

Name Emilie E. Regnier

Area of Responsibility/Interests

Responsibilities are 35% research and 15% resident instruction in weed science, with an emphasis on the ecological basis for the management of weedy and invasive species.

Interests include the biology and ecology of seeds of weedy and invasive species as related to mechanisms of spread and persistence and targets for improved weed management strategies; the impact of vertebrate and invertebrate organisms on seed dispersal, seed predation, and seed survival in weedy/invasive species; and weed control methods for organic vegetable and grain crop production.

Education History

B.S., Biology, Vassar College, 1977
M.S., Agronomy, University of Illinois, 1983
Ph.D., Agronomy, University of Illinois, 1986

Position Held

1995 - present Associate Professor, Ohio State University
1987 - 1994 Assistant Professor, Ohio State University

Current/Recently Expired Activities

Research Projects

Project No: OHO01122

Title: Ecology of *Ambrosia trifida* (giant ragweed): species interactions and weed survival

Non-Technical Summary: Giant ragweed is a major source of human allergen and one of the ten most problematic weeds of corn and soybean fields in the United States. The purpose of this study is to gain a better understanding of how habitats and organisms influence giant ragweed survival and persistence as a major invasive weed of the U.S. Corn Belt. Results of this research may ultimately be applied toward developing integrated strategies for managing giant ragweed and preventing new invasions.

Courses Taught

HCS 414 Crop Science Lab (Undergraduate, 2 credits)
HCS 422 Principles of Weed Science (Undergraduate, 4 credits, responsible for labs)
HCS 604.01 Research Methods in Plant Science: Plants & Communities (Graduate, 5 credits, team-taught)
HCS 694 Weed Seed Ecology (Graduate, 3 credits, team-taught)
HCS 693 Weed Ecology Journal Club (Graduate, 1 credit)
HCS 993 Weed Ecology Journal Club (Graduate, 1 credit)
HCS 830 Current Topics in Weed Ecology (Graduate, 2 credits)

5-year Refereed Publications

Schutte, B., Regnier, E., & K. Harrison. 2008. The association between seed size and seed longevity among maternal families in *Ambrosia trifida* L. populations. Seed Science Research (Accepted pending revisions).

Schutte, B., Regnier, E., Harrison, S. K., Spokas, K., & F. Forcella. 2008. A hydrothermal seedling emergence model for giant ragweed (*Ambrosia trifida*). Weed Science (In Press).

Regnier, E., Harrison, K., Liu, Schmoll, J., Edwards, A., Arancon, N. & C. Holloman. 2008. Impact of an exotic earthworm on seed dispersal of an indigenous U.S. weed. Journal of Applied Ecology (In Press).

Harrison, S. K., Regnier, E.E., Schmoll, J.T. & Harrison, J.M. 2007. Seed size and burial effects on giant ragweed (*Ambrosia trifida*) emergence and seed demise. Weed Science 55:16-22.

Luckeydoo, L., Fausey, N., Davis, C., Regnier, E. E., and Brown, L. 2006. Passive Establishment of Vegetation in Constructed Wetlands in Agricultural Settings: a Case Study. Ohio Journal of Science 106:164-168.

Hoffman, M. L., and E. E. Regnier. 2006. Contributions to weed suppression from cover crops. p. 53-78 in H. P. Singh, D. R. Batish and R. K. Kohli, eds. Handbook of Sustainable Weed Management. Haworth Press, Inc., USA.

Trainer, G., M. M. Loux, S. K. Harrison, and E. E. Regnier. 2005. Response of horseweed biotypes to foliar applications of cloransulam-methyl and glyphosate. Weed Technology 19:231-236

Bultemeier, T. L., Barker, D. J., Sulc, R. M., Harrison, S. K., and E. E. Regnier. 2005. Species interactions with quackgrass and their effects on forage production. Crop Science 45:290-296.

Grassbaugh, E. M., Regnier, E. E., Bennett, M. A., and R. M. Riedel. 2004. Comparison of organic and inorganic mulches for heirloom tomato production. Acta Horticulturae 634:171-176.

Harrison, S. K., E. E. Regnier, and J. T. Schmoll. 2003. Postdispersal predation of giant ragweed (*Ambrosia trifida*) seed in no-tillage corn. Weed Science 51:955-964.

5-year Proceedings/Conference Publications

Davis, A. S., Regnier, E., Harrison, K. Liu, J., Schutte, B. and E. Luschei. 2008. Mutualism between common earthworm (*Lumbricus terrestris*) and giant ragweed (*Ambrosia trifida*) varies between Ohio and Illinois. Abstr. Weed Sci. Soc. Am. 48.

Liu, J., Regnier, E. Harrison, K., Holloman, C., Schmoll, J., Diekman, F., and D. Barker. 2008. Net influence of earthworms (*Lumbricus terrestris*) on giant ragweed (*Ambrosia trifida*) seedling recruitment. Abstr. Weed Sci. Soc. Am. 48.

Schutte, B., Regnier, E. E., Harrison, S. K., Schmoll, J., Forcella, F., and Spokas, K. 2007. Predicting late-season emergence for improved giant ragweed (*Ambrosia trifida*) management in Ohio. Abstr. Weed Sci. Soc. Am. 47.

Liu, J., Regnier, E. E., and Harrison, S. K. 2007. Influence of seed burial by earthworms and seed predation by vertebrates on seedling recruitment in giant ragweed. Proc. North Cent. Weed Sci. Soc. 62:108.

Schutte, B., Regnier, E. E., and Harrison, S. K. 2006. Dissection of divergent emergence patterns in agricultural and successional populations of giant ragweed (*Ambrosia trifida*). Abstr. Weed Sci. Soc. Am. 46:249.

Regnier, E. E., Harrison, S. K., and Schmoll, J. T. 2006. Impact of seed caching by the earthworm, *Lumbricus terrestris*, on giant ragweed (*Ambrosia trifida*) establishment. Abstr. Weed Sci. Soc. Am. 46:247.

Schutte, B., Regnier, E. E., and Harrison, S. K. 2006. Maternal plants as sources of emergence variation within giant ragweed (*Ambrosia trifida*) populations. Abstr. Weed Sci. Soc. Am. 46:118.

Schutte, B., E. Regnier, and S. K. Harrison. 2005. Maternal plants as sources of emergence variation within *Ambrosia trifida* populations. Annual Meeting of the Ecol. Soc. Am., Abstract 222.

Schmoll, J. T., E. E. Regnier, and S. K. Harrison. 2004. Giant ragweed interference among cropping systems. Proc. North Cent. Weed Sci. Soc. 59:98.

Schutte, B. J., E. E. Regnier, and S. K. Harrison. 2004. The effects of interplant variation on *Ambrosia trifida* emergence patterns. Proc. North Cent. Weed Sci. Soc. 59:55.

Venkatesh, R., S. K. Harrison, E. E. Regnier, and R. M. Riedel. 2004. Purple deadnettle effects on soybean cyst nematode populations in no-till soybeans. Proc. North Cent. Weed Sci. Soc. 59:56.

Schutte, B. J., E. E. Regnier, and S. K. Harrison. 2004. Primary seed dormancy in *Ambrosia trifida* L. (giant ragweed). Proc. North Cent. Weed Sci. Soc. 59:119.

Regnier, E. E., S. K. Harrison, and J. T. Schmoll. 2004. Secondary seed dispersal by the earthworm, *Lumbricus terrestris*. Proc. North Cent. Weed Sci. Soc. 59:120.

Schmoll, J., E. E. Regnier, and S. K. Harrison. 2004. Seed fate pathways in giant ragweed (*Ambrosia trifida* L.). Proc. Ohio Invasive Weed Conf., Columbus, OH.

Venkatesh, R., S. K. Harrison, E. E. Regnier and R. M. Riedel. 2003. Soybean cyst nematode reproduction on purple deadnettle under greenhouse conditions. Proc. North Cent. Weed Sci. Soc. 58:68.

Harrison, S. K., E. E. Regnier, and J. T. Schmoll. 2003. Tillage effects on emergence and longevity of giant ragweed seeds. Abstracts of the Weed Science Society of America 43:49.

Regnier, E. E. and S. K. Harrison. 2003. Collection and burial of giant ragweed seeds by the earthworm, *Lumbricus terrestris*. Abstracts of the Weed Science Society of America 43:48.

Bultemeier, T. L., D. J. Barker, R. M. Sulc, S. K. Harrison, and E. E. Regnier. 2003. Quackgrass contribution to production of pasture mixtures under grazing. Proceedings of the American Forage and Grasslands Congress 12:135-139.

5-year Grant Activity

Regnier, E., S. K. Harrison, C. A. Edwards, and J. Cardina. Role of the exotic earthworm, *Lumbricus terrestris*, in the colonizing behavior of the native weed, *Ambrosia trifida* (giant ragweed). 8/15/2005 – 8/14/2009. USDA-NRICGP Weedy and Invasive Plants. \$433,000.

Harrison, S. K., E. E. Regnier and R. M. Sulc. A Winter Cover Crop for Integrating Suppression of Soybean Cyst Nematode and its Winter Annual Weed Hosts. 6/01/2005-5/31/2007. USDA-NCIPM Program. \$94,000.

Harrison, S. K. and E. E. Regnier. *Lamium purpureum* and *Heterodera glycines*: II. Interactions and Implications for Integrated Pest Management. 7/1/2003-5/31/2006. USDA-NCIPM Program. \$92,000.

Regnier, E. E., St Martin, S. K., Harrison, S. K. Contribution of seed polymorphism to diverse adaptation of the native invasive annual, *Ambrosia trifida*. 9/1/2002 - 8/30/2006. USDA-NRICGP. \$175,000.

Harrison, S. K. and E. E. Regnier. *Lamium purpureum* and *Heterodera glycines*: I. Interactions and Implications for Integrated Pest Management. 6/1/2001-5/31/2003. USDA-NCIPM Program. \$91,675.

Regnier, E. E., S. K. Harrison, S. St. Martin, and A. Snow. Inheritance of ALS Herbicide Resistance in Giant Ragweed: Investigation of Mating System and Gene Flow in Natural Populations. 7/1/2001 - 6/30/2003. Ohio Agric. Res. Devt. Ctr. Interdisciplinary Team Competitive Grants Program. \$29,043.

5-year Presentation List

CSREES Competitive Programs, Panel Manager Orientation. Washington, DC. October 23, 2007. Panel member: "Tips for Success from Experienced Panel Managers".

Ohio State University Nursery Short Course. Columbus, OH. Jan 22, 2007. "Managing the Weed Seed Bank."

University of Illinois, Agronomy Department, Jan 26, 2006. "Ambrosia for *Lumbricus*, a mutualism between an earthworm and a weed?"

NRI Panel Meeting, Biology of Weedy and Invasive Species. May 2, 2006. "Role of the exotic earthworm, *Lumbricus terrestris*, in the colonizing behavior of the native weed, *Ambrosia trifida* (giant ragweed)".

ISEE8, the Eighth International Symposium on Earthworm Ecology. Krakow, Poland. September 19, 2006. "Seed foraging and caching by *Lumbricus terrestris*."

Symposium on Ambrosia. INRA, Dijon, France. September 2006. "Seed (*Ambrosia trifida*) dispersal by *Lumbricus terrestris*."

University of Iowa, Agronomy Department. November 1, 2006. "Interaction of a native weed with an exotic earthworm".

5-year Creative Output

Web Pages.

Schutte, B., Regnier, E. E., and Harrison, S. K. 2006. Giant ragweed (*Ambrosia trifida*) seedling emergence projections for 2006. Updated and posted weekly on the OSU Extension AgCrops website: <http://agcrops.osu.edu/weeds> (April 15 - July 10, 2006).

Schutte, B., Regnier, E. E., and Harrison, S. K. 2007. Giant ragweed (*Ambrosia trifida*) seedling emergence projections for 2007. Updated and posted weekly on the OSU Extension AgCrops website: agcrops.osu.edu/weeds/2007ragweedemergence.php (March 19 - July 24, 2007).