

## CURRICULUM VITA

**NAME:** Tracy M. Sterling

**ADDRESS:** Professor (Research/Teaching, 80/20)  
Department of Entomology, Plant Pathology, and Weed Science (EPPWS)  
New Mexico State University  
MSC 3BE, Box 30003  
Las Cruces, NM 88003  
505-646-6177

**EDUCATION:**

**University of Wisconsin, Madison, WI, 1988**

**Ph.D.**, Agronomy/Botany

Dissertation: Mechanisms of Herbicide Absorption and Metabolism

**Michigan State University, East Lansing, MI, 1985**

**M.S.**, Horticulture

Thesis: Phytotoxic Exudates from Glandular Trichomes of Weeds as Allelopathic Chemicals

**University of Minnesota, St. Paul, MN, 1983**

**B.S.**, Agronomy and Horticulture

**RESEARCH & PROFESSIONAL EXPERIENCE:**

<b>Program Director and PI</b> , NSF-ADVANCE (50% position) New Mexico State University	2005-2008
<b>Professor</b> , New Mexico State University Department of Entomology, Plant Pathology and Weed Science	2001 to present
<b>Associate Professor</b> , New Mexico State University Department of Entomology, Plant Pathology and Weed Science	1995 to 2001
<b>Assistant Professor</b> , New Mexico State University Department of Entomology, Plant Pathology and Weed Science	1989 to 1995
<b>Graduate Research Assistant</b> , University of Wisconsin, Department of Agronomy	1986 - 1988
<b>Graduate Research Assistant</b> , Michigan State University, Department of Horticulture	1983 - 1985
<b>Assistant Agronomist</b> , Agri-growth Research Inc. Hollandale, MN	1983

**RESEARCH PROGRAM:** My research program in weed physiology centers on understanding how environmental, insect and herbicide stresses influence crop and weed productivity. Research interests include determining the role of oxidative stress tolerance in weed/crop interactions and responses to abiotic stress; the impact of the weedy plant genetic variability and physiology on their invasiveness and biological control; and mechanisms of herbicide action and resistance. Current research projects include determining the role of oxidative stress tolerance in protecting crops and weeds from abiotic stresses; alkaloid biosynthesis by locoweed and its endophyte; physiological strategies used by African rue to invade under severe drought stress; and the mechanism of auxinic herbicide signal transduction, action and resistance.

## **TEACHING PROGRAM:**

**Plant Physiology, EPWS/BIOL 314:** Undergraduate course integrating biophysical, biochemical, and whole plant processes to understand the mechanisms behind plant growth, development, and function (taught 1989 to present).

**Plant Physiology Laboratory, EPWS/BIOL 314/514:** Undergraduate/Graduate laboratory course centered on application of methodologies to study plant physiology (taught 2001 to 2006).

**Plant Physiology: Metabolism, AGRO/BIOL/EPWS/HORT/MOLB 530:** Graduate course on the biochemistry and physiology of major plant metabolic pathways (taught 1990 to present, even springs).

**Environmental and Physiological Pesticide Science, EPWS 420/520** (co-taught with Dr. Schroeder): Undergraduate/Graduate course on the behavior of pesticides in plants and the environment (taught since 1991, odd yrs).

**Herbicide Physiology, PSPP 546** - co-taught with Drs. Dyer (Montana State University) and Nissen (Colorado State University), as a distance-delivered course, every Fall since 2006.

**Science Distance Education Resources:** Developing award-winning animations and peer-reviewed lessons on herbicide mode of action and plant physiology in collaboration with University of Nebraska-Lincoln (UNL) at <http://plantandsoil.unl.edu>. These lessons are mirrored at <http://www.wsweedscience.org/Lessons/lessons.asp>.

## **PROGRAM ADMINISTRATION:**

**NSF-ADVANCE: INSTITUTIONAL TRANSFORMATION at NMSU** - Serving as Program Director and PI since May 2005 when founding PI took professional leave. The goal of the program is Institutional Transformation through improving recruitment and retention of female faculty in Science, Technology, Engineering & Mathematics (STEM) disciplines. Major responsibilities include directing our major programs (i.e. Mentoring, Visiting Professors, Faculty Development, Research Awards, ADVANCING Leaders) while facilitating institutionalization of these programs. In addition, seeking funding for sustainability after the current 5-year grant ends in December 2008. The program is described at <http://www.nmsu.edu/~advprog>.

**NSF-ADVANCE - PAID (Partnerships for Adaptation, Implementation and Dissemination) at NMSU** – Serving as PI since January 2007, to disseminate NMSU’s best practices of Mentoring, Promotion & Tenure training and Department Head training through annual retreats, to other doctoral institutions in New Mexico, UNM and NMT, and to Los Alamos National Labs, as described at <http://www.advance.nmsu.edu/PAID/index.html>.

## **AWARDS AND SCHOLARSHIPS:**

2008	Honorary Member for Faculty Development Initiatives - Teaching Academy. NMSU
2007	YWCA REACH Award of Excellence – Post-Secondary Education Division
2005	NSF Visualization Challenge; Transpiration Animation; <i>Science</i> 309:1993 - Interactive Media - Honorable mention
2005	Silver Award – Interactive Multimedia and Web Graphics category - Transpiration Flash Animation (collaboration with Agric. Comm.) - from the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences
2004	National Excellence in Distance Education Award – The American Distance Education Consortium (collaboration with Univ. Nebraska-Lincoln)
1997	Sam Steel Society Induction
1994	El Paso Natural Gas Foundation Faculty Achievement Award
1992	National Assoc. of Colleges and Teachers of Agriculture Teaching Award of Merit
1988	D.C. Smith Outstanding Agronomy Graduate Student Award, University of Wisconsin-Madison
1988	Outstanding Weed Science Graduate Student Award, University of Wisconsin

**MEMBERSHIPS IN PROFESSIONAL SOCIETIES:**

American Society of Plant Biologists  
Gamma Sigma Delta  
Sigma Xi  
Weed Science Society of America  
Western Society of Weed Science

**REFEREED PUBLICATIONS:**

- Abbott, L. B., G. T. Bettmann, and T. M. Sterling. 2008. Physiology and recovery of African rue (*Peganum harmala*) seedlings under water deficit stress. *Weed Science* 56:52-57.
- Bettmann, G. T., H. H. Ratnayaka, W. T. Molin, and T. M. Sterling. 2006. Effects of nitrogen deficiency on physiological and antioxidant stress responses of cotton (*Anoda cristata*) and spurred anoda (*Gossypium hirsutum* and *G. barbadense*). *Weed Sci.* 54:641-650.
- Molin, W. T., J. A. Hugie, H. H. Ratnayaka and T. M. Sterling. 2006. Spurred anoda (*Anoda cristata*) competition in wide row and ultra-narrow row cotton (*Gossypium hirsutum* and *G. barbadense*) management systems. *Weed Sci.* 54:634-640.
- Sterling, T. M., S. K. Nissen, and D. Namuth. 2006. Metabolism of Herbicides or Xenobiotics in Plants. *J. Natl. Resources & Life Sci. Educ.* 35:E01.
- Abbott, L. B. and T. M. Sterling. 2006. African rue (*Peganum harmala*) seedling response to herbicides applied under water-deficit stress. *Weed Sci.* 54:198-204.
- Sterling, T.M. 2005. Transpiration – Water Movement through Plants. *J. Natl. Resources & Life Sci. Educ.* 34:E04-36W.
- Sterling, T. M., D. C. Thompson, and L. A. Abbott. 2004. Implications of invasive plant variation for weed management. *Weed Technology* 18:1319-1324.
- Kulshreshtha, S., R. Creamer, and T. M. Sterling. 2004. Phylogenetic relationships among New Mexico *Astragalus mollissimus* varieties and *Oxytropis* species by restriction fragment analysis. *Weed Sci.* 52:984-988.
- Gibbs, L. A. and T. M. Sterling. 2004. Seasonal variation of picloram metabolism in broom and threadleaf snakeweed populations in a common garden. *Weed Sci.* 54:206-212.
- Sterling, T. M. and D. Namuth. 2004. Auxinic Herbicide Mechanism(s) of Action - Part 1 – Introduction. *J. Natl. Resources & Life Sci. Educ.* 33:E03-9W.
- Sterling, T. M., and D. Namuth. 2004. Auxinic Herbicide Mechanism(s) of Action - Part 2 – Advanced. *J. Natl. Resources & Life Sci. Educ.* 33:E03-10W.
- Sabba, R. P., I. M. Ray, N. Lownds, and T. M. Sterling. 2003. Inheritance of resistance to clopyralid and picloram in yellow starthistle (*Centaurea solstitialis* L.) is controlled by a single nuclear recessive gene. *J. Heredity* 94(6):523-527.
- Ratnayaka, H. H., W. T. Molin and T. M. Sterling. 2003. Physiological and antioxidant responses of cotton and spurred anoda under interference and mild drought. *J. Exper. Bot.* 54:2293-2305.
- Valenzuela-Valenzuela, J. M., N. K. Lownds and T. M. Sterling. 2002. Ethylene plays no role in clopyralid action in yellow starthistle (*Centaurea solstitialis* L.). *Pestic. Biochem. Physiol.* 72:142-152.
- Valenzuela-Valenzuela, J. M., N. K. Lownds and T. M. Sterling. 2001. Clopyralid uptake, translocation, metabolism and ethylene induction in picloram-resistant yellow starthistle

- (*Centaurea solstitialis* L.). Pestic. Biochem. Physiol. 71:11-19.
- Sterling, T. M., N. K. Lownds and L. W. Murray. 2001. Similar competitive ability between *Centaurea solstitialis* accessions resistant or susceptible to picloram. Weed Sci. 49:42-47.
- Sterling, T. M., L. W. Murray and Y. Hou. 2000. Morphological variation among broom snakeweed (*Gutierrezia sarothrae*) populations. Weed Sci. 48:356-365.
- Sabba, R.P., T.M. Sterling and N.K. Lownds. 1998. Effect of picloram on resistant and susceptible yellow starthistle: The role of ethylene. Weed Sci. 46:297-300.
- Sterling, T. M. and Y. Hou. 1997. Genetic diversity of broom snakeweed (*Gutierrezia sarothrae*) and threadleaf snakeweed (*G. microcephala*) populations. Weed Sci. 45:674-680.
- Fuerst, E. P., T. M. Sterling, M. A. Norman, T. S. Prather, G. P. Irzyk, Y. Wu, N. K. Lownds and R. H. Callihan. 1996. Physiological characterization of picloram resistance in yellow starthistle. Pestic. Biochem. Physiol. 56:149-161.
- Waldrop, M. P., T. M. Sterling, R. A. Khan and W. T. Molin. 1996. Fate of prometryn in prometryn-tolerant and -susceptible cotton cultivars. Pestic. Biochem. Physiol. 56:111-122.
- Sterling, T. M., N. K. Lownds, and L. W. Murray. 1996. Picloram uptake and picloram-induced ethylene production by broom snakeweed as influenced by environment. J. Range Man. 49:245-250.
- Thompson, D. C., J. L. Knight, T. M. Sterling and L. W. Murray. 1995. Preference for specific varieties of woolly locoweed by a specialist weevil, *Cleonidius trivittatus* (Say). Southwestern Entomologist 20:325-333.
- Hou, Y. and T. M. Sterling. 1995. Isozyme variation in broom snakeweed (*Gutierrezia sarothrae*). Weed Sci. 43:156-162.
- Sterling, T. M. and H. J. Jochem. 1995. Uptake, translocation and metabolism of picloram and metsulfuron by two genera of locoweed. Weed Sci. 43:13-17.
- Morrison, R. G., N. K. Lownds and T. M. Sterling. 1995. Picloram uptake, translocation and efficacy in relation to water status in Russian knapweed (*Centaurea repens* L.). Weed Sci. 43:34-39.
- Sterling, T.M. 1994. Mechanisms of herbicide absorption across plant membranes and accumulation in plant cells. Weed Sci. 42:263-276.
- Sterling, T.M. and N.K. Lownds. 1992. Picloram absorption by broom snakeweed (*Gutierrezia sarothrae*) leaf tissue. Weed Sci. 40:390-394.
- Sterling, T.M. and N.E. Balke. 1990. Bentazon uptake and metabolism by cultured plant cells in the presence of monooxygenase inhibitors and cinnamic acid. Pestic. Biochem. Physiol. 38:66-75.
- Sterling, T.M., N.E. Balke, and D.S. Silverman. 1990. Uptake and accumulation of the herbicide bentazon by cultured plant cells. Plant Phys. 92:1121-1127.
- Sterling, T.M. and N.E. Balke. 1989. Differential bentazon metabolism and retention of bentazon metabolites by plant cell cultures. Pestic. Biochem. Physiol. 34:39-48.
- Sterling, T.M. and N.E. Balke. 1988. Use of soybean (*Glycine max*) and velvetleaf (*Abutilon theophrasti*) suspension-cultured cells to study bentazon metabolism. Weed Sci. 36:558-565.
- Sterling, T.M. and A.R. Putnam. 1987. Possible role of glandular trichome exudates in interference by velvetleaf (*Abutilon theophrasti*). Weed Sci. 35:308-314.
- Sterling, T.M., R.L. Houtz, and A.R. Putnam. 1987. Phytotoxic exudates from velvetleaf (*Abutilon theophrasti*) glandular trichomes. Amer. J. Bot. 74:543-550.

### **BOOK CHAPTERS:**

- McDaniel, K., T. Sterling, and S. Ivey. 2007. Herbicidal control of locoweed. In K. E. Panter, T. L.

- Wierenga, and J. A. Pfister (editors), *Poisonous Plants: Global Research and Solutions*, CABI Publishing, CAB International, Oxford, pp. 353-358.
- Vallotton, A. D. and T. M. Sterling. 2007. Water deficit effects on *Astragalus mollissimus* and *Oxytropis sericea* swainsonine content, physiology, and growth. *In* K. E. Panter, T. L. Wierenga, and J. A. Pfister (editors), *Poisonous Plants: Global Research and Solutions*, CABI Publishing, CAB International, Oxford, pp. 372-376.
- Sterling, T. M. and J. C. Hall. 1997. Mechanism of action of natural auxins and the auxinic herbicides. *In* R. M. Roe, J. D. Burton and R. J. Kuhr (editors), *Herbicide Activity: Toxicology, Biochemistry, and Molecular Biology*, I. O. S. Press, Inc., Amsterdam, pages 205-263.
- Sterling, T. M., D.C. Thompson and K.C. McDaniel. 1999. Perennial Snakeweeds. *In* R. L. Sheley and J. K. Petroff, Eds., *Biology and Management of Noxious Rangeland Weeds*, Oregon State University Press, Corvallis, pages 323-335.

### **NON-REFEREED PUBLICATIONS:**

- Murray, L., T. M. Sterling, and J. Schroeder. 1999. My View. *Weed Sci.* 47:367-368.
- Sterling, T. M. and D. C. Thompson, editors. 1999. *Locoweed Research: Updates and Highlights*. New Mexico State Univ., Res. Rep. 730. 88 pages.
- Campanella, M. C., T. M. Sterling, and D. C. Thompson. 1999. *Walshia misecolorella* caterpillars may alter swainsonine levels in white locoweed. *In* *Locoweed Research: Updates and Highlights*. Sterling, T. M. and D. C. Thompson, eds., New Mexico State Univ., Res. Rep. 730, pp. 36-37.
- Sterling, T. M. and H. S. Jochem. 1999. Understanding why white locoweed is more sensitive to herbicides than woolly locoweed. *In* *Locoweed Research: Updates and Highlights*. Sterling, T. M. and D. C. Thompson, eds., New Mexico State Univ., Res. Rep. 730, pp. 46-47.
- Sterling, T. M. and H. S. Jochem. 1999. Do differences in locoweed leaf surfaces affect herbicide uptake? *In* *Locoweed Research: Updates and Highlights*. Sterling, T. M. and D. C. Thompson, eds., New Mexico State Univ., Res. Rep. 730, pp. 55-56.
- Thompson, D. C., J. L. Knight, T. M. Sterling, and K. T. Gardner. 1999. Locoweed weevils prefer certain varieties of locoweed. *In* *Locoweed Research: Updates and Highlights*. Sterling, T. M. and D. C. Thompson, eds., New Mexico State Univ., Res. Rep. 730, 48-49.
- Hatzios, K. K., B. Auxier, M. R. Blumhorst, J. M. Campbell, J. M. DiTomaso, W. E. Dyer, R. J. Ehr, S. Harper, M. V. Hickman, R. E. Hoagland, R. S. McAllister, C. A. Nord, R. L. Ratliff, W. F. Simmons, T. M. Sterling and J. B. Weber. 1998. *Herbicide Handbook. Supplement to the Seventh Edition*. Weed Science Society of America, Lawrence, KS. 104 pp.
- Sterling, T.M. 1996. Structure-activity relationships: Approaches to Herbicide Design. *Weed Sci.* 44:717.
- Sterling, T.M. and N.K. Lownds. 1996. Factors affecting herbicide activity in snakeweed and locoweed. *In* *Locoweed & Broom Snakeweed Research Update*, NMSU Ag. Expt. Sta., Clayton, NM, February 9, pp. 16-17.
- Ahrens, W. H., C. D. Anderson, J. M. Campbell, S. Clay, J. M. DiTomaso, W. E. Dyer, M. T. Edwards, R. J. Ehr, J. R. Frank, M. V. Hickman, E. R. Hill, A. R. Isensee, W. C. Koskinen, W. J. McAvoy, L. W. Mitich, R. L. Ratliff, and T. M. Sterling. 1994. *Herbicide Handbook. Seventh Edition*. Weed Sci. Soc. Amer., Champaign, IL, 352 pp.
- Hou, Y. and T.M. Sterling. 1993. Genetic variability in broom snakeweed. *In* Sterling, T.M. and D.C. Thompson, editors, *Snakeweed Research: Highlights and Updates*, Ag. Expt. Sta. Res. Rep. 674, NMSU, Las Cruces, NM, pp. 4-5.
- Hou, Y. and T.M. Sterling. 1993. Water stress and picloram alter carbohydrate content in broom snakeweed. *In* Sterling, T.M. and D.C. Thompson, editors, *Snakeweed Research: Highlights and Updates*, Ag. Expt. Sta. Res. Rep. 674, NMSU, Las Cruces, NM, pp. 30-31.
- Lownds, N.K. and T.M. Sterling. 1993. Herbicide-induced responses in broom snakeweed. *In* Sterling, T.M. and D.C. Thompson, editors, *Snakeweed Research: Highlights and Updates*, Ag. Expt. Sta. Res. Rep. 674, NMSU, Las Cruces, NM, pp. 34-35.
- Sterling, T.M. and N.K. Lownds. 1993. Herbicide absorption by broom snakeweed leaves. *In* Sterling, T.M. and D.C. Thompson, editors, *Snakeweed Research: Highlights and Updates*, Ag. Expt. Sta. Res. Rep. 674, NMSU, Las Cruces, NM, pp. 32-33.
- Thompson, D.C. and T.M. Sterling. 1993. Snakeweed species influence a biological control agent differently. *In*

- Sterling, T.M. and D.C. Thompson, editors, *Snakeweed Research: Highlights and Updates*, Ag. Expt. Sta. Res. Rep. 674, NMSU, Las Cruces, NM, pp. 20-21.
- Liddell, C.M., D.C. Thompson, T.M. Sterling, D.B. Richman, and C.J. DeLoach. 1990. Biological control of broom snakeweed in New Mexico, *In* *Snakeweed: Problems and Perspective Proceedings*, Ag. Expt. Sta. Bull. 751, NMSU, Las Cruces, NM, pp. 163-167.
- Sterling, T.M. 1990. Physiology of broom snakeweed in relation to chemical control, *In* *Snakeweed:Problems and Perspectives Proceedings*, Ag. Expt. Sta. Bull. 751, NMSU, Las Cruces, NM pp. 51-60.
- Sterling, T.M. 1990. Physiology and biochemistry of broom snakeweed in relation to biological control, *In* *Snakeweed:Problems and Perspectives Proceedings*, Ag. Expt. Sta. Bull. 751, NMSU, Las Cruces, NM pp. 169-177.

## **EDUCATIONAL MATERIALS:**

**Video** •Payne, J. and T. M. Sterling. 1997. *Water Potential in Plants*. NMSU. 30 min.

### **Proceedings:**

- Vallotton, Ulery, and Sterling. 2006. Using Plant Stress Experiments to Teach Across Disciplines in Plant Physiology and Soil Chemistry. Presented at the NMSU College of Engineering and NM Space Grant Consortium's Science, Engineering and Technology Education Conference - <http://spacegrant.nmsu.edu/NMSU/2006/vallotton.pdf>
- Boren, A., S. Fritz, C. Speth, D. Namuth, T. Sterling and D. Lee. 2005. A Tale of Two Constructs: Distance Students' Learning Approaches and Motivations. 3rd Annual Hawaii International Conference on Education, February 2005.
- Namuth, D. M., D. Lee, A. Guru, S. J. Nissen, and T. M. Sterling. 2003. Development of an Electronic Library of Lessons for Multi-Institutional Use. NMSU College of Engineering and NM Space Grant Consortium's Science, Engineering and Technology Education Conference - <http://spacegrant.nmsu.edu/NMSU/2003/index.html>
- Vallotton, A. D., A. Ulery, and T. M. Sterling. 2006. Using Plant Stress Experiments to Teach Across Disciplines in Plant Physiology & Soil Chemistry. NMSU College of Engineering and NM Space Grant Consortium's Science, Engineering & Technology Education Conference-<http://spacegrant.nmsu.edu/NMSU/2006/index.html>.

## **COMPETITIVE GRANTS:**

- 1990-91 Reducing herbicide use rates for Russian knapweed control: I. Effect of surfactants on uptake; Co-principal investigators: T. M. Sterling and N. K. Lownds; Western Regional Pesticide Impact Assessment Program; \$9,000.
- 1991-92 Reducing herbicide use rates for Russian knapweed control: II. Effect of Environment; Co-principal investigators: T. M. Sterling and N. K. Lownds; Western Regional Pesticide Impact Assessment Program; \$14,227.
- 1991-92 Picloram resistance in yellow starthistle; Co-principal investigators: T. M. Sterling, N. K. Lownds, and E. P. Fuerst (Washington State Univ.); Western Regional Pesticide Impact Assessment Program (WRPIAP); \$16,447.
- 1992-93 Picloram resistance in yellow starthistle; Co-principal investigators: T. M. Sterling, N. K. Lownds, and E. P. Fuerst (Washington State Univ.); Western Regional Pesticide Impact Assessment Program; \$16,948.
- 1993-94 Picloram resistance in yellow starthistle; Co-principal investigators: T. M. Sterling, N. K. Lownds, and E. P. Fuerst (Washington State Univ.); Western Regional Pesticide Impact Assessment Program; \$19,564.
- 1992-94 Mechanism of auxin-like herbicide resistance in yellow starthistle; Co-principal investigators: T. M. Sterling and N.K. Lownds; National Research Initiative Competitive Grants Program (NRICGP); \$50,000.
- 1993-94 Improvement of cotton tolerance to herbicides; Co-principal investigators: W. T. Molin (University of Arizona) and T. M. Sterling; Southwest Consortium on Plant Genetics and Water Resources; \$50,000.
- 1994-95 Improvement of cotton tolerance to herbicides; Co-principal investigators: W. T. Molin

- (University of Arizona) and T. M. Sterling; Southwest Consortium on Plant Genetics and Water Resources; \$46,000.
- 1994-96 Mechanism of auxin-like herbicide resistance and cross-resistance in yellow starthistle; Co-principal investigators: T. M. Sterling and N.K. Lownds; National Research Initiative Competitive Grants Program; \$100,000.
- 1996 Spectrophotometer for weed physiology research; Principal investigator: T. M. Sterling, National Research Initiative Competitive Grants Program - Equipment Grant; \$25,000.
- 1997 Mechanism(s) of auxinic herbicide resistance in important agricultural and rangeland weeds of the western United States; Co-principal investigators: W. T. Dyer and T. M. Sterling; Montana Weed Trust Fund; \$21,000
- 1997 Mechanism of picloram resistance; Co-principal investigators: T. M. Sterling and W. T. Dyer; DowElanco, \$5,000.
- 1999-03 The role of oxidative stress tolerance in crop/weed interactions; Co-principal investigators: T. M. Sterling and W. T. Molin; National Research Initiative Competitive Grants Program - Weeds; \$250,000.
- 2001 HPLC for weed physiology research; Principal investigator: T. M. Sterling, National Research Initiative Competitive Grants Program - Equipment Grant; \$60,000.
- 2001-02 Weed Science Electronic Library Modules; Co-principal investigators: D. Namuth, S. Nissen, and T. M. Sterling; American Distance Education Consortium; \$50,000.
- 2001-04 Development of Decision Support Tools for Water Conservation in the Rio Grande Valley; Co-principal investigators: R. Sanderson, D. Miller, M. Bleissweiss, T. M. Sterling, T. Sammis, and E. A. Herrera; USDA/CSREES, Efficient Irrigation for Water Conservation in the Rio Grande Basin; \$284,505.
- 2002 Travel Award – NSF-ADVANCE Institutional Transformation Awards; \$4,688.
- 2002 Visiting Professor Award– NSF-ADVANCE Institutional Transformation Awards; \$4,500.
- 2003 Spray Chamber for Weed Science Programs; Principle Investigator: T.M. Sterling, National Research Initiative Competitive Grants Program – Equipment Grant; \$26,440.
- 2003-04 Learning to Think Like a Plant Scientist; Co-principal investigators: D. Lee, R. Gaussoin, T. M. Sterling and K. Todd; American Distance Education Consortium; \$35,000.
- 2004 Oxidative Stress Tolerance Mechanisms in Plants; Principal Investigator: T. M. Sterling, NSF-ADVANCE Institutional Transformation Award; \$21,420.
- 2004-06 Candidate Gene Markers and Traits for Drought Tolerance QTL in Alfalfa; Co-principal investigators: I. Ray and T. M. Sterling; Southwest Consortium on Plant Genetics and Water Resources; \$80,000.
- 2006-09 Drought Responsive Genes and Physiological Traits as Enriched Sources of Markers for Improving Alfalfa Drought Tolerance, Co-principal investigators: I. Ray and T.M. Sterling, USDA-NRICGP – Agricultural Plants and Environmental Adaptation; \$375,000
- 2007-09 Advancing Faculty Diversity, PI: T. M. Sterling; Co-PIs from NMSU, New Mexico Tech, University of New Mexico, & Los Alamos National Lab, NSF-ADVANCE: Partnering for Adaptation, Implementation and Dissemination, \$500,000.

### **GRADUATE ADVISING:**

(EPPWS offers a M.Sc. in Agricultural Biology; Students obtain Ph.D.s in Agronomy & Horticulture where I am Graduate Faculty)

#### **Post-docs advised:**

Tushini deSoyza (1992-1994) - Researcher, George Washington University

Robert Sabba (1996-1998) - Post-doc, University of Wisconsin-Madison

Harish Ratnayaka (2000-2003) - Faculty, Xavier University of Louisiana  
Janakiraman Maruthavanan (2006-present)  
Fathima Nalim (2007-present)

**Ph.D. students:**

Yanglin Hou, 1994, Phenotypic and genetic variability in broom snakeweed (*Gutierrezia sarothrae*) and its genotype response to picloram, Grower manager, Mid-American Growers, IL  
Juan Valenzuela-Valenzuela, 1998, Physiological studies into the cross-resistance of picloram-resistant yellow starthistle (*Centaurea solstitialis* L.) to the auxinic herbicide clopyralid, Vegetable crops researcher, CIANO-INIFAP, Mexico  
Ismael Hernandez-Rios, 2004, Mechanisms of oxidative stress tolerance to herbicide and salinity stress in cotton (*Gossypium* sp.), Crop science faculty, Colegios de Postgraduados, SLP, Mexico

**M.Sc. students:**

Robert Morrison, 1992, Picloram uptake, translocation and picloram-induced ethylene production in relation to water status of Russian knapweed (*Centaurea repens* L.)  
Marianne Pedersen, 1995, Auxin binding in picloram-susceptible and -resistant yellow starthistle (*Centaurea solstitialis* L.)  
Asuncion Rios-Torres, 1997, Effects of three acetolactate synthase (ALS) herbicides in soils and nutrient solutions at different pHs and water potentials  
David Johnson, 2004, Prediction of water deficit stress in pecans (*Carya illinoensis*) with remotely sensed hyper-spectral data  
Amber Vallotton, 2005, Genetic and environmental variation in swainsonine production by locoweed species  
Kevin Branum, 2006, Influence of drought stress on African rue (*Peganum harmala*) physiology and management  
Greg Bettmann, 2007, Oxidative stress and photosynthesis response during drought in African rue

**SERVICE:**

**Professional Societies:**

**Weed Science Society of America (WSSA)**

Reviewer *Weed Science* and *Weed Technology* – 1989 - present  
Program Committee, Physiology Section of Annual Meeting - 1994-1995  
- 1993-94 - Vice Chair; 1994-95; Chair  
Physiology section symposium organizer - 1995  
Herbicide Handbook Committee – 1992-1998  
Co-Editor of Physiological and Biochemical Behavior Section – 1992-1994  
Co-Editor for 1998 Supplement to Herbicide Handbook – 1994-1998  
Placement Committee, Member – 1992-1996  
Editorial Committee, Member – 1995-1998  
Publications Promotion Committee, Member – 1996-2000  
Education Committee, Member – 1998-2002  
Herbicide Resistant Plants Committee, Member – 1998-2001  
Outstanding Paper in *Weed Science* Committee - Member – 2004 – present  
Research & Competitive Grants Committee – Member – 2005 – present  
Professional Development Committee – Chair – 2006 – 2007; member 2007 - present

**Western Society of Weed Science-**

Herbicide Resistance Working Group, Member – 1992-2001  
Poster Committee, Member, 1994-1997; Chair, 1996-1997  
Local Arrangements Committee – Albuquerque – 1995 – 1996  
Nominations Committee, Member - 1996-1999; Chair, 1997-1998  
Student Paper Judging Committee – 1990-1993  
Placement Committee – member, 2002-2005; chair – 2003-2004  
Basic Sciences Committee – vice-chair – 1990-1991, 2003-2004, Chair – 1991-1992, 2004-2005

Distance Education Committee – member – 2003-2004; chair – 2005-present

**W-45 Regional Project** – member, 1989 – present; vice-chair, 1994-1995; chair, 1995-1997

**USDA/CSREES National Research Initiative Competitive Grants Program – Panel Member**

Biology of Weedy and Invasive Plants – 1994, 1995, 2004, 2005

- Attended NRI/NSF Interagency meeting on Invasive Species - 2005

Initiative for Future Agriculture and Food Systems (IFAFS) – 2001

**NSF ADVANCE Grants Program – Panel Member**

IT-START - 2008

**University Committees**

EPPWS Graduate Teaching Assistantship Committee – 1989 - present	Chair
EPPWS Graduate Student Club – 1989-1997	Advisor
EPPWS Scholarship Committee – 1990, 1991, 1994	Member
EPPWS Nominations Committee – 2005 – present	Member
Molecular Biology Graduate Program – 1989 – present	Member
Graduate Faculty – 1989 – present	Member
EPPWS Promotion and Tenure Committee – 1995 – present (interim chair, 2004)	Member
<b>ADVANCE</b>	
ADVANCE Visiting Professor Committee – 2002- 2006	Member
ADVANCE Mentoring Assignment Committee – 2003 - present	Member
ADVANCE Mentor – Laurie Abbott – 2002 – present	Mentor
ADVANCE Mentor – Erin Silva – 2004 – 2006	Team Mentor
ADVANCE Mentee – Ann Vail – 2002 – 2005	Mentee
ADVANCE Mentee – Greg Blanch – 2005 – present	Mentee
ADVANCE Mentor – Derek Bailey – 2006 – present	Mentor
ADVANCE Mentor – Rene Hadjigeorgalis – 2007 – present	Mentor
Advancing Leaders Program – 2005-2006	Co-chair
NM Network for Women in Science and Engineering – 1989-1991	Member
- panel participant, exhibit committee, tour escort	
NMSU Strategic Planning Committee - Academic Programs Sub-committee - 1997	Member
NBIF/PSL/NMSU Collaboration Enhancement Team – 1998-1999	Member
University Research Council (URC) - 1995-2001	Member
URC Bid Sub-Committee – 1995-1996	Member
Chair – 1999-2000	Chair
- established URC Research and Creative Activities Fair	
- established URC Award for Research and Scholarly Activity	
Council of Research Centers (CORC) – 1999-2000	Member
Grant Process Committee - 2002	Member
Research Awards Sub-committee - 2001	Chair, Member
Strategic Research Themes Sub-committee – 2001	Member
NMSU Equipment Committee – 2000-2001	Member
NMSU Disclosure Statement Committee - 2002	Member
CSDAL Plant Science Teaching Laboratory Committee – 1999	Member
CSDAL EPWS Research Laboratory Committee – 1999-2000	Chair
Skeen Hall Building Committee – 2001	Member
<b>Search Committees</b>	
EPPWS – Plant Pathology – 1990	Member
EPPWS – Biological Control – 1990	Member
Agronomy and Horticulture - Soil Chemistry Position – 1997	Member

EPPWS – Molecular Plant Pathology – 2002	Member
Extension Plant Sciences – Vegetable Specialist Position - 2003	Member
Range Science – Assistant Professor Positions – 2002, 2004	Member
Biochemistry – Assistant Professor Position – 2005-2006	Member
Institutional Research Director – 2006	Member
Faculty Senate – elected to two terms - 2002–2005, 2005-2008	Member
Senior Senator – 2007-2008	Senior Senator
Committee on Committees – 2007-2008	Member
Long-Range Planning Committee – 2002-2003, 2007-2008	Member
Faculty Affairs – 2003-2004	Member
Scholastic Affairs – 2004-2005	Chair
University Affairs – 2005-2006	Member
Provost’s P&T Revision Task Force – 2005-2007	Co-Chair
CAHE Dean’s P&T Revision Action Team – 2007- present	Chair
President’s Commission on the Status of Women – 2003 - present	Member
Campus Planning Committee – 2003 – 2004	Member
Parking Committee – 2004 – 2005	Member
CAHE Senators’ P & T Workshop – Research/Teaching – 2003-2004	Chair
NMSU Electron Microscope Laboratory Use Committee – 2003 – 2006	Member
Westhafer Award for Excellence in Teaching Committee - 2003	Member
Promotion and Tenure Workshop sponsored by Hispanic Caucus/ADVANCE - 2003 - Panel Moderator	
Faculty mentor for undergraduate/high school student research programs	
NIH Bridges to Native Americans in Community Colleges Program – 1993 – present	
NSF-ASSURE Program – NSF program for students from migrant families - 2004	
NIH Minority High School Student Research Apprenticeship Program – 1996	
WSSA Undergraduate Research Awards – support applications from students almost annually	
NIH-RISE Mentor– 2001-2003	
NMSU Experimental Statistics Task Force – 2007-2008	Member

**Selected Teaching Enhancement & Faculty Development:**

- Writing Across the Curriculum - 1989
- ACOP Western Regional Teaching Symposium – 1992, 1995
- CAHE Teaching Discussion Group/Screaming Scholars - 1995, 1996, 2000, 2001
- Took BIOL 550 - Phylogenetic Inference – Fall 1992
- Took AXED 501 – Methods in Teaching Agriculture – Spring 1994
- Took Two-week course on Plant Biochemistry at Washington State Univ - 1997
- Six-month Sabbatical Leave at Montana State University - 1997
- Publish, Don’t Perish Writing Workshop – 1998
- WebCT Training - 2000
- ITAL – Technology in the Classroom – Summer 2003
- GRASP – semester-long review of course and lecture relative to learning styles by an outside observer from the NM Space Grant – Spring 2004
- Teaching Academy –regular participation in programs
- Advancing Leaders Program – 2004-2005 participant in a year-long leadership program for two participants per College
- LEAD 21 – 2007-2008 class member in a year-long program for Land Grant University Leaders - program components include self evaluation, change in higher education, and legislative process

**Community (Local Schools):**

- Insect Expo, Girl Scout Science, Supercomputing Challenge, Judge at Science Fairs, Tombaugh Science Interns, Tombaugh Student Advisory Council, etc.

## **International:**

- 1997 Mexico Society of Weed Science – invited speaker  
External Evaluator of PhD Dissertation – University of Guelph – Ontario – Jan. 2004  
Collaboration with Spanish-speaking weed scientists and agronomists for translations of on-line lessons

## **ABSTRACTS:**

- Pinch, M., I. Calderon, A. D. Vallotton, R. Creamer, T. M. Sterling. 2007. Mutualism or parasitism: What is the nature of the symbiotic relationship between locoweed and its fungal endophyte, *Embellisia*. Proc. Western Society Weed Science 60:9.
- Lange, C., A. Vallotton, and T. Sterling. 2007. Genetic variation of the alkaloid swainsonine in locoweed species of New Mexico. Proc. Western Society of Weed Science 60:8-9.
- Sterling, T. M. and A. D. Vallotton. 2007. Physiology, growth and swainsonine content response to water-deficit stress in woolly loco and silky crazyweed. Weed Sci. Soc. Amer. Abstracts 47:112.
- Vallotton, A. D., and T. M. Sterling. 2006. Water deficit effects on woolly loco and silky crazyweed swainsonine content, physiology, and growth. Proc. Western Society of Weed Science 59:50-51.
- Sterling, T. M., L. M. Frehill, and C. Jeser-Cannavale. 2006. NSF-ADVANCE: Institutional transformation for faculty diversity. Proc. Western Society of Weed Science 59:44-45.
- Sterling, T. M., G. T. Bettmann, H. H. Ratnayaka and W. T. Molin. 2006. Photosynthesis and antioxidant responses in cotton and spurred anoda under nitrogen deficiency. Weed Sci. Soc. Amer. Abstracts 46:85-86.
- Sterling, T. M., L. M. Frehill, and C. Jeser-Cannavale. 2006. NSF-ADVANCE: Institutional transformation for faculty diversity. Weed Sci. Soc. Amer. Abstracts 46:23-24.
- Sterling, T. M., P. Hunt, L. M. Frehill, and C. Jeser-Cannavale. 2005. NSF-ADVANCE: Institutional transformation for faculty diversity. Annual meeting New Mexico Network of Women in Science & Engineering, October 29, 2005.
- Bettmann, G. T., H. H. Ratnayaka, T. M. Sterling, and W. T. Molin. 2005. Nitrogen stress effects on cotton and spurred anoda physiology. Proc. Western Soc. Weed Sci. 58:17.
- Branum, K. S., L. B. Abbott, and T. M. Sterling. 2005. The influence of water stress and timing of herbicide application on African rue control. Proc. Western Soc. Weed Sci. 58:58.
- Calderon, I. G., G. T. Bettmann, and T. M. Sterling. 2005. Does prometryn tolerance confer paraquat tolerance? Proc. Western Soc. Weed Sci. 58:30.
- Vallotton, A. D. and T. M. Sterling. 2005. Water deficit effects on *Astragalus mollissimus* and *Oxytropis sericea* swainsonine content, physiology, and growth. Proc. International Symposium on Poisonous Plants, Logan Utah.
- Branum, K. S., and T. M. Sterling. 2004. Nitrogen response of picloram-resistant yellow starthistle. 2004. Proc. Western Soc. Weed Sci. 57:8.
- Branum, K. S., L. B. Abbott, and T. M. Sterling. 2004. Water stress effects on diurnal physiology of African rue. Proc. Western Soc. Weed Sci. 57:51.
- Vallotton, A. D., L. A. Gibbs, L. B. Abbott, and T. M. Sterling. 2004. Uptake and translocation of herbicides in African rue under water stress. Proc. Western Soc. Weed Sci. 57:31.
- Vallotton, A. D., D. R. Gardner, M. H. Ralphs, and T. M. Sterling. 2004. Comparison of three methods for swainsonine detection and quantification in woolly loco. Soc. Range Management, 57<sup>th</sup> Annual Meeting.
- Namuth, D. M., S. J. Nissen, T. M. Sterling, S. M. Fritz, I. Hernandez-Rios, A. Martin, B. Kappler, C. Mallory-Smith, J. A. Dille. 2004. Creation of peer-reviewed online herbicide modes of action lessons and animations for public education. WSSA Abstracts 44:85.
- Sterling, T. M. and D. C. Thompson. 2003. Implications of invasive plant variation for weed management. Invasive Plants in Natural and Managed Systems: Linking Science and Management and 7<sup>th</sup> International Conference on the Ecology and Management of Alien Plant Invasion, p.85.
- Abbott, L. B. and T. M. Sterling. 2003. Recovery of African rue seedlings from water stress: Implications for recruitment and invasion. Invasive Plants in Natural and Managed Systems: Linking Science and Management and 7<sup>th</sup> International Conference on the Ecology and Management of Alien Plant Invasion, p. 3.
- Dyer, W. and T. M. Sterling. 2003. Selection and compressed evolution in agroecosystems. Invasive Plants in Natural and Managed Systems: Linking Science and Management and 7<sup>th</sup> International Conference on the Ecology and Management of Alien Plant Invasion, p. 26.
- Abbott, L. B., T. M. Sterling, and L. M. Hite. 2003. Photosynthesis and growth responses of African rue to progressive drought. SRM Annual Meeting 56:5.
- Abbott, L. B., L. M. Hite, and T. M. Sterling. 2003. Physiological responses of African rue to progressive drought. Proc.

- Western Soc. Weed Sci. 56:25.
- Bettmann, G. T., H. H. Ratnayaka, Abbott, L. B., and T. M. Sterling. 2003. Antioxidant levels of African rue under water stress. *Proc. Western Soc. Weed Sci.* 56:27.
- Nissen, S. J., T. M. Sterling, D. M. Namuth, S. M. Fritz, A. Martin, B. Kappler, and C. Mallory-Smith. 2003. Teaching herbicide mode of action with lessons and animations available online. *Proc. Western Soc. Weed Sci.* 56:93.
- Vallotton, A. D., Abbott, L. B., and T. M. Sterling. 2003. African rue seedling response to herbicides applied under drought stress. *Proc. Western Soc. Weed Sci.* 56:26.
- Ratnayaka, H. H., T. M. Sterling, and W. T. Molin. 2003. Photosynthetic and antioxidative responses in cotton and spurred anoda under progressive drought. *WSSA Abstracts* 43:53.
- Amador, R., H. H. Ratnayaka, T. M. Sterling and W. T. Molin. 2002. Diurnal patterns of antioxidant systems in cotton and spurred anoda. *ASPB 2002 Supplement*, p. 145.
- Ratnayaka, H. H., T. M. Sterling, and W. T. Molin. 2002. Antioxidative response of cotton and spurred anoda under progressive drought. *ASPB 2002 Supplement*, p. 143.
- Branum, K. S., H. H. Ratnayaka, A. D. Vallotton, and T. M. Sterling. 2002. Temperature response of picloram-resistant yellow starthistle (*Centaurea solstitialis* L.). *Proc. Western Soc. Weed Sci.* 55:7.
- Vallotton, A. D. and T. M. Sterling. 2002. Variation in swainsonine content among extraction methods and between locoweed genera. *Proc. Western Soc. Weed Sci.* 55:18.
- Molin, W. T., H. H. Ratnayaka, and T. M. Sterling. 2002. Effects of spurred anoda interference on yield and photosynthesis in cotton. *WSSA Abstracts* 41: 71.
- Ratnayaka, H. H., T. M. Sterling, and W. T. Molin. 2002. Antioxidative responses in cotton and spurred anoda under interference and drought. *WSSA Abstracts* 41: 71.
- Sterling, T. M., I. Ray, A. D. Vallotton, and R. P. Sabba. 2002. Recessive inheritance of picloram resistance in yellow starthistle (*Centaurea solstitialis* L.). *WSSA Abstracts* 41: 11.
- Ratnayaka, H. H., W. T. Molin, and T. M. Sterling. 2001. Oxidative stress tolerance in cotton and spurred anoda under competition and drought. *Amer. Soc. Botany Abstracts* 2001:75.
- Hernandez-Rios, I. and T. M. Sterling. 2001. Antioxidant response in prometryn-tolerant and -susceptible cotton varieties. *Proc. Western Soc. Weed Sci.* 54:28.
- Molin, W. T., H. H. Ratnayaka, and T. M. Sterling. 2001. Spurred anoda competition in wide row and ultra narrow row cotton. *Proc. Western Soc. Weed Sci.* 54:48.
- Ratnayaka, H., W. T. Molin and T. M. Sterling. 2001. Interaction between competition and oxidative stress tolerance in cotton and spurred anoda. *Proc. Western Soc. Weed Sci.* 54:52.
- Vallotton, A. D., R. P. Sabba, I. Ray and T. M. Sterling. 2001. Inheritance of picloram resistance in yellow starthistle. *Proc. Western Soc. Weed Sci.* 54:27.
- Hernandez-Rios, I. and T. M. Sterling. 2000. Lipid peroxidation as an index of prometryn damage in cotton. *Proc. Western Soc. Weed Sci.* 53:100.
- Kulshreshtha, S. and T. M. Sterling. 2000. Variation in amplified chloroplast genes from different locoweed varieties in New Mexico. *Proc. Western Soc. Weed Sci.* 53:15.
- Campanella, M. C., and T. M. Sterling. 1999. Photosynthetic rates among broom and threadleaf snakeweed populations. *Proc. West. Soc. Weed Sci.* 52:40.
- Eichler, E. R. and T. M. Sterling. 1999. Flowering variation among different broom and threadleaf snakeweed populations. *Proc. West. Soc. Weed Sci.* 52:37.
- Hernandez-Rios, I. and T. M. Sterling. 1999. Role of oxidative stress response in cotton tolerance to prometryn. *Proc. West. Soc. Weed Sci.* 52:16.
- Kulshreshtha, S. and T. M. Sterling. 1999. Strategy to study the phylogenetic relationship among different varieties of locoweed. *Proc. West. Soc. Weed Sci.* 52:143-144.
- Hou, Y., L. W. Murray, and T. M. Sterling. 1999. Phenotypic variation in broom [*Gutierrezia sarothrae* (Pursh) Britt. & Rusby] and threadleaf snakeweed [*G. microcephala* (DC.) Gray] snakeweed. *WSSA Abstracts* 39:20.
- Campanella, M.C., T.M. Sterling, and L.W. Murray. 1998. Chlorophyll and water potential variation among broom and threadleaf snakeweed populations. *Proc. West Soc. Weed Sci.* 51:38-39.
- Sterling, T.M., W.E. Dyer, M.E.Chaverra, J.K. Pepelnjak, and R.P. Sabba. 1998. Auxin-binding proteins from susceptible and dicamba-resistant kochia accessions. *Proc. West Soc. Weed Sci.* 51:29-30.
- Campanella, M. C., T. M. Sterling, and D. A. Thompson. 1997. The effects of *Walshia miscecolorella* feeding on swainsonine concentrations in silky crazyweed. *Proc. Western Soc. Weed Sci.* 50:23-24.

- Maynard, R. L. and T. M. Sterling. 1997. The influence of epicuticular wax on picloram photodegradation. Proc. Western Soc. Weed Sci. 50:80.
- Maynard, R. L. and T. M. Sterling. 1997. Picloram photodegradation in plant epicuticular wax. Weed Sci. Soc. Am. Abstracts 36:128.
- Parreira, R. E., T. M. Sterling, D. A. Thompson, and L. W. Murray. 1997. Broom and threadleaf snakeweed relative susceptibility to a natural infestation of the long-horned beetle. Proc. Western Soc. Weed Sci. 50:33-34.
- Rios-Torres, A., T. M. Sterling, and J. Schroeder. 1997. Efecto de imazethapyr, imazaquin y chlorimuron en maiz con diferente suel y niveles de humedad. XVIII Congreso Nacional de la Ciencia de la Maleza, November 3 to 7, p. 41.
- Rios-Torres, A., T. M. Sterling, and J. Schroeder. 1997. Efecto de imazethapyr, imazaquin y chlorimuron en hidroponia con diferente pH y potenciales osmoticos. XVIII Congreso Nacional de la Ciencia de la Maleza, November 3 to 7, p. 42.
- Sabba, R. P., T. M. Sterling, and N. K. Lownds. 1997. Complex genetics of yellow starthistle (*Centaurea solstitialis* L.) resistance to the auxinic herbicides picloram and clopyralid. Weed Sci. Soc. Am. Abstracts 36:124.
- Valenzuela-Valenzuela, J., N. K. Lownds, and T. M. Sterling. 1997. Clopyralid uptake, translocation and ethylene production in resistant and susceptible yellow starthistle plants. Proc. Western Soc. Weed Sci. 50:36.
- Sabba, R. P., T. M. Sterling and N. K. Lownds. 1996. Inheritance of yellow starthistle resistance to the auxinic herbicides picloram and clopyralid. Plant Physiol. 111S:117.
- Gibbs, L. A., T. M. Sterling and N. K. Lownds. 1996. Picloram response by picloram-resistant and -susceptible yellow starthistle in a replacement series and F1 seedlings. Proc. Western Soc. Weed Sci. 49:38.
- Maynard, R. L. and T. M. Sterling. 1996. Photodegradation of picloram within plant epicuticular wax. Proc. Western Soc. Weed Sci. 49:104.
- Murray, M. W., T. M. Sterling, and W. T. Molin. 1996. Varietal differences in response of cotton to prometryn. Proc. Western Soc. Weed Sci. 49:91-92.
- Rios-Torres, A., J. Schroeder, and T. M. Sterling. Behavior of three ALS inhibitors in two soils at different moisture levels. Proc. Western Soc. Weed Sci. 49:35-36.
- Sabba, R. P., T. M. Sterling, and N. K. Lownds. 1996. The role of ethylene in yellow starthistle resistance to the auxinic herbicide picloram. Proc. Western Soc. Weed Sci. 49:39.
- Sterling, T.M. and Y. Hou. 1996. Isozyme variation among broom snakeweed [*Gutierrezia sarothrae* (Pursh) Britt. & Rusby] and threadleaf snakeweed [*Gutierrezia microcephala* (DC.) Gray] populations. Weed Sci. Soc. Am. Abstracts 36:73.
- Anand, P., W. T. Molin, and T. M. Sterling. 1995. Differential tolerance of cotton cultivars to the herbicide prometryn. Weed Sci. Soc. Am. Abstracts 35:79.
- Gibbs, L. A., M. W. Murray, and T. M. Sterling. 1995. Comparison of picloram-resistant and -susceptible yellow starthistle in a replacement series. Proc. Western Soc. Weed Sci. 48:26.
- Hou, Y. and T. M. Sterling. 1995. Isozyme variation of broom and threadleaf snakeweed from four western states. Proc. Western Soc. Weed Sci. 48:21-22.
- Murray, M. W., T. M. Sterling, and W. T. Molin. 1995. Screening for prometryn tolerance in cotton varieties. Proc. Western Soc. Weed Sci. 48:41.
- Parreira, R. E., T. M. Sterling, D. C. Thompson and L. W. Murray. 1995. Damage potential of a long-horned beetle on broom and threadleaf snakeweed. Proc. Western Soc. Weed Sci. 48:31.
- Waldrop, M. P., L. A. Gibbs and T. M. Sterling. 1995. Prometryn uptake and translocation by Pima and Upland-type cotton seedlings. Proc. Western Soc. Weed Sci. 48:16-17.
- Molin, W. T., P. Anand, and T. M. Sterling. 1994. Differential tolerance of cotton (*Gossypium* sp.) cultivars to the herbicide prometryn. Plant Physiol. 105S:77.
- Sterling, T. M. and H. J. Jochem. 1994. Mechanisms of differential tolerance in locoweed to picloram and metsulfuron. Weed Sci. Soc. Am. Abstracts 34:29.
- Hou, Y. and T. M. Sterling. 1994. Phenotypic variability in broom snakeweed (*Gutierrezia sarothrae*). Weed Sci. Soc. Am. Abstracts 34:29.
- Molin, W. T., P. Anand, and T. M. Sterling. 1994. Differential tolerance to prometryn in cotton (*Gossypium* sp.). Weed Sci. Soc. Am. Abstracts 34:53.
- Pedersen, M. P., T. M. Sterling, and N. K. Lownds. 1994. Auxin and auxin-like herbicide binding in picloram-susceptible and -resistant yellow starthistle (*Centaurea solstitialis* L.). Southern Soc. Weed Sci. 47:246-247.
- Hou, Y., and T. M. Sterling. 1994. Genotype variation in broom snakeweed (*Gutierrezia sarothrae*) response to

- picloram. Southern Soc. Weed Sci. 47:218-219.
- Sterling, T. M., J. A. Parreira, and D. C. Thompson. 1994. Consumption differences among woolly loco varieties by a specialist weevil. Proc. Western Soc. Weed Sci. 47:17.
- Sterling, T. M., N. K. Lownds, and L. W. Murray. 1994. Effect of broom snakeweed stage of plant growth on picloram uptake and picloram-induced ethylene production. Proc. Western Soc. Weed Sci. 47:17-18.
- Morrison, R.G. and N.K. Lownds and T.M. Sterling. 1993. Effects of drought stress on picloram uptake, translocation and efficacy in Russian knapweed (*Centaurea repens* L.). HortScience 28:536.
- Sterling, T.M., N.K. Lownds, and T.V. de Soyza. 1993. Role of modified ethylene biosynthesis in yellow starthistle (*Centaurea solstitialis* L.) resistance to the herbicide, picloram. Plant Physiol. 102S:64.
- Hou, Y. and T.M. Sterling. 1993. Genetic variability in broom snakeweed. Proc. Southwest. Rocky Mountain Div. AAAS Annual Meeting 33:28.
- Hou, Y. and T.M. Sterling. 1993. Water stress effects on picloram translocation and carbohydrate movement in broom snakeweed. Proc. Western Soc. Weed Sci. 46:10.
- Jochem, H.J. and T.M. Sterling. 1993. Mechanisms of differential tolerance to picloram and metsulfuron in locoweed. Proc. Western Soc. Weed Sci. 46:8-9.
- Parreira, J.A., M.O. Waugh and T.M. Sterling. 1993. Restriction fragment length polymorphism analysis of two locoweed species. Proc. Western Soc. Weed Sci. 46:9.
- Pedersen, M.K., T.M. Sterling and N.K. Lownds. 1993. Differences in ethylene biosynthesis between picloram-susceptible and -resistant yellow starthistle and the role of ethylene in resistance. Proc. Western Soc. Weed Sci. 46:114-115.
- Welker, C. A. and T. M. Sterling. 1993. Picloram metabolism by rangeland weeds. Proc. Western Soc. Weed Sci. 46:8.
- Hou, Y. and T.M. Sterling. 1993. Isozyme studies of genetic variation in broom snakeweed [*Gutierrezia sarothrae* (Pursh) Britton & Rusby]. Weed Sci. Soc. Am. Abstracts 33:97.
- Morrison, R.G., N.K. Lownds, and T.M. Sterling. 1993. Picloram uptake, translocation and picloram-induced ethylene production in relation to water status of Russian knapweed (*Centaurea repens* L.). Weed Sci. Soc. Am. Abstracts 33:32.
- Pedersen, M.K., T.M. Sterling, and N.K. Lownds. 1993. Auxin binding by picloram-susceptible and -resistant yellow starthistle (*Centaurea solstitialis* L.) cell culture proteins. Weed Sci. Soc. Am. Abstracts 33:65.
- Sterling, T.M. 1993. Mechanisms of herbicide absorption across membranes. Weed Sci. Soc. Am. Abstracts 33:76.
- Lownds, N.K. and T.M. Sterling. 1992. Characterization of picloram-induced ethylene production in broom snakeweed and its role in herbicide activity. Plant Growth Reg. Soc. Amer., Quarterly 20:142.
- Morrison, R.G., N.K. Lownds, and T.M. Sterling. 1992. Characterization of picloram uptake, translocation and picloram-induced ethylene production in Russian knapweed. Proc. Western Soc. Weed Sci. 45:128.
- Hou, Y. and T.M. Sterling. 1992. Isozyme variation among and within populations of broom snakeweed. Proc. Western Soc. Weed Sci. 45:121.
- Pedersen, M.K., T.M. Sterling, and N.K. Lownds. 1992. Auxin binding in picloram susceptible and resistant yellow starthistle. Proc. Western Soc. Weed Sci. 45:121-122.
- Sterling, T.M. and D.C. Thompson. 1992. Variable response of a potential biocontrol agent to snakeweed species. Proc. Western Soc. Weed Sci. 45:40.
- Sterling, T.M. and N.K. Lownds. 1992. Picloram absorption by broom snakeweed [*Gutierrezia sarothrae* (Pursh) Britton & Rusby] leaf tissue. Weed Sci. Soc. Am. Abstracts 32:68.
- Hou, Y. and T.M. Sterling. 1991. Characterization of snakeweed genetic variability using gel electrophoresis. Plant Physiol. 96S:88.
- Lownds, N.K., T.M. Sterling and E.P. Fuerst. 1991. Modified ethylene production in picloram-resistant yellow starthistle (*Centaurea solstitialis* L.). Plant Physiol. 96S:78.
- Sterling, T.M. and N.K. Lownds. 1991. Factors affecting picloram absorption by broom snakeweed. Western Soc. Weed Sci. Proc. 44:47-48.
- Sterling, T.M., N.K. Lownds, E.P. Fuerst, T.S. Prather, and R.H. Callihan. 1991. Potential mechanism of picloram resistance in yellow starthistle (*Centaurea solstitialis* L.). Weed Sci. Soc. Am. Abstracts 31:80.
- Lownds, N.K. and T.M. Sterling. 1990. Picloram-induced ethylene production by broom snakeweed. Hort. Sci. 25:1108.
- Sterling, T.M. and N.K. Lownds. 1990. Picloram absorption by broom snakeweed and picloram-induced ethylene production. Proc. Western Soc. Weed Sci. 43:27.
- Sterling, T.M. and N.E. Balke. 1989. Bentazon metabolism by cultured plant cells of several species. Weed Sci. Soc.

- Amer. Abstracts 29:70.
- Sterling, T.M. and N.E. Balke. 1988. Effects of monooxygenase inhibitors on bentazon hydroxylation in rice and soybean suspension-cultured cells. Proc. North Cent. Weed Cont. Conf. 43:12-13.
- Sterling, T.M. and N.E. Balke. 1988. Is bentazon hydroxylation catalyzed by a cytochrome P-450 monooxygenase? *In* Factors affecting herbicidal activity and selectivity. Proc. Europ. Weed Res. Soc. Symp., 1988, p.199-200.
- Balke, N.E., and T.M. Sterling. 1988. Mechanism of bentazon absorption by cultured plant cells. *In* Factors affecting herbicidal activity and selectivity. Proc. Europ. Weed Res. Soc. Symp., 1988, p. 197-198.
- Sterling, T.M. and N.E. Balke. 1988. Absorption mechanism for the herbicide bentazon, a weak acid, by cultured plant cells. Plant Physiol. 86S:78.
- Sterling, T.M. and N.E. Balke. 1988. Metabolism of bentazon by soybean and velvetleaf (*Abutilon theophrasti* Medic.) suspension-cultured cells. WSSA Abstracts 28:70.
- Sterling, T.M., D.S. Silverman and N.E. Balke. 1987. Differential uptake of bentazon by soybean and velvetleaf suspension-cultured cells. Proc. NCWCC 42:4.
- Sterling, T.M. and N.E. Balke. 1986. Uptake and metabolism of bentazon by soybean and velvetleaf suspension cells. Proc. NCWCC 41:94.
- Sterling, T.M. and A.R. Putnam. 1986. Phytotoxic exudates from velvetleaf (*Abutilon theophrasti* Medic.): Environmental influences and isolation of phytotoxic components. WSSA Abstracts 26:61.
- Sterling, T.M. and A.R. Putnam. 1984. Phytotoxic exudates from velvetleaf trichomes and their possible ecological role. Proc. NCWCC 39:78.