

**JAMES R. BRANDLE**, Professor – Shelterbelt Ecology/Applied Ecology

## **EDUCATION**

B.S. Botany, University of Tennessee, Knoxville (1966)  
M.S. Forest Biology, University of Missouri, Columbia (1970)  
Ph.D. Tree Physiology, University of Missouri, Columbia (1974)

## **PROFESSIONAL EXPERIENCE**

1997 - Present	Professor	School of Natural Resources, UNL
1981 - 1997	Associate Professor	Dept. Forestry, Fisheries and Wildlife, UNL
1975 - 1981	Assistant Professor	Dept. Forestry, Fisheries and Wildlife, UNL
1974 - 1975	Post-doctoral Fellow	Dept. Range Science, Utah State University

## **CURRENT TEACHING**

NRES 417/817 Agroforestry Systems in Sustainable Agriculture  
Ag 103/NRES 103 Introduction to Agriculture and Natural Resource Systems

In 2009 I took over the major responsibility for the College wide course (Ag103/NR103) required of all majors in the College of Agricultural Sciences and Natural Resources. I teach 3 of the 4 sections (2 of 3 in the fall and 1 in the spring). Each section has between 100 and 125 students. This past year we restructured the class and students now work in teams to produce a paper on some aspect of an environmental challenge or event. The teams produce a short white paper and a poster for presentation at an end of the semester poster session.

Our emphasis remains on providing the students a common knowledge base upon which to draw as they pursue their respective majors. We focus on assessing information quality and reliability and how to use the information to form opinions which they can then support with factual information. The class also exposes the students to the various sides of the issues and challenges they will face as they take their place in their fields.

## **RESEARCH**

Over the past 37 years our research has focused on the role that shelterbelts play in our agricultural systems. Initially our focus was on microclimate effects and crop yields. For the last 10 years our emphasis has been on the mechanisms associated with the windbreak response and developing a better understanding of the flow mechanisms associated with windbreak structure. We have defined the three-dimensional structure of a tree windbreak in terms of surface area and volume and their arrangement. Our current research efforts have moved toward interdisciplinary efforts with a focus on the ecology of shelterbelts at the landscape scale. Working with colleagues in the Departments of Animal Science, Agronomy and Horticulture and Entomology we have a number of cooperative efforts to define and evaluate the role of woody plants in biological control of pests, diversification of production systems, carbon sequestration in woody species, the reduction of carbon dioxide emissions from agriculture and the enhancement of wildlife habitat, all as a part of an integrated agricultural system.

## RECENT EXTRAMURAL GRANTS AND CONTRACTS

2011 – 2015	Temperate Agroforestry in GHG Mitigation on Agricultural Lands: Accounting and Methodologies for Carbon and Indirect Benefits (\$50,000) J. Brandle	Nat. Agroforestry Ctr
2009 – 2013	Improving organic systems and assessing Their environmental impacts (\$1,494,431) C. Shapiro, Corresponding PI, J. Brandle, C. Francis, S. Knezevic, R. Wright, R. Johnson M. Bernards, G. Hergert, V. Schlegel, C. Wortmann, and D/ Lyon	USDA

## PROPOSAL SUBMITTED

1. Prairie Pines Wetland Program (\$162,742) The Nebraska Environmental Trust – pending
2. Prairie Pines Wetland Construction ( 52,633) Nebraska Department Environmental Quality – not funded
3. New Trees for Nebraska (\$222,169) McIntyre Stennis Program – not funded but resubmitted with others in a combined project on urban tree selection – pending

## AWARDS

**Outstanding Peer-reviewed Publication, 2010** - Puckett, Brandle, Johnson and Blankenship, Avian foraging patterns in crop field edges adjacent to woody habitat. *Agric. Ecosys. & Environ* 131:9-15.  
*Awarding organization:* Mississippi Chapter of The Wildlife Society

## UNL-CASNR Distinguish Teaching Award 2009

### Holling Family Senior Faculty Teaching Excellence Award 2008

*Awarding organization:* Holling Family Award Program for Teaching Excellence in Agriculture and Natural Resources, IANR

### 2008 Entomology Educational Project Award for the Extension Publication: Lady Beetles of Nebraska.

A.P. Cunningham (graduate student) J.R. Brandle, S.D. Danielson, and T.E. Hunt

*Awarding organization:* Board Certified Entomologists of Mid-America *Scope:* Regional

*Award description:* Recognition of an outstanding Extension publication in the area of Entomology

## Publications — Journal articles — last 6 years

Li, Y.Q., **Brandle, J.**, **Awada, T.**, Chen, Y.P., Han, J.J., Zhang, F.X., Luo, Y.Q., 2013. A

*Accumulation of carbon and nitrogen in the plant–soil system after afforestation of active sand dunes in China's Horqin Sandy Land.* *Agric. Ecosyst. Environ.* 177, 75–84.

Li, Y.Q., Han, J.J., Wang, S.K., **Brandle, J.**, Lian, J., Luo, Y.Q., Zhang, F.X., 2013. *Soil organic carbon and total nitrogen storage under different land uses in the Naiman Banner, a semiarid degraded region of northern China.* *Can. J. Soil Sci.* Available at: <http://pubs.aic.ca/doi/abs/10.4141/CJSS2013-074>.

Quinn, J.E., A. Oden, J.R. Brandle. 2013. *The influence of different cover types on American Robin nest success in organic agroecosystems.* *Sustainability.* 5:3502-3512

- Quinn, J.E., J. Brandle, and R. Johnson. (2012). *A farm-scale biodiversity and ecosystem services assessment tool: The Healthy Farm Index*. International Journal of Agricultural Sustainability 11(2):176-192. doi:10.1080/14735903.2012.726854.
- Schoeneberger, M.M., G. Bentrup, H. deGooijer, R. Soolanayakanahally, T. Sauer, J. Brandle, X. Zhou, and D. Current. 2012. *Agroforestry as a climate change mitigation and adaptation tool for agriculture*. Journal of Soil and Water Conservation 67: 128A-136A. doi:10.2489/jswc.67.5.128A
- Awada, T. R.El-Hage, M. Geha, D.A. Wedin, J.A. Huddle, X. Zhou, J. Msanne, R.A. Sudmeyer, D.L. Martin, and J.R. Brandle. 2012. *Intra-annual variability and environmental controls over transpiration in a 58-year-old stand of invasive woody Juniperus virginiana L. in the Nebraska Sandhills, USA*. Ecohydrology 6:731-740. (doi:10.1002/eco.1294)
- Li, Y., X. Zhou, J.R. Brandle, T. Shang, Y. Chen, J. Han. 2012. *Temporal progress in improving carbon and nitrogen storage by grazing exclosure practice in a degraded land area of China's Horqin Sandy Grassland*. Agriculture Ecosystems and Environment 150:55-61.
- Quinn, J.E., J. Brandle, and R. Johnson. 2012. *The effects of land sparing and wildlife-friendly practices on grassland bird abundance within organic farmlands*. Agriculture Ecosystems, & Environment. 161:10-16.
- Quinn, J.E, J.R. Brandle, R.J. Johnson, and A.J. Tyre. (2011) *Application of detectability in the use of indicator species: A case study with birds*. Ecological Indicators 11:1413-1418.
- Hernandez-Ramirez, G., T.J. Sauer, C.A. Cambardella, J.R. Brandle and D.E. James. (2011) *Carbon sources and dynamics in afforested and cultivated corn belt soils*. Soil Sci. Soc. of Am. J. 75:216-225.
- Zhou, X.H., J.R. Brandle, T.N. Awada, M.M. Schoeneberger, D.L. Martin, Z.H Tang. (2011) *The use of forest-derived specific gravity for the conversion of volume to biomass for open grown trees on agricultural land*. Biomass and Bioenergy 35:1721-1731.
- Hou, Q., L.J. Young, J.R. Brandle, and M.M. Schoeneberger. (2011) *A spatial model approach for assessing windbreak growth and carbon stocks*. J. Environ. Quality 40:842-852.
- Hoagland, L., L. Hodges, G.A. Helmers, J.R. Brandle and C.A. Francis. 2010. *Labor availability in an integrated agricultural system*. J. Sust. Agric. 34:532-548.
- Perry, M.E.L., W.H. Schacht, G.A. Ruark, and J.R. Brandle (2009) *Tree canopy effect on grass and grass/legume mixtures in eastern Nebraska*. Agroforestry Systems 77:23-35.
- Hynstrom, S.E., S.J. Josiah, P.D. Skelton, J.A. Gilsdorf, D.R. Virchow, J.R. Brandle, A.K. Jayaprakash, K.M. Eskridge and K.C. VerCauteren. (2009) *White-tailed deer browsing and rubbing preferences for trees and shrubs that produce non-timber forest products*. HortTechnology 19:204-211.
- Puckett, H.L, J.R. Brandle, R.J. Johnson, and E.E. Blankenship (2009) *Avian foraging patterns in crop field edges adjacent to woody habitat*. Agriculture Ecosystems and Environment 131:9-15.
- Mize, C., J.R. Brandle, M. Schoeneberger, and G. Bentrup (2008) *Ecological function, development, and design of shelterbelt systems in North America*. In: Jose, S. and A.M. Gordeon (eds) *Toward Agroforestry Design – An Ecological Approach*. Springer, NY. p. 27-54.
- Zhou, X.H., J.R. Brandle, C.W. Mize, and E.S. Takle (2008) *Relationship of three-dimensional structure to shelterbelt function: A theoretical hypothesis*. In: D.R. Batish, R.K. Kohli, S. Jose,

- and H.P. Singh (eds.) *Ecological Basis of Agroforestry*. Taylor & Francis, Boca Raton, FL. p. 273-285.
- Mize, C.W., J. Colletti, W. Batchelor, S.S. Kim, E.S. Takle, and J.R. Brandle (2008) *Modeling a field shelterbelt system with the shelterbelt agroforestry modeling system*. In: D.R. Batish, R.K. Kohli, S. Jose, and H.P. Singh (eds.) *Ecological Basis of Agroforestry*. Taylor & Francis, Boca Raton, FL. p. 273-285
- Sauer, T.J., C.A. Cambardella, and J.R. Brandle (2007) Soil carbon and tree litter dynamics in a red cedar-scotch pine shelterbelt. *Agroforestry Systems* 71:163-174.
- Zhou, X.H., J. Brandle, M. Schoeneberger, and T. Awada (2007) *Developing above ground biomass equations for open-grown multiple-stemmed tree species: Shelterbelt grown Russian olive*. *Ecological Modeling* 202:311-323.
- Dosskey, M.G., K.D. Hoagland, and J.R. Brandle (2007) *Change in filter strip performance over ten years*. *Journal of Soil and Water Conservation* 62: 21-32.
- Zhang, D.S., A. Samal, and J.R. Brandle. (2006) *A Method for estimating fractal dimension of tree crowns from digital images*. *International Journal of Pattern Recognition and Artificial Intelligence* 20:1-11.
- Hodges, L., E. Daningsih, and J. Brandle (2006) *Comparison of an antitranspirant spray, a polyacrylamide gel and wind protection on early growth of muskmelon*. *HortScience* 41:361-366.
- Samal, A., J.R. Brandle, and D.S. Zhang (2006) *Texture as the basis for individual tree identification*. *Information Sciences* 176:565-576.
- Kriz, J., S.D. Danielson, J.R. Brandle, and E.E. Blankenship (2006) *Relative abundance of exotic and native Coccinellidae (Coleoptera) in southeast Nebraska alfalfa*. *Journal of Entomological Science* 41:84-86.
- Kriz, J., S.D. Danielson, J.R. Brandle, E.E. Blankenship and G. Henebry (2006) *Effects of aphid (Homoptera) abundance and surrounding vegetation on the encounter rate of Coccinellidae (Coleoptera), Chrysopidae (Neuroptera) and Nabidae (Hemiptera) in alfalfa*. *Journal of Entomological Science* 41: 211-220.

### **Publication – Book**

- Brandle, J.R., D.L. Hintz, and J.W. Sturrock (editors) 1988, *Windbreak Technology*. Elsevier. Amsterdam, 598 pages.

### **Publications – Book Chapters**

- Johnson, R.J., J.A. Jedlicka, J.E. Quinn, and J.R. Brandle 2011. Global perspectives on birds in agricultural landscapes. Pages 55-140. In: Campbell, W.B. and S.L. Ortiz (editors) *Issues in agroecology – Present status and future prospects*. Singer
- Quinn, J.E., J.R. Brandle, and R.J. Johnson (2009) *Development of a healthy farm index to assess ecological, economic, and social function on organic and sustainable farms in Nebraska's four agroecoregions*. In: A. Franzluebbers, ed., *Farming with Grass: Achieving Sustainable Mixed Agricultural Landscapes*. Pages 156-170.
- Brandle, J.R., J. Tyndal, R.A. Sudmeyer, and L. Hodges (2009) *Windbreak Practices*. In: Garrett, H.E., W.J. Rietveld, and R.F. Fisher (eds.) *North American*

- Agroforestry: An Integrated Science and Practice, 2<sup>nd</sup> edition, American Society of Agronomy, Madison, WI.
- Mize, C., J. Brandle, M. Schoeneberger, and G. Bentrup. 2008. Ecological development and function of shelterbelts in temperate North America. Pp 27-54. Jose S., and Gordon A. (eds.) *Toward Agroforestry Design: An Ecological Approach*. Springer, The Netherlands.
- Zhou, X.H., J.R. Brandle, C.W. Mize, and E.S. Takle (2008) *Relationship of three-dimensional structure to shelterbelt function: A theoretical hypothesis*. In: D.R. Batish, R.K. Kohli, S. Jose, and H.P. Singh (eds.) *Ecological Basis of Agroforestry*. Taylor & Francis, Boca Raton, FL. p. 273-285.
- Mize, C.W., J. Colletti, W. Batchelor, S.S. Kim, E.S. Takle, and J.R. Brandle (2008) *Modeling a field shelterbelt system with the shelterbelt agroforestry modeling system*. In: D.R. Batish, R.K. Kohli, S. Jose, and H.P. Singh (eds.) *Ecological Basis of Agroforestry*. Taylor & Francis, Boca Raton, FL. p. 273-285.

### **Conference posters**

- Koehler-Cole, K., Brandle, J. R., Annual Meeting American Society of Agronomy, ASA, Tampa, Florida, "Clover green manure performance and subsequent corn yields", Research/Creative Activity, Conference, International. (November 5, 2013).
- Koehler-Cole, K., Brandle, J. R., Ecological Society of America Annual Meeting, ESA, "Organic wheat-clover intercrop effects on soil nitrate levels and subsequent corn yields", Research/Creative Activity, Conference, National. (August 6, 2013).
- Brandle, J. R., Chen, X., Ballesteros, W., 13th North American Agroforestry Conference, Association for Temperate Agroforestry, Charlottetown, PEI, Canada, "Windbreak Removal in Eastern Nebraska", Research/Creative Activity, Conference, International, Accepted. (June 2013).