

# MICHAEL VINCENT MICKELBART

## PRESENT APPOINTMENT AND INFORMATION

Assistant Professor  
Department of Horticulture and Landscape Architecture  
Purdue University  
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### Appointment:

60% Extension  
30% Research  
10% Teaching

## EXTENSION

### 1. *Description of Extension Program*

#### Clientele

Commercial production nurseries (wholesale) and re-wholesale, commercial landscape installation and maintenance companies.

#### Needs

The current primary need of the green industry in Indiana is education of professionals involved in production, management, maintenance, or sales of nursery and/or landscape products. Labor is also an increasingly important concern: finding educated employees, insurance, and immigrant labor. Production and maintenance issues vary depending on the operation. Most wholesale production nurseries have few production problems apart from natural phenomenon (excess or inadequate rain, storms, etc). Vertebrate pests, particularly deer, are a major problem in Indiana.

#### Response

My role is primarily to act as a conduit between the industry and Purdue University. The industry sectors that I directly deal with are professional organizations such as the Indiana Nursery and Landscape Association (INLA), private companies, and county extension professionals. I make it my responsibility to be aware of the resources available at Purdue to deal with the wide-ranging issues in this diverse industry. I am not an entomologist, an engineer, or an economist, and I could not provide those specific tools to the industry. However, I act as a contact between the industry and those at Purdue who are experts in those areas. Examples of this are the articles published with Jennifer Dennis and Janna Beckerman. Managing risk is of interest to those business owners in the industry, so I asked Jennifer to help generate a series of articles to address this issue. Likewise, Sudden Oak

Death is a recently identified pathogen in Indiana that has the potential to completely shut down a business. Therefore, I wrote an article with Janna Beckerman, a plant pathologist at Purdue, giving growers a plan for reducing the potential impact of this disease. I also serve on the board of directors for the INLA. Another way in which I act as a link between the industry and Purdue is by co-chairing the education committee of the INLA. I am involved with organizing speakers for the annual winter meeting in Indianapolis.

## 2. *Extension Accomplishments*

### Extension Publications

**Mickelbart, M.V.** and J. Beckerman. 2006. What you need to know about *P. ramorum*. American Nurseryman 204(10):20-23.

**Mickelbart, M.V.** 2006. Managing for minimal losses in the event of Sudden Oak Death infestation. Indiana Nursery and Landscape News 66(6):30-31.

Dennis, J.H. and **M.V. Mickelbart**. 2006. Decreasing marketing risk. Ohio Florists Association Bulletin, May/June Issue, Number 896.

Dennis, J.H., B. Taylor, and **M.V. Mickelbart**. 2006. Risk management principles I: Production risk. Indiana Nursery and Landscape News 66(1):32-33.

Dennis, J.H., B. Taylor, and **M.V. Mickelbart**. 2006. Risk management principles II: Marketing risk. Indiana Nursery and Landscape News 66(2):32-34.

Dennis, J.H. and **M.V. Mickelbart**. 2006. Risk management principles III: Human risk. Indiana Nursery and Landscape News 66(3):34-35.

Dennis, J.H. and **M.V. Mickelbart**. 2006. Risk management principles IV: Financial risk. Indiana Nursery and Landscape News 66(4):26-28.

**Mickelbart, M.V.** and T.E. Marler. 1992. Pruning trees and shrubs in Micronesia. Agricultural Experiment Station Technical Bulletin, University of Guam. 18 pp.

### Regular Columns

Science Review with Dr. Mike

**Mickelbart, M.V.** 2006. Deer control in nurseries and landscapes. Indiana Nursery and Landscape News 66(1):34.

**Mickelbart, M.V.** 2006. How do plants respond to warm winters? Indiana Nursery and Landscape News 66(2):38.

**Mickelbart, M.V.** 2006. Is there enough bark to meet landscape demands? Indiana Nursery and Landscape News 66(3):36

**Mickelbart, M.V.** 2006 Tree planting depth and mulch. Indiana Nursery and Landscape News 66(4):34.

Editor, Indiana Plant Picks

Jan/Feb 2007. *Heuchera villosa* 'Caramel'. Indiana Nursery and Landscape News 67(1):18.

Mar/Apr 2007. *Coreopsis* 'Crème Brulee'. Indiana Nursery and Landscape News 67(2):10.

#### Industry Reports

**Mickelbart, M.V.** 2003. Development of a dry matter test for olives in New Zealand. A report to the New Zealand Olive Association. 15 pp.

**Mickelbart, M.V.** 2002. Report to the Jenderal Soedirman University Agronomi Study Program as part of the UNSOED DUE Project. 18 pp.

Jordan, B.R. and **M.V. Mickelbart.** 2002. Evaluation of a Draft Safety Assessment Report for Application A436, Insect Protected Cotton Containing Event 15985. Submitted to Food Standards Australia New Zealand (FSANZ).

#### Presentations at County & Regional Meetings

"Optimizing fertilization for woody ornamentals," 2007 Professional Landscape Management School, University of Southern Indiana, Evansville, IN, January 26, 2007.

"Strategies for minimizing production time of field-grown trees and shrubs," 2007 Indiana Green Expo, Indianapolis, IN, January 11, 2007.

"Optimizing fertilization for woody ornamentals," Marion County Annual Turfgrass and Ornamental Pest Control Workshop, Indianapolis, IN, November 28, 2006.

"Optimizing fertilization for woody ornamentals," Midwest Regional Turfgrass Foundation Winter Meeting, West Lafayette, IN, November 16, 2006.

"Indiana soil properties and their effects on plant growth and establishment," Northwest Indiana Nurseryman's Association, Merrillville, IN, February 7, 2006.

"Christmas tree nutrition," Indiana Christmas Tree Growers' Association Annual Meeting, Turkey Run State Park, IN, January 13, 2006.

"Diagnosis and prevention of nutritional deficiencies," Indiana Nursery and Landscape Association Annual Meeting, Indianapolis, IN, January 6, 2006.

“Diagnosing and alleviating stresses of woody plants,” Marion County Annual Turfgrass and Ornamental Pest Control Workshop, Indianapolis, IN, November 29, 2005.

“Common causes of nutrient deficiencies in woody plants,” 10<sup>th</sup> Annual Professional Horticulture Seminar, Floyd County, New Albany, IN, December 9, 2005.

“Diagnosis and prevention of stresses in woody plants,” Midwest Regional Turfgrass Foundation Winter Meeting, West Lafayette, IN, November 16, 2005.

“Avocado responses to light and implications for pruning,” Cooperative Extension, University of California, San Luis Obispo, Ventura, and Escondido, California, 2004.

“Physiology of plant mineral nutrition,” Ravensdown Fertiliser Company, Christchurch, NZ, 2004.

“Foliar nutrition for horticultural crops,” Ravensdown Fertiliser Company, Nelson, NZ, 2004.

“Factors involved in leaf photosynthetic performance: Implications for the NZ avocado grower,” Advantage 2003 Avocado Conference, Waihi Beach, NZ, 2003.

“Getting a handle on olive fruit maturity in New Zealand,” NZ Olive Association Annual Meeting, Auckland, NZ, 2002.

“Plant compounds involved in cold tolerance,” New Zealand Olive Growers’ Association National Frost Workshop, Blenheim, NZ, 2002.

“Phenological and physiological development of avocado trees in California,” California Avocado Research Symposium, Riverside, CA, 2000.

#### Industry Committees

July 2005-	Board, INLA
August 2005-	Co-Chair, Education Committee, INLA
August 2005-	Co-Chair, Indiana Accredited Horticulturist Program, INLA

#### Other Extension Activities

Regularly diagnose abiotic stress symptoms for the Purdue Plant & Pest Diagnostics Lab.

Regularly answer phone calls and e-mails from commercial growers.

Judge, Plant Propagation, 2006 National FFA Convention, Nursery/Landscape Career Development Event, Indianapolis State Fairgrounds, Oct. 26, 2006.

Regular contributor to the “Picture of the Week” website of the Purdue Plant & Pest Diagnostics Lab:

	Date	Title	# of hits as of Oct, 2006
2006	Feb. 20	Winter dessication	159
	May 1	Mulch volcanoes	318
	May 15	Residual roundup damage	310
	Sept. 4	Late summer leaf fall in trees	80
	Nov. 11	Smelly Gingko fruit	
2007	Jan. 22	Salt injury	

### 3. *Evidence of Regional and National Recognition*

#### Extension seminar evaluations

Meeting	Evaluation
Indiana Nursery and Landscape Association Annual Meeting, Indianapolis, IN, 2006	Valuable content: 100% agree Clear presentation: 100% agree Expectations met: 90% agree
Marion County Annual Turfgrass and Ornamental Pest Control Workshop, Indianapolis, IN, 2005	86% of respondents indicated the presentation was “Good” or “Excellent”
Midwest Regional Turfgrass Foundation Winter Meeting, West Lafayette, IN, 2005	Average rating: 4.15 (out of 5)

## RESEARCH

### 1. *Program Description*

The research in my lab is focused on how plants survive environmental stress, particularly water stress. The overall goal is to identify mechanisms that allow plants to continue to grow under water-limiting conditions. Eventually, we hope to incorporate these traits into woody plant species, either through traditional breeding methods, or genetic modification.

### 2. *Publications*

#### Refereed Publications

**Mickelbart, M.V.**, G.S. Bender, G.W. Witney, C. Adams, and M.L. Arpaia. 2007. Effect of clonal rootstocks on ‘Hass’ avocado yield components, alternate bearing, and nutrition. *Journal of Horticultural Science and Biotechnology* (in press).

Teixeira, E.I., D.J. Moot, and **M.V. Mickelbart**. 2007. Seasonal patterns of root C and N reserves of lucerne crops (*Medicago sativa* L.) grown in a temperate climate were affected by defoliation regime. *European Journal of Agronomy* 26:10-20.

- Mickelbart, M.V.**, P. Chapman, and L. Collier-Christian. 2006. Endogenous levels and exogenous application of glycinebetaine to grapevines. *Scientia Horticulturae* 111:7-16.
- Mickelbart, M.V.**, S. Melser, and M.L. Arpaia. 2007. Salinity-induced changes in ion concentrations of 'Hass' avocado trees on three rootstocks. *Journal of Plant Nutrition* 30:105-122.
- Mickelbart, M.V.** and D. James. 2003. Development of a dry matter test for olive. *New Zealand Journal of Crop and Horticultural Science* 31(3):269-276.
- Mickelbart, M.V.**, G. Peel, R.J. Joly, D. Rhodes, G. Ejeta, and P.B. Goldsbrough. 2003. Development and characterization of near-isogenic lines of sorghum segregating for glycinebetaine accumulation. *Physiologia Plantarum* 118:253-261.
- Yang, W.-J., P.J. Rich, J.D. Axtell, K.V. Wood, C.C. Bonham, G. Ejeta, **M.V. Mickelbart**, and D. Rhodes. 2003. Genotypic variation for glycinebetaine in *Sorghum bicolor*. *Crop Science* 43(1):162-169.
- Mickelbart, M.V.** and M.L. Arpaia. 2002. Rootstock influences changes in ion concentrations, growth, and photosynthesis of 'Hass' avocado trees in response to salinity. *Journal of the American Society for Horticultural Science* 127(4):649-655.
- Liu, X., **M.V. Mickelbart**, P.W. Robinson, R. Hofshi, and M.L. Arpaia. 2002. Photosynthetic characteristics of avocado leaves. *Acta Horticulturae* 575:865-874.
- Robinson, P.W., **M.V. Mickelbart**, X. Liu, G.W. Witney, and M.L. Arpaia. 2002. Development of a model of avocado tree growth for California. *Acta Horticulturae* 575:859-864.
- Mickelbart, M.V.** and T.E. Marler. 1998. Growth, gas exchange, and mineral relations of black sapote (*Diospyros digyna* Jacq.) as influenced by salinity. *Scientia Horticulturae* 72:103-110.
- Marler, T.E. and **M.V. Mickelbart**. 1998. Drought, leaf gas exchange, and chlorophyll fluorescence of field-grown papaya plants. *Journal of the American Society for Horticultural Science* 123(4):714-718.
- Mickelbart, M.V.** and T.E. Marler. 1996. Root-zone sodium chloride influences photosynthesis, water relations, and mineral content of sapodilla foliage. *HortScience* 31(2):230-233.
- Marler, T.E. and **M.V. Mickelbart**. 1994. Growth and chlorophyll fluorescence of *Spondias purpurea* L. as influenced by salinity. *Tropical Agriculture* 70(3):245-247.
- Marler, T.E., **M.V. Mickelbart**, and R. Quitigua. 1993. Papaya ringspot virus influences leaf physiology of papaya plants. *HortScience* 28(4):322-324.

Marler, T.E., and **M.V. Mickelbart**. 1992. Application of GA<sub>4+7</sub> to stem enhances carambola seedling growth. HortScience 27(2):122-123.

Marler, T.E., and **M.V. Mickelbart**. 1992. Repeated mechanical stress from leaf cuvette influences leaf gas exchange. HortScience 27(5):432-434.

### Abstracts

Yoo, C.Y., J.B. Jin, K. Miura, Y. Hua, M. Gosney, **M.V. Mickelbart**, R.A. Bressan, and P.M. Hasegawa. 2007. Ca<sup>2+</sup>/CaM signaling through AtGTL1 mediates drought stress adaptation. Plant Physiology, Plant Biology '07, Final Program and Abstract Supplement (in press).

Gosney, M.J. and **M.V. Mickelbart**. 2006. Measuring water loss in *Thellungiella halophila*. The Biology of Transpiration: From Guard Cells to Globe, October 10-14, 2006, Snowbird, Utah.

Moot, D.J., E. Teixeira, H.E. Brown, and **M.V. Mickelbart**. 2006. Changes in total biomass and N content of taproots of alfalfa crops under contrasting defoliation frequencies. 40th North American Alfalfa Improvement Conference and 19th Trifolium Conference, July 16-19, 2006. Ramada Inn Airport at Mall of America in Bloomington, Minnesota, USA.

<http://www.naaic.org/meetings/national/2006meeting/proceedings/clovers&medicago.htm>

Heath, R.L., **M.V. Mickelbart**, M.L. Arpaia, C. Fassio, and R. Miller. 2006. Water relations of avocado in response to changes in relative humidity. HortScience 41(4):1058.

Teixeira, E.I., D.J. Moot, H.E. Brown, and **M.V. Mickelbart**. 2005. Seasonal variation of taproot biomass and N content of lucerne crops under contrasting grazing frequencies. Proceedings of the XX International Grasslands Conference, University College, Dublin, Ireland, p. 529.

**Mickelbart, M.V.** and R.L. Heath. 2004. Avocado leaf development. Harnessing the Potential of Horticulture in the Asian-Pacific Region. Proceedings of the Joint Australia/New Zealand Society for Horticultural Science/New Zealand Society of Plant Physiologists Meeting, 1-3 September 2004, p. 124.

**Mickelbart, M.V.**, P.W. Robinson, C. Adams, G.W. Witney, and M.L. Arpaia. 2001. Avocado tree phenology in California. HortScience 36(3):527.

Robinson, P., X. Liu, **M.V. Mickelbart**, and M.L. Arpaia. 2000. Development of a phenological model of avocado tree growth in California. International Symposium on Tropical and Subtropical Fruits, Cairns, Australia, Symposium Booklet and Abstracts, pp. 33-34.

Liu, X., **M.V. Mickelbart**, P. Robinson, R. Hofshi, W.C. Arteberry, and M.L. Arpaia. 2000. Photosynthetic efficiency of avocado leaves. International Symposium on Tropical and Subtropical Fruits, Cairns, Australia, Symposium Booklet and Abstracts, p. 34.

**Mickelbart, M.V.**, R.J. Joly, D. Rhodes, G. Ejeta, and P.B. Goldsbrough. 1999. Development of near-isogenic lines of sorghum accumulating different concentrations of glycinebetaine. Plant Physiology, Plant Biology '99, Final Program and Abstract Supplement, p.120.

Ejeta, G., P. Goldsbrough, M. Tuinstra, E. Grote, and **M.V. Mickelbart**. 1999. Drought tolerance in sorghum: Mapping of QTL and analysis of near-isogenic lines. Agronomy Abstracts, ASA, Madison, Wisconsin, p. 242.

**Mickelbart, M.V.**, D.T. Hahn, D. Rhodes, R.J. Joly, G. Ejeta, and P.B. Goldsbrough. 1998. Analysis of glycinebetaine-deficiency in sorghum: gene mapping. Plant Physiology, Plant Biology '98, Final Program and Abstract Supplement, p.103.

**Mickelbart, M.V.** and M.L. Arpaia. 1995. The effect of salinity on growth and physiology of 'Hass' avocado on three rootstocks. HortScience 30(4):780.

Robinson, P.W., **M.V. Mickelbart**, and M.L. Arpaia. 1994. 'Hass' avocado phenology in California - Preliminary results. HortScience 29(5):517.

**Mickelbart, M.V.** 1994. Planting density effects on characteristics of sun and shade leaves of *Eucalyptus nitens* and *Eucalyptus ovata*. HortScience 29(5):569.

Marler, T.E. and **M.V. Mickelbart**. 1993. Drought, leaf gas-exchange, and water relations of papaya. HortScience 28(5):167.

**Mickelbart, M.V.** 1993. Leaf gas-exchange, water relations, and ionic responses of sapodilla to salinity. HortScience 28(5):451.

#### Book Reviews

**Mickelbart, M.V.** 2003. Review of "The Avocado – Botany, Production and Uses". New Zealand Journal of Crop and Horticultural Science 31(1):73.

#### Technical Publications

**Mickelbart, M.V.**, R. Miller, S. Parry, M.L. Arpaia, and R. Heath. 2002. Avocado leaf surface morphology. California Avocado Society Yearbook 84:139-150.

**Mickelbart, M.V.** and M.L. Arpaia. 2001. Branch position affects nutrient analysis results of cherimoya leaves. Subtropical Fruit News 8(1-2):29-30.

**Mickelbart, M.V.** and M.L. Arpaia. 1996. Choice of clonal rootstock affects salt tolerance of 'Hass' avocado. *Subtropical Fruit News* 4(2):6-9.

**Mickelbart, M.V.** 1994. Sapodilla - A possible crop for Southern California? *Fruit Gardener* 20(3):3, 17, 27.

**Mickelbart, M.V.** 1990. Current status of the mango in California. *Tropical Fruit World* 1(3):87.

*Proceedings*

**Mickelbart, M.V.** and M.L. Arpaia. 2006. Salinity tolerance of avocado rootstocks. In: M.L. Arpaia and R. Hofshi (eds.), *Proc. Of Avocado Brainstorming 2003*, Oct. 31-Nov. 1, 2003, Ventura, California, 9 pp.

[http://www.avocadosource.com/journals/brainstorming\\_2003/brainstorming\\_2003\\_toc.htm](http://www.avocadosource.com/journals/brainstorming_2003/brainstorming_2003_toc.htm)

Teixeira, E., D.J. Moot, H.E. Brown, and **M. Mickelbart**. 2006. Seasonal changes in root dry matter and N content of lucerne. 13<sup>th</sup> Aust. Soc. of Agr. Cong., Perth, WA.

Teixeira, E. D.J. Moot, H.E. Brown, and **M. Mickelbart**. 2005. Seasonal variation of taproot biomass and N. content of lucerne crops under contrasting grazing frequencies. 20<sup>th</sup> Intl. Grasslands Cong., Dublin, Ireland.

**Mickelbart, M.V.** 2001. Plant compounds involved with cold tolerance. New Zealand Olive Association National Frost Workshop Proceedings, 8 pp.

**Mickelbart, M.V.**, G. Ejeta, D. Rhodes, R.J. Joly, and P.B. Goldsbrough. 1999. Assessing the contribution of glycinebetaine to environmental stress tolerance in sorghum. *Molecular Approaches for the Genetic Improvement for Cereals for Stable Production in Water-Limited Environments. An International Workshop held at the International Maize and Wheat Improvement Center (CIMMYT), El Batan, Mexico, June 21-25, 1999.* 10 pp.

**Mickelbart, M.V.** 1997. Sapodilla: A potential crop for subtropical climates. In: J. Janick (ed.), *Progress in New Crops*, pp. 439-446. ASHS Publications, Alexandria, VA.

Arpaia, M.L., P.W. Robinson, X. Liu, **M.V. Mickelbart**, and G.W. Witney. 1996. Development of a phenological model for California 'Hass' avocado. *Proc. Calif. Avocado Res. Symp.*, April 1, 1996, Orange, CA. pp. 23-30.

**Mickelbart, M.V.** and M.L. Arpaia. 1995. Effects of salinity on growth and photosynthesis of 'Hass' avocado on three rootstocks. *Proc. Calif. Avocado Res. Symp.*, 1995. pp. 21-32.

Arpaia, M.L., G. Witney, P.W. Robinson, and **M.V. Mickelbart**. 1995. Development of a phenological model for California 'Hass' avocado. *Proc. Calif. Avocado Res. Symp.*, March 25, 1995, Riverside, CA. pp. 15-19.

### 3. *Research Support*

*Total support at Purdue to date: \$122,500.00*

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**Agency/Title:** Ohio State University/Role of fertility and Round-up in bark cracking

**Duration of Funding (Dates):** 2007-2009

**Total amount of award:** \$2,000

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** Indiana Nursery and Landscape Association/Unrestricted support

**Duration of Funding (Dates):** 2006-07

**Total amount of award:** \$1,000

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** Purdue Agricultural Research Programs/Genetic Basis of Plant Water Use Efficiency

**Duration of Funding (Dates):** 2007-2009

**Total amount of award:** \$34,000

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** University of California-Riverside/Developmental Leaf Physiology

**Duration of Funding (Dates):** 2006

**Total amount of award:** \$29,000

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** University of California-Riverside/Development of a program for calculating plastochron index

**Duration of Funding (Dates):** 2006

**Total amount of award:** \$20,000

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** Dow AgroSciences/Herbicide phytotoxicity assessments

**Duration of Funding (Dates):** 2006

**Total amount of award:** \$4,500

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** Michael Huff/Propagation of dwarf spruce

**Duration of Funding (Dates):** 2005 - Ongoing

**Total amount of award:** \$500

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** Bayer/Analysis of induced branching using cyclanillide

**Duration of Funding (Dates):** 2006

**Total amount of award:** \$5,000

**Your role (PI, Co-PI, Cooperator):** PI

**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** Tree Fund/Optimized sulphur nutrition for woody plant species  
**Duration of Funding (Dates):** 2007  
**Total amount of award:** \$7,500  
**Your role (PI, Co-PI, Cooperator):** PI  
**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** IR-4/Herbicide phytotoxicity assessments  
**Duration of Funding (Dates):** 2006  
**Total amount of award:** \$10,000  
**Your role (PI, Co-PI, Cooperator):** PI  
**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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**Agency/Title:** Syngenta/ Herbicide phytotoxicity assessments  
**Duration of Funding (Dates):** 2006  
**Total amount of award:** \$9,000  
**Your role (PI, Co-PI, Cooperator):** PI  
**If Co-PI, for how much of the total funding are you directly responsible:** 100%

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#### 4. *Workshops Attended*

April 10, 2006 – Proposal writing workshop. Sponsored by the Graduate School.

#### 5. *Advisees*

##### Committee Member

##### **Ph.D.**

Chan Yul Yoo, Ca<sup>2+</sup>/calmodulin-mediated stress signalling network in Arabidopsis. Major advisor: Mike Hasegawa.

##### **M.S.**

Mindy Bumgarner, Influence of irrigation method, media type, and fertilization rate on growth of *Quercus rubra* L. and *Juglans nigra* L. seedlings. Major advisor: Doug Jacobs (Forestry).

Kehua Wang, Waterlogging stress on cool-season turfgrass. Major advisor: Yiwei Jiang (Agronomy).

##### **Other**

Nick Wasmer, summer internship, Kalamazoo College, Effects of supplemental sulfur fertilization on growth and stress tolerance of 'Red Sunset' red maple (*Acer rubrum* L.). Project completed September 2006.

Jimmy Xu, summer research project, West Lafayette High School. Natural variation for water loss in *Thellungiella halopila* ecotypes. Project completed September 2006.

Sachit Revankar, Effects of supplemental sulfur fertilization on growth of four woody ornamental species. Project completed September 2006.

Bhaswati Ghosh, Osmotic adjustment in *Arabidopsis thaliana*. Project ongoing.

#### 6. *Lab Members*

Michael Gosney, Technician

7. ***Evidence of National and International Recognition***

*Editorial Boards*

PLoS One, 2006-

*Manuscript Reviews*

2007

Effect of nitrogen fertigation on first-year pecan seedling growth. HortTechnology.

2006

Stomata-autonomous function in the blue light response. PLoS ONE.

Decrease in sedoheptulose-1,7-bisphosphatase activity by antisense RNA in transgenic rice. Relationship between photosynthesis and plant growth from the vegetative growth stage under salt stress. Plant Physiology.

Salinity and water effects on 'Hass' avocado yields. Journal of the American Society for Horticultural Science.

'Hass' avocado (*Persea americana* Mill.) photosynthetic performance and growth in response to salt stress. Scientia Horticulturae.

2005

Salinity and water effects on 'Hass' avocado yields. Reviewed for the Journal of the American Society for Horticultural Science.

*Professional Talks and Invited Seminars*

"Glycinebetaine accumulation in ryegrass and its potential affect on plant growth and animal nutrition," ViaLactia Biosciences, Auckland, NZ, 2003.

"Avocado tree phenology in California," ASHS Annual Meeting, Sacramento CA, 2001.

"Photosynthetic characteristics of avocado leaves," Intl. Symp. Tropical and Subtropical Fruits, Cairns, Australia, 2000.

"Development of near-isogenic lines of sorghum contrasting for glycinebetaine accumulation," Plant Biology and Genetics Seminar, Purdue University, 1999.

"The effect of salinity on growth and physiology of 'Hass' avocado on three rootstocks," ASHS Annual Meeting, Montreal, Quebec, 1995.

“Responses of clonal avocado rootstocks to increasing root zone salinity,” presented to the California Avocado Research Board, Riverside, CA, 1994.

“Planting density effects on characteristics of sun and shade leaves of *Eucalyptus nitens* and *Eucalyptus ovata*,” ASHS Annual Meeting, Corvallis OR, 1994.

“Leaf gas-exchange, water relations, and ionic responses of sapodilla to salinity,” ASHS Annual Meeting, Nashville TN, 1993.

“Subtropical Fruit Production in Southern California,” College of Life Sciences Seminar Series, University of Guam, 1991.

Posters at National and International Meetings

“Avocado leaf development,” Joint Australia/New Zealand Society for Horticultural Science/New Zealand Society of Plant Physiologists Meeting, Coolum Beach, Australia, 2004.

“Understanding the physiological basis of avocado tree productivity,” Calif. Avocado Res. Symp., Riverside, CA, 2002.

“Avocado leaf morphology,” Calif. Avocado Res. Symp., Riverside, CA, 2001.

Participation in Professional Organizations

American Society of Plant Biologists

American Society for Horticultural Science

Secretary, Environmental Stress Working Group, 2005-2006

Chair-Elect, Environmental Stress working Group, 2006-2007

New Zealand Society of Plant Physiologists

**TEACHING**

**1. Classes taught**

Nursery Crops (HORT 411)

	2005	2006
Overall course rating	3.4	3.6
Overall instructor rating	3.4	3.9

**2. Guest Lectures**

“Tropical Crops” in HORT 101, Spring, 2006.

“Extension in the HLA Department” in HORT 601, September 25, 2006.

“Plant Nutrition and Fertilization” in HORT 317, October 23, 2006

### 3. *Preparation of Instructional Material*

Lab book for Plant Science II (PLSC 201), Lincoln University, 89 pp.

Laboratory handout for “Fruits – Form and Function.” Fundamentals of Horticulture (HORT 101) Laboratory, Purdue University, 5 pp.

Slide set and supplemental material for lecture on “Tropical Horticulture” in Fundamentals of Horticulture (HORT 101), also available on the web site:

<http://www.hort.purdue.edu/hort/courses/HORT101Spring/TropicalHort.htm>

Section on “Data Presentation” in lab manual for Fundamentals of Horticulture (HORT 101), Purdue University, 3 pp.

### 4. *Teaching Symposia or Training Meetings Attended*

September 7, 2007 – Expanding Your Teaching Toolkit: Teaching Problem Solving. Sponsored by Teaching and Learning Services, Purdue University.

“Outcomes-Based Teaching” presentation by Kevin Kirby. Offices of Agricultural Research Programs and Academic Programs Orientation, Sept 30, 2005.

Graduate Mentoring Workshop, Sept 20, 2005.

“Lecturing Techniques” Fall 2005 College Teaching Workshop Series 1: Basics of Teaching, Sept 27, 2005.

“Subjective Tests and Assigning Grades” Fall 2005 College Teaching Workshop Series 1: Basics of Teaching, Nov 1, 2005.

## **UNIVERSITY AND DEPARTMENTAL SERVICE**

### Committees

#### Departmental

2006-	HLA Undergraduate Advisor
2006-	HLA Search Committee for Floriculture position
2006-	HLA Search Committee for Department head
2005-	HLA Graduate Committee
2005-	HLA Seminar Committee
2005-	HLA Curriculum Committee

#### University

2006-07	President, Purdue Young Faculty Association
2006-	College of Agriculture Outcome Based Improvement Committee