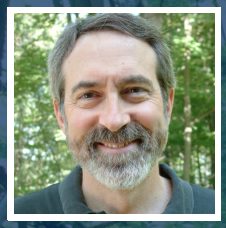
An Evolutionary Approach to Agricultural Pests



Jeff Conner

CURRENT RESEARCH

Reducing future crop losses with weed adaptation studies

An estimated 40% of the earth's land surface has been converted by humans to agriculture, making it one of the largest sources of global environmental change. In fact, humans are changing the environment so much that the evolution of many species is accelerating. What little is currently known about weed evolution involves the weeds' response to human control measures, particularly the evolution of herbicide resistance. However, these control measures are only deployed once the weed has become adapted enough to the agricultural environment to cause economic damage.

Dr. Jeff Conner of Michigan State University targets the first stage of weed evolution which, until recently, has been mostly ignored by the scientific community. His studies focus on weed adaptations to pollinators and the habitat of the farmer's field itself, which will provide a better understanding of why weeds are so successful. Members of his lab group conduct laboratory, greenhouse, and field studies integrating evolution, genetics, genomics, and ecology. Their goal is to attack problems at the interface of these areas in novel ways.

- One major focus of Dr. Conner's work is to understand the mechanisms underlying the rapid adaptation of wild radish, one of the world's worst weeds, to farmers' fields. Compared to the native European populations of wild radish, weedy radish has evolved a very rapid life cycle, flowering and producing seeds before the crop is harvested. The team's goal is to uncover the genetic and genomic changes that occurred during the rapid evolution of this agricultural pest from its wild ancestors. In the future, understanding the genetic basis of how weeds have sped up their life cycle may better...

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AFFILIATION

Michigan State University

EDUCATION

- Ph.D. in Neurobiology 1987 ,Cornell University
- B.A. cum laude in Biology 1979,Harvard College

AWARDS

- Distinguished Sabbatical Scholar, 2013-2014
- Elected Fellow, American Association for the Advancement of Science (AAAS), 2011
- Walton lecturer, 2004
- College of Natural Science Outstanding Graduate Advisor, 2003

RESEARCH AREAS

Environment, Ecology, Global Policy

FUNDING REQUEST

Contribute and be part of Dr. Conner's ground-breaking studies! More funding from you means more staff, especially postdoctoral associates, and more genome sequencing, both of which increase the pace of discovery. With your donations, Dr. Conner should be able to identify at least one of the key genes underlying rapid weed evolution in two to three years. In another two years, a clear understanding of the origins of both weedy and crop radish should be clarified.

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