**Dr. Mary E. Lucero**
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## Professional Positions

**Owner and Director,** End-O-Fite Enterprises $_{LLC}$, Spring, 2013 to present.
Restore natural microbial communities (microbiomes) to living systems for human and environmental health. Aid growers in developing high yielding organic production systems. Assist health care providers and consumers in restoring good health by rebuilding natural microbiomes.

**Research Molecular Biologist,** United States Department of Agriculture, Agricultural Research Service, Jornada Experimental Range, 2005 to Spring, 2013.
Planned and conducted independent and cooperative research examining the role of microbial endophytes in natural and micropropagated range plants. Published research. Obtained extramural support through competitive grant processes.

**Adjunct Faculty,** Molecular Biology Program, Graduate Program, and Plant and Environmental Sciences, New Mexico State University. Fall, 2000 to Present. *Not all programs span the 15 year tenure.*
Collaborate with university faculty, served as guest lector to classes, mentored and advised students, and sat on graduate committees and faculty search committees.

**Postdoctoral Research Chemist,** United States Department of Agriculture, Agricultural Research Service, Jornada Experimental Range, Fall, 1999 to 2005. Planned and conducted research examining the natural product chemistry of arid range plants. Cooperated with a team of animal and range scientists to explore the influence of phytochemical components on diet selection. Cooperated with plant geneticist to identify microbial endophytes in arid range plants.

**Postdoctoral Research Associate and MEDIC-B Parntership Coordinator,** Department of Agronomy and Horticulture, New Mexico State University, Spring, 1998 to Fall, 1999. Planned and conducted research investigating the biosynthesis of capsaicin in chile peppers. Cooperated with Indiana University to coordinate exchanges between biomedical students and faculty.

**Research Assistant**, Molecular Biology Program, New Mexico State University. Fall, 1992 to Fall, 1997. Planned and conducted research exploring biodegradation of explosives in plant and microbial systems, conducted research investigating drought stress tolerance in microbes.

**Science Teacher**, Picacho Middle School, Las Cruces, NM. Fall, 1987 - Spring, 1992. Taught courses in biology and earth sciences. Sponsored student organizations. Developed curriculum.

## Professional Preparation

| Undergraduate Institution: | Major: | Degree & Year: |
|---|---|---|
| New Mexico State University | Agricultural and Extension Education | B.S. 1986 |

| Graduate Institutions: | Major: | Degree & Year: |
|---|---|---|
| New Mexico State University | Curriculum and Instruction | M.A. 1988 |
| New Mexico State University | Molecular Biology (Minor Toxicology) | Ph.D. 1997 |
| Postdoctoral Institutions: | Area: | Inclusive Dates (years): |
| New Mexico State University | Plant Secondary Chemistry | (1997-1999) |
| USDA-ARS Jornada Experimental Range | Plant Secondary Chemistry Characterization of Plant Endophytes | 1999-2005 |

**Peer Reviewed Publications**


**Tahtamouni ME, Khresat S, Lucero ME, Sigala J, Unc A, 2016.** Diversity of endophytes across the soil-plant continuum for Atriplex spp. in arid environments. Journal of Arid Land **8**:241-253.

**Nelson C, Unc A, Lombard K, Lucero M, Perkins, S. 2014.** Impact of seed exposure to plant material on plant growth and development on remediated arid lands. American Society of Mining and Reclamation Journal. 3(1):41-69.

**Hao G-Y, Lucero ME, Sanderson SC, Zacharias EH, Holbrook NM. 2012.** Polyploidy enhances the occupation of heterogeneous environments through hydraulic related trade-offs in *Atriplex canescens* (Chenopodiaceae). *New Phytologist*.

**Osuna-Avila P, Barrow J, Lucero M, Aaltonen RE. 2012.** Relationship between plant lipid bodies and fungal endophytes. *Revista Terra Latinoamericana* **30**: 39-45.

**Lucero ME, Unc A, Cooke P, Dowd S, Sun S. 2011.** Endophyte microbiome diversity in micropropagated *Atriplex canescens* and *Atriplex torreyi* var *griffithsii*. *PLoS ONE* **6**: e17693.

**Reyes-Vera I, Lucero M, Barrow J. 2010.** An improved protocol for micropropagation of saltbush (*Atriplex*) species. *Native Plants Journal* **11**: 53-56.

**Lucero ME, Dreesen DR, VanLeeuwen DM. 2010.** Using hydrogel filled, embedded tubes to sustain grass transplants for arid land restoration. *Journal of Arid Environments* **74**: 987-990.

**Lucero ME, Estell RE, Fredrickson E. 2010.** Composition of C*eanothus gregii* oil as determined by steam distillation and solid-phase microextraction. *Journal of Essential Oil Research* **22**: 140-142.

**Lucero M, Estell R, Tellez M, Fredrickson E. 2009.** A retention index calculator simplifies identification of plant volatile organic compounds. *Phytochemical Analysis* **20**: 378-384.

**Barrow JR, Lucero ME, Reyes-Vera I, Havstad KM. 2008.** Do symbiotic microbes have a role in plant evolution, performance and response to stress? *Communicative and Integrative Biology* **1**: 69-93

**Lucero M, Barrow JR, Osuna P, Reyes I. 2008.** A cryptic microbial community persists within micropropagated *Bouteloua eriopoda* (Torr.) Torr. Cultures. *Plant Science* **174**: 570-575.

**Lucero ME, Barrow JR, Osuna P, Reyes I, Duke SE. 2008.** Enhancing native grass productivity by cocultivating with endophyte-laden calli. *Rangeland Ecology and Management* **61**: 124-130.

**Barrow J, Lucero M, Reyes-Vera I, Havstad K. 2007.** Endosymbiotic fungi structurally integrated with leaves reveals a lichenous condition of C4 grasses. *In Vitro Cellular and Developmental Biology - Plant* **43**: 65-70.

**Lucero ME, Barrow JR, Osuna P, Reyes I. 2006.** Plant-fungal interactions in arid and semi-arid ecosystems: Large-scale impacts from microscale processes. *Journal of Arid Environments* **65**: 276-284.

**Lucero ME, Fredrickson EL, Estell RE, Morrison AA, Richman DB. 2006.** Volatile composition of *Gutierrezia sarothrae* (broom snakeweed) as determined by steam distillation and solid phase microextraction. *Journal of Essential Oil Research* **18**: 121-125.

**Hyder PW, Fredrickson EL, Estell RE, Lucero ME, Remmenga MD. 2005.** Loss of phenolic compounds from leaf litter of creosotebush [*Larrea tridentata* (sess. & moc. Ex dc.) cov.] and tarbush (*Flourensia cernua* dc.). *Journal of Arid Environments* **61**: 79-91.

**Lucero ME, Estell RE, Sedillo RL. 2005.** The composition of *Dalea formosa* oil determined by steam distillation and solid-phase microextraction. *Journal of Essential Oil Research* **17**: 645-647.

**Medina AL, Lucero ME, Holguin FO, Estell RE, Posakony JJ, Simon J, O'Connell MA. 2005.** Composition and antimicrobial activity of *Anemopsis californica* leaf oil. *Journal of Agricultural and Food Chemistry* **53**: 8694-8698.

**Lucero ME, Estell RE, Fredrickson EL. 2003.** The essential oil composition of *Psorothamnus scoparius* (a. Gray) Rydb. *Journal of Essential Oil Research* **15**: 108-111.

**Hyder PW, Fredrickson EL, Estell RE, Lucero ME. 2002.** Transport of phenolic compounds from leaf surface of creosotebush and tarbush to soil surface by precipitation. *Journal of Chemical Ecology* **28**: 2475-2482.

**Lucero ME, Mueller W, Hubstenberger J, Phillips GC, O'Connell MA. 1999.** Tolerance to nitrogenous explosives and metabolism of TNT by cell suspensions of *Datura innoxia*. *In Vitro Cell. Dev. Biology-Plant* **35**: 480-486.

**Patent**

**Barrow, J.R., and Lucero, M.E. (2011)** Transfer and incorporation of heritable symbiotic fungi into non-host plants. . The United States of America as represented by the Secretary of Agriculture (Washington, DC, US)

**Book Chapters**

**Lucero M, DeBolt S, Unc A, Ruiz-Font A, Reyes L, McCulley R, Alderman S, Dinkins R, Barrow J, and Samac D 2014.** Using microbial community interactions within plant microbiomes to advance and evergreen agricultural revolution. M. Oelbermann ed. Sustainable agroecosystems in climate change mitigation.

**Lucero M 2011.** Detection of uncultured seed-borne endophytes in *Atriplex canesens*. In: S. SorvariA. M. Pirttilä eds. *Prospects and applications for plant-associated microbes. A laboratory manual part b: Fungi*

**Lucero M 2011.** Examination of seed-borne endophyte microbiomes. In: S. SorvariA. M. Pirttilä eds. *Prospects and applications for plant-associated microbes. A laboratory manual part b: Fungi*

**Published Symposium Proceedings**

**Lucero M, Barrow J, Reyes-Vera I, Sedillo R 2008**. Examining endophyte interactions within fourwing saltbush (*Atriplex canescens*).In C. L. Wambolt, S. G. Kitchen, M. R. Frisina, B. Sowell, R. B. Keigley, P. Palacios, J. Robinson. *Proceedings of the 15th Wildand Shrub Symposium: Shrublands: Wildlands and Wildlife Habitats*. Bozeman, Montana: Quinney Library, Utah State University. 159-165.

**Barrow JR, Lucero ME, Osuna P, Reyes I, Aaltonen RE 2004**. Fungal genomes that influence basic physiological processes of black grama and fourwing saltbush in arid southwestern rangelands.In R. E. Sosebee, D. B. Wester, D. M. Birton S. G. McArthur. *Shrubland Dynamics-Fire and Water*. Lubbock, Texas: USDA Forest Service. 123-131.

**Lucero ME, Estell RE, Anderson DM, Fredrickson EL, Remmenga M 2004.** Differences in volatile profiles between populations of *ceratoides lanata* var. Subspinosa (rydb.) j.T. Howell In R. E. Sosebee, D. B. Wester, C. M. Britton, E. D. McArthurS. G. Kitchen. *Shrubland Dynamics-Fire and Water*. Lubbock, Texas: US Forest Service 142-146.

**Synergistic Activities**

*Community Outreach*. Efforts to interact with local and larger communities has included presentations and demonstrations to various K-12 students from Southern New Mexico, teacher workshops, presentations to community organizations (New Mexico Museum of Natural History, Local PEO and NAFRE chapters, Bridges to American Indian Students Programs, Graduate Student Organizations, and National Onion Association, and others), and service on advisory board of a local charter school and on the Helping Kids be Kids Foundation. Serve a coach and alumni officer for Centennial High School FFA. Research has been featured nationally in Scientific American, New Scientist, International Innovation, and Agricultural Research magazines.

*Adjunct Faculty, Department of Plant and Environmental Sciences (*2001-2005, 2010 to present) and *Molecular Biology Program* (2004 to present), New Mexico State University, Las Cruces, NM. Mentor students in special topics and laboratory research projects, guest lector, advise graduate students and serve on graduate committees.

*FESIN (Fungal Environmental Sampling and Informatics Network) Spring, 2009 to 2013.* This is an NSF-funded research coordination network of mycologists and ecologists coordinating development of rapid identification methods for fungi from environmental samples, creating cyberinfrastructure for retrieval of biologically relevant information on fungal taxa, and stimulating educational and outreach opportunities in fungal ecology.

*Jornada LTER. 2006 to 2013. Collaborator.* Developing an Access database to manage host plant and environmental microbial and genetic data, using field codes and naming conventions compatible with LTER data systems.

*Shrub Research Consortium Executive Committee*. 2004 to 2013. Work with the committee to plan symposia, proceedings publication, and related activities.