

Kent Harrison

Area of Responsibility/Interests

Responsibilities include 60% research and 40% teaching. Overall responsibility is development and implementation of research and teaching programs in weed science, with an emphasis on weed ecology and integrated weed management. My specific research interests are in ecological interactions of weedy plants with invertebrates and vertebrates, and winter annual weeds as alternate hosts of soybean cyst nematode. Other responsibilities include advising undergraduate and graduate students, serving as the Coordination Advisor for the Crop Science major, and public service for the Department, College, and University.

Education History

1985 Ph.D., Agronomy/Weed Science, University of Illinois
1981 M.S., Plant & Soil Science/Weed Science, Texas Tech University
1979 B.S., Agronomy, Texas A&M University

Positions Held

Professor, Dept. of Horticulture & Crop Science, 2004-present
Associate Professor, Dept. of Horticulture & Crop Science, 1992-2004
Assistant Professor, Dept. of Horticulture & Crop Science, 1986-1992

Current/Recently Expired Activities

A. Research Projects

Hatch 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.

Current Sponsored Research Projects:

OSURF 60002782: A Winter Cover Crop for Integrating Suppression of Soybean Cyst Nematode and its Winter Annual Weed Hosts. USDA-North Central IPM Program, 2005-2008.

OSURF 60003512: Role of the Exotic Earthworm, *Lumbricus terrestris*, in the Colonizing Behavior of the Native Weed, *Ambrosia trifida* (Giant Ragweed). USDA-NRI Weedy and Invasive Plants Program, 2005-2009.

B. Courses Taught

H&CS 422: Principles of Weed Science. 4 cr. Fall and Spring Quarters

H&CS 411: Grain Crops. 3 cr. Winter Quarter

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* 18:(Accepted pending revision).

Schutte, B., Regnier, E., **Harrison, S. K.**, Spokas, K., & F. Forcella. 2008. A hydrothermal seedling emergence model for giant ragweed (*Ambrosia trifida*). *Weed Science* 56:(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* 45: (In Press).

Harrison, S. K., R. Venkatesh, and R. M. Riedel. 2008. Purple deadnettle (*Lamium purpureum*) emergence and removal time effects on soybean cyst nematode (*Heterodera glycines*). *Weed Sci.* 56:327-335.

Creech, E., Webb, J., Young, B., Bond, J., **Harrison, S. K.**, Ferris, V., Faghihi, J., Westphal, A., and Johnson, W. 2007. Development of soybean cyst nematode on henbit (*Lamium amplexicaule*) and purple deadnettle (*Lamium purpureum*). *Weed Technol.* 21:1064-1070.

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

Figueroa, R., D. Doohan, J. Cardina, and **K. Harrison**. 2007. Common groundsel (*Senecio vulgaris*) seed longevity and seedling emergence. *Weed Sci.* 55:187-192.

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 Tech.* 19: 231-236.

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

Yang, X., **Harrison, S. K.**, R. M. Riedel, R. Venkatesh, M. M. Loux. 2004. Glyphosate behavior in a transgenic glyphosate- and soybean cyst nematode-resistant soybean variety. *J. of New Seeds* 7:23-41.

Banks, P. A., Branham, B., **K. Harrison**, T. Whitson, and I. Heap. 2004. Determination of the potential impact from the release of glyphosate- and glufosinate-resistant *Agrostis stolonifera* L. in various crop and non-crop ecosystems. *Weed Sci. Soc. Am. Special Report*: Published Online at <http://wssa.net/publications.html>

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

Gower, S., M. M. Loux, J. Cardina, and **S. K. Harrison**. 2003. Effect of postemergence glyphosate application timing on weed control and grain yield in glyphosate-resistant corn: Results of a two-year multi-state study. *Weed Technol.* 17:821-828.

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.

Harrison, S. K. 2007. Scientific writing: Meeting the reader's needs. *Proc. North Cent. Weed Sci. Soc.* 62:211.

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., 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.* 47:249.

Creech, J. E., W. G. Johnson, J. S. Webb, B. G. Young, J. P. Bond, and S. K. Harrison. 2006. Fall and spring development of soybean cyst nematode on winter annual weeds. *Proc. North Cent. Weed Sci. Soc.* 61:74.

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

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

Creech, J. E., B. G. Young, J. S. Webb, J. P. Bond, M. M. Menke, and S. K. Harrison. 2005. Fall and spring development of soybean cyst nematode on winter annual weeds in the Eastern Corn Belt. Proc. North Cent. Weed Sci. Soc. 60:51.

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.

Banks, P. A., B. Branham, K. Harrison, T. Whitson, and I. Heap. 2005. WSSA Report to APHIS-USDA: Determination of the Potential Impact from the Release of Glyphosate- and Glufosinate-resistant *Agrostis stolonifera* L. in Various Crop and Non-Crop Ecosystems. Abstr. Weed Sci. Soc. Am. 45:364.

Stachler, J. M., M. M. Loux, S. K. Harrison and A. F. Dobbels. 2005. The characterization of an ALS- and glyphosate-resistant horseweed (*Conyza canadensis*) biotype in Ohio. Abstr. Weed Sci. Soc. Am. 45:155.

Menke, M., S. Kent Harrison, R. Venkatesh. 2004. Italian ryegrass as a potential tool to manage winter annual weeds and soybean cyst nematode. Proc. North Cent. Weed. Sci. Soc. 59:142.

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.

Stachler, J. M., M. M. Loux, and S. K. Harrison. 2004. Characterization and management of a horseweed biotype with resistance to glyphosate and ALS inhibitors. Proc. North Cent. Weed Sci. Soc. 59:176.

Sprague, C. L., L. M. Wax, R. G. Hartzler, and K. Harrison. 2004. Variations in emergence patterns of giant ragweed biotypes from Ohio, Illinois, and Iowa. Abstr. Weed Sci. Soc. Am. 44:60.

Schutte, B., E. Regnier, and S. K. Harrison. 2004. The effect of interplant variation on *Ambrosia trifida* L. emergence patterns. Proc. Ohio Invasive Weed Conf., Columbus, OH. OARDC Special Circular 156:105-108

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. Abstr. Weed Sci. Soc. Am. 43:49.

Regnier, E. E. and S. K. Harrison. 2003. Collection and burial of giant ragweed seeds by the earthworm, *Lumbricus terrestris*. Abstr. Weed Sci. Soc. Am. 43:48.

Trainer, G. D., M. M. Loux, S. K. Harrison, and A. F. Dobbels. 2003. Management of ALS-resistant horseweed (*Conyza canadensis*) in soybean. Abstr. Weed Sci. Soc. Am. 43:5.

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.

Burgess, M. R., D. J. Barker, D. L. Zartman, R. M. Sulc, and S. K. Harrison. 2003. Forage species and spatial effects on the dietary intake of goats. Proceedings of the American Forage and Grasslands Congress 12:182-186.

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. \$96,739.

Johnson, W. G., S. K. Harrison, and B. G. Young. Influence of Winter Weed Management and Cropping System on Weed Growth and Seed Bank Dynamics and SCN Population Density. USDA-NCIPM, 7/2004 – 6/2007. \$9700 (OSU share).

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.