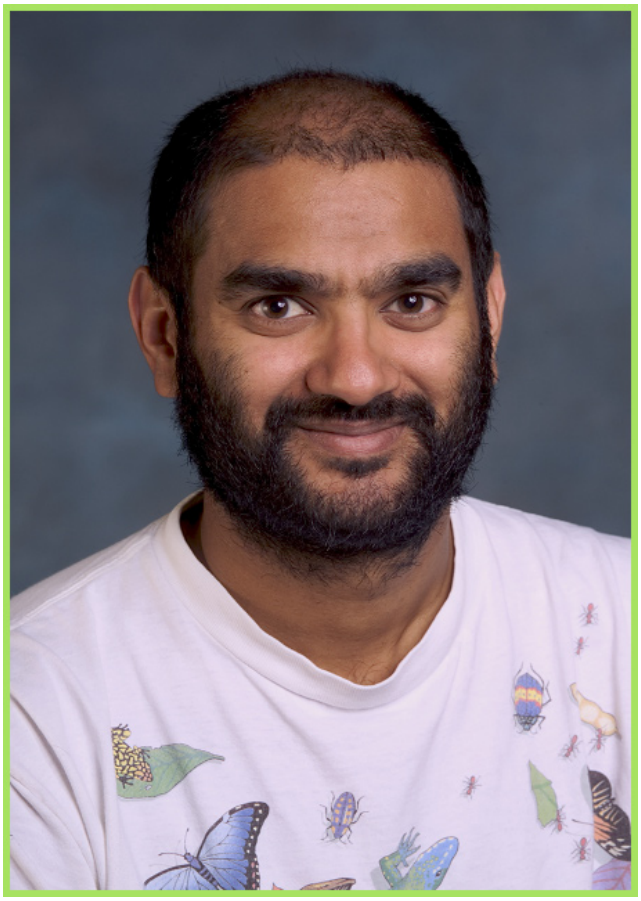
George Mercer Award
Anurag Agrawal

Agrawal, A.A. (2004)
Resistance and susceptibility of milkweed: competition, root herbivory and plant genetic variation. *Ecology* 82(8): 2118-2133.



The **Mercer Award** is given for an outstanding ecological research paper published by a younger researcher (the lead author must be 40 years of age or younger at the time of publication). The paper must have been published in 2004 or 2005 to be eligible for the 2005 award. Nominees may be from any country and need not be ESA members. The winner of this year's Mercer Award is Anurag Agrawal of Cornell University, for his 2004 paper, "Resistance and susceptibility of milkweed: competition, root herbivory and plant genetic variation," published in *Ecology*.

A major controversy in community ecology from the middle of the last century has revolved around whether plant productivity is controlled by competition for resources or consumption by herbivores. As with many contentious dichotomies, the answer has proven to be more complex, which has demanded greater ingenuity from researchers seeking to understand the distribution and abundance of organisms. Anurag Agrawal's Mercer Award winning paper is exemplary in the thoroughness with which it tackles this complexity. It strongly deserves recognition.

The experiments carefully teased apart the complex interactive effects of herbivory, plant competition, and plant genotype on milkweed performance and fitness. The non-additive effects of competition by grasses and beetle herbivory on milkweed growth was a particularly novel aspect of the results. With a quantitative genetic experiment, Agrawal showed that milkweeds growing near grass experienced more herbivory from adult *Tetraopes* beetles, and that this effect was directly due to beetles being attracted to grass, which serves as their oviposition site. In a manipulative experiment with beetle larvae, Agrawal also found that grass competition interacted with larval feeding on roots to negatively impact milkweed. The grass, meanwhile, enjoyed competitive release by facilitating its neighbor's herbivore. Finally, Agrawal presented a general model to predict the conditions under which plant–plant interactions can result in net competition or facilitation via indirect effects.

This paper represents the kind of holistic studies that will take our understanding of plant–herbivore interactions to a new level. Overall, Anurag Agrawal's growing body of work, exemplified by but not restricted to this paper, is having a significant impact in the areas of plant–animal interactions and community ecology.