

PERSONAL INFORMATION FOR DEPARTMENTAL WEB PAGE

Name Joseph Carl Scheerens

Area of Responsibility/Interests

- Directs and conducts research delineating the genetic, physiological and cultural determinants of fruit and vegetable quality and the quality of their processed products.
- Directs and conducts research identifying bioactive compounds in fruits and vegetables and delineating their interactivity resulting in chemoprevention.
- Directs and conducts research on pre- and postharvest factors affecting the phytonutritional components of fruit and vegetable crops.
- Directs and conducts research examining the potential of novel fruit and vegetable crops as potential dietary sources of phytonutrients.
- Directs and conducts research examining aspects of small fruit culture.
- Teaches H&CS 200, 600, 761 and 830; contributes to Department graduate and undergraduate curriculum.
- Presents information at OSU Extension and other extension venues.

Education History

B.S.	Agriculture (Horticulture)	May 1975	Univ. of Arizona, Tucson, AZ 85721
M.S.	Plant Breeding/Plant Genetics	Aug. 1975	Univ. of Wisconsin, Madison, WI 53706
Ph.D.	Agronomy & Plant Breeding	May 1985	Univ. of Arizona, Tucson, AZ 85721

Position Held Associate Professor: 70% OARDC; 30% OSU

Current/Recently Expired Activities

Research Projects

Recently Expired

- Quality parameters of fresh fruit juice
- Increasing the antioxidant level in Ohio berries for potential prevention and intervention of certain cancers in humans
- Chemoprevention studies of the effects of berries on colon cancer and on the cardiovascular system.
- Potassium fertilization to enhance fruit growth and antioxidant content of blueberries and black raspberries

Current

- Optimizing antioxidant level in Ohio berries for potential prevention and intervention of certain cancers in humans
- Prevention of lung and liver diseases associated with oxidative stress
- A high field nuclear magnetic resonance-based approach to profile biologically active plant metabolites using black raspberry-mediated inhibition of GI tract cancer cells as a model system
- Development of genetic variation for anthocyanin and carotenoid pigment content in native American maize

Courses Taught

- H&CS 999; Research; variable credit hours.
SP 05 – 1 student; 14 credit hrs
WI 05 – 1 student; 12 credit hrs
AU 04 – 1 student; 10 credit hrs
SU 04 – 2 students; 12 and 9 credit hrs
SP 04 – 2 students; 12 and 5 credit hrs
WI 04 – 2 students; 7 and 5 credit hrs
AU 03 – 1 student; 6 credit hrs
SU 03 – 1 student; 12 credit hrs
SP 03 – 2 students; 5 and 12 credit hrs
WI 03 – 2 students; 8 and 12 credit hrs
- H&CS 993; Individual Studies; variable credit hrs.
SU 05 – 1 student; 1 credit hr
- H&CS 830; Multidisciplinary Perspectives on Major Issues in Crop Quality; 2 credit hrs.
SP 05 – 6 students
- H&CS 693; Individual Studies; variable credit hrs.
WI 06 – 1 student; 4 credit hrs.
- H&CS 601; Issues in Crop and Turfgrass Sciences; 5 credit hrs.
WI 03 – 17 students
- H&CS 600; Issues in Horticulture and Crop Science; 5 credit hrs.
WI 08 – 13 students
WI 07 – 13 students
WI 06 – 32 students
- H&CS 200; Crop Science; 5 credit hrs
SU 03 – 21 students
WI 03 – 58 students

5-year Refereed Publications

Ozgen, M., F.J. Wyzgoski, A.Z. Tulio, Jr., A. Gazula, A.R. Miller, J.C. Scheerens, R.N. Reese and S.R. Wright. 2008. Antioxidant capacity and phenolic antioxidants of midwestern black raspberries grown for direct markets are influenced by production site. HortScience (Accepted with revision).

Tulio Jr., A.Z. R.N. Reese, F.J. Wyzgoski, P.L. Rinaldi, R. Fu, J.C. Scheerens and A.R. Miller 2008. Cyanidin 3-rutioside and cyanidin 3-xylosylrutinoside as primary phenolic antioxidants in black raspberry. J. Agric. Food Chem. 56:1880-1888.

Prajitna, A., I.E. Dami, T.E. Steiner, D.C. Ferree, J.C. Scheerens and S. J. Schwartz. 2007. Influence of cluster thinning on phenolic composition, resveratrol and antioxidant capacity in Chambourcin wine. *Amer. J. Enol. Vitic.* 58:346-350.

Stanton, M. A., J.C. Scheerens, R.C. Funt and J.R. Clark. 2007. Floral competence of primocane-fruiting blackberries Prime Jan and Prime Jim grown at three temperature regimes. *HortScience* 42:508-513.

Gazula, A., M.D. Kleinhenz, J.C. Scheerens and P.P. Ling. 2007. Anthocyanin levels in nine lettuce (*Lactuca sativa*) cultivars: influence of planting date and relations among analytic, instrumented and visual assessments of color. *HortScience* 42:232-238.

Pratt, R. C., J.C. Scheerens and S.J. Park. 2006. Seven diverse *Phaseolus* germplasm lines derived through interspecific hybridization of common bean and tepary bean. *HortScience* 41:265-269.

Ozgen, M., A.Z. Tulio, Jr., R.N. Reese, J.C. Scheerens and A.R. Miller. 2006. Modified 2,2-azino-bis-3-ethylbenzothiazoline-6-sulfonic acid method to measure antioxidant capacity of selected small fruits and comparison to ferric reducing antioxidant power and 2,2,-diphenyl-1-picrylhydrazyl methods. *J. Agric. Food Chem.* 54:1151-1157.

Wszelaki, A. L., J.F. Delwiche, S. Walker, S., R.E. Liggett, J.C. Scheerens and M.D. Kleinhenz. 2005. Sensory quality and mineral and glycoalkaloid concentrations in organically and conventionally grown redskin potatoes (*Solanum tuberosum*). *J. Sci. Food Agric.* 85:720-726.

Polter, S.B., D.J. Doohan and J.C. Scheerens. 2005. The effect of irrigation on terbacil tolerance in field-grown strawberries. *HortTechnology* 15:560-564.

Radovich, T.J.K., M.D. Kleinhenz, J.G. Streeter, A.R. Miller and J.C. Scheerens. 2005. Planting date affects total glucosinolate concentrations in six commercial cultivars of cabbage (*Brassica oleraceae* L., Capitata Group). *HortScience* 40:106-110.

Polter, S.B., D.J. Doohan and J.C. Scheerens. 2004. Tolerance of greenhouse-grown strawberries to terbacil as influenced by cultivar, plant growth stage, application rate, application site and simulated post-application irrigation. *HortTechnology* 14:223-229.

Rivera, T.M., M.F. Quigley and J.C. Scheerens. 2004. Performance of component species in three apple-berry polyculture systems *HortScience* 39:1601-1606.

Kleinhenz, M.D., D.G. French, A. Gazula, and J.C. Scheerens. 2003. Variety, shading, and growth stage effects on pigment concentrations in lettuce (*Lactuca sativa*) grown under contrasting temperature regimens. *HortTechnology* 13:677-683.

5-year Proceedings/Conference Publications

Scheerens, J.C., A.Z. Tulio, Jr., M. Ozgen, A.R. Miller, F.J. Wyzgoski, M.M. Giusti, P. Jing, J.A. Bomser, B.L. Bishop, S.R. Wright, R.N. Reese, P.L. Rinaldi and R. Fu. 2007. The dietary intervention research program: Plant-based research summary 2007. Pp. 44-55. In: Proc. North American Bramble Growers Association Conference, January 15-17, 2007, Columbus, OH

Pratt, R. C., J.C. Scheerens and S.J. Park. 2005. Selection of backcross *Phaseolus* germplasm lines derived through interspecific hybridization of common bean. Pp. 49-50. In: Proc. Annual Bean Improvement Cooperative Conference, March 2006.

Kovach, J., M. Ozgen, L. Harper, S. Wright, and J.C. Scheerens. 2005. Do organically grown strawberries have higher levels of phytochemicals and can consumers tell the difference? Pp. 53-54, In: Proceedings of the Organic Agriculture Consortium Conference: Transitioning to Organic Agriculture: Ecology, Economics and Marketing Proceedings, August 29-31, 2005, Wooster, OH.

Kleinhenz, M. D., J.C. Scheerens, S.D. Walker, A.L. Wszelaki, J. F. Delwiche and R.E. Liggett. 2005. Sensory quality and phytochemical concentrations in organically and conventionally grown redskin potatoes. Pp. 52-53. In: Proceedings of the Organic Agriculture Consortium Conference: Transitioning to Organic Agriculture: Ecology, Economics and Marketing Proceedings, August 29-31, 2005, Wooster, OH.

Kleinhenz, M. D., Scheerens, J. C., Radovich, T. J., Sanchez-Vela, A., and Schult, B. 2004. Fresh cabbage sensory quality: Components and the impact of production factors. *Acta Horticulturae* 628:878-795.

Scheerens, J.C., D.D. Miller and A. Sanchez-Vela. 2003. Comparison of methods influencing grape juice safety and quality. pp. 102-120. In *Pouring on the quality*, Proc. 2003 Ohio Grape-Wine Short Course (T.E. Steiner, J.F. Gallander and D.C. Ferree, eds.), Feb. 9-11, 2003, Columbus, OH, The Ohio State University, Horticulture and Crop Science Series 733.

Funt, R.C. M.A. Ellis and J.C. Scheerens. 2003. Effect of fumigation and composted yard waste on strawberry yield, plant and root quality. Proc. of the XXVI Intl., Hortic. Congr. *Acta Horticulturae* 626:225-230.

Scheerens, J.C., M.D. Kleinhenz, D.C. Ferree, R.C. Funt, D.D. Miller, T.E. Steiner and A. Sanchez-Vela. 2003. From farm to consumer B linking crop physiology and production with buyer-oriented quality. II. Fruits. In *Proceedings of the International Conference on Quality in Chains, an Integrated View on Fruit and Vegetable Quality*. (L.M.M. Tijskens and H.M. Vollebregt, eds). 6-9 July 2003. Wageningen, The Netherlands. *Acta Horticulturae* 604 (2):417-423.

Kleinhenz, M.D., J.C. Scheerens, D.M. Francis, T.J.K. Radovich, D.G. French, A. Gazula, A. Wszelaki, A. Sanchez Vela A.A.C. McIntyre, J. Delwiche, P. Ling, K. Amisi, and D.J. Doohan. 2003. From Farm to Consumer B Linking Crop Physiology and Production with Buyer-oriented Quality. I. Vegetables. *In Proceedings of the International Conference on Quality in Chains, an Integrated View on Fruit and Vegetable Quality.* (L.M.M. Tijskens and H.M. Vollebregt, eds). 6-9 July 2003. Wageningen, The Netherlands. *Acta Horticulturae* 604 (1):95-104.

5-year Grant Activity

Project	Granting Agency	Duration	JCS Effort	Total Funding Level
Preparation and quality evaluation of unique varietal grape juices with commercial potential	Appalachian Ohio Grape Producer=s Group	12/03-6/04	50%	\$9,250
Special research grant for dietary intervention OH	USDA CSREES	9/03-8/05	5%	\$252,000
Special research grant for dietary intervention: Chemoprevention of oral and GI tract cancers with berries	USDA CSREES	9/04-8/05	5%	\$835,768
Federal administration grant for dietary intervention: Chemoprevention of GI tract cancers with berries	USDA CSREES	9/05-8/06	5%	\$682,409
Special research grant for dietary intervention: Prevention of lung and liver diseases associated with oxidative stress	USDA-CSREES	9/06-8/07	6.5%	\$694,980
A high field nuclear magnetic resonance-based approach to profile biologically active plant metabolites using black raspberry –mediated inhibition of GI tract cancer cells as a model system.	OARDC Research Enhancement Competitive Grants Program	3/07-2/09	17.6%	\$99,936
Special research grant for dietary intervention	USDA-CSREES-HATCH	7/07-6/08	6.5%	\$489,536
Development of genetic variation for anthocyanin and carotenoid pigment content in native American maize	OARDC Research Enhancement Competitive Grants Program	4/08-4/10	30%	\$46,493
Fruit Phytonutrients for Health and Well-being	Bond Development Funds	1/08-12/08	100%	\$61,000
Integrated efforts to improve food quality and nutritional education among Ohio children to promote optimal health	USDA-CSREES-NRI	4/08-4/11	13.5%	\$741,843 pending

5-year Presentation List

Scheerens, J.C. and A.Z. Tulio, Jr. 2007. Genetic and cultural parameters affecting strawberry phytonutrient content. Address given at the 6th North American Strawberry Symposium, 9-12 Feb. 2007, Ventura, CA

Kovach, J., M. Ozgen, L. Harper, S. Wright and J.C. Scheerens. 2007. Organic strawberry production in Ohio and can consumers tell the difference? Address given at the 6th North American Strawberry Symposium, 9-12 Feb. 2007, Ventura, CA

Chanon, A. M., P.S. Jourdan and J.C. Scheerens. 2007. Stratification procedures optimizing seed germination, emergence and seedling efficiency in bottlebrush and red buckeye. HortScience 42:987.

Tulio, Jr., A.Z., M. Ozgen, R.N. Reese, A.R. Miller and J.C. Scheerens. 2007. Cyanidin 3-rutinoside levels and antioxidant properties in black raspberries as impacted by fruit maturation and storage temperature. HortScience 42:985.

Scheerens, J.C. and A.Z. Tulio, Jr. 2007. Nutraceuticals from the garden: How and why plants make them and how they affect our health. Ohio Master Gardener Conference, 15 Sept. 2007, Columbus, OH.

Scheerens, J.C., A.R. Miller and A.Z. Tulio, Jr. and M. Ozgen. 2007. Dietary intervention research program: Plant based research summary – January 2007. Ohio Fruit Growers Congress, 17 Jan. 2007, Columbus, OH.

Chanon, A. M., P.S. Jourdan and J.C. Scheerens. 2006. *Aesculus* pollen viability and longevity under frozen storage. HortScience 41:1020.

Chanon, A. M., P.S. Jourdan and J.C. Scheerens. 2006. Comparison of inflorescence morphology, anthesis and floral sex expression in bottlebrush and red buckeye. HortScience 41:1020.

Gazula, A., M.D. Kleinhenz, P.P., Ling and J.C. Scheerens. 2006. Planting date effects on anthocyanin concentrations in nine lettuce (*Lactuca sativa*) varieties and relationships among anthocyanin levels and instrumented and visual assessments of color. HortScience 41:1000.

Ozgen, M., A.Z. Tulio, Jr., A.M. Chanon, N. Janakiraman, R.N. Reese, A.R. Miller and J.C. Scheerens. 2006. Phytonutrient accumulation and antioxidant capacity at eight developmental stages of black raspberry fruit. HortScience 41:1082.

Ozgen, M., A.Z. Tulio, Jr., A.M. Chanon, N. Janakiraman, R.N. Reese, A.R. Miller and J.C. Scheerens. 2006. Variation in cornelian cherry (*Cornus mas* L.) phytonutrient capacity. HortScience 41:1038-1039.

Stanton, M. A., R.C. Funt, J.R. Clark and J.C. Scheerens. 2006. Floral competence of primocane-fruiting blackberries Prime Jan and Prime Jim grown at three temperature regimes HortScience 41:1048.

Tulio, Jr., A. Z., A.M. Chanon, N. Janakiraman, M. Ozgen, G.D. Stoner, R.N. Reese, A.R. Miller and J.C. Scheerens. 2006. Effects of storage temperatures on the antioxidant capacity and anthocyanin contents of black raspberries. HortScience 41:1043.

Tulio, Jr., A. Z., A.M. Chanon, N. Janakiraman, G.D. Stoner, R.N. Reese, A.R. Miller and J.C. Scheerens. 2006. Postharvest storage temperature influences bioactive components, antioxidant activity and physico-chemical properties of black raspberries. Institute of Food Technologists 2006 Book of Abstracts (Abstract # 054F-18).

Wyzgoski, F.J., A.R. Miller, J.C. Scheerens, P.L. Rinaldi, B.L. Bishop, R.N. Reese, M. Ozgen, A.Z. Tulio Jr., M.M. Giusti, J.A. Bomser. 2006. A nuclear magnetic resonance (NMR) spectroscopy-based approach to profile biologically active plant metabolites using black raspberry inhibition of colon cancer cell proliferation as a model system. HortScience 41:1000.

Wyzgoski, F.J., P.L. Rinaldi, R.N. Reese, J.C. Scheerens, A.R. Miller, B.L. Bishop, M.M. Giusti, J.L. Bomser, M. Ozgen, A.Z. Tulio Jr. and P. Jing. 2006. Using high field cryoprobe NMR experiments and multivariate analysis to identify bioactive components in black raspberries. 231st American Chemical Society National Meeting, Sept. 2006. Paper #995565

Reese, R.N., F.J. Wyzgoski⁵, A.R. Miller, J.C. Scheerens, P.L. Rinaldi, B.L. Bishop, M. Ozgen, A.Z. Tulio, Jr., M.M. Giusti and J.A. Bomser. 2006. Biologically active plant metabolites in black raspberries: A nuclear magnetic resonance (NMR) spectroscopy-based approach to identification of compounds inhibiting colon cancer cell proliferation. Botanical Society of America National Meeting, Book of Abstracts, Abstract 411.

Prajitna, A., I. Dami, T.E. Steiner, J.C. Scheerens, A.R. Miller and S.J. Schwartz. 2006. Do vineyard cultural practices improve health benefits in wines? OARDC Annual Conference, April 2006, Wooster, OH.

Dami, I. E., J.C. Scheerens, T.E. Steiner, S.J. Schwartz, A. Prajitna and A.R. Miller. 2006. The influence of cluster thinning on polyphenolic and antioxidant content of 'Chambourcin' fruit and wine. Amer. Soc. of Enol. Vitic. Eastern Section Conference.

Scheerens, J.C. and F.J. Wzgoski. 2006. Developing a model system for identifying bioactive black raspberry compounds with potential chemopreventive effects. OSU Dept. Horticulture and Crop Science Seminar Series, 28 April 2006.

Scheerens, J.C. and D.D. Miller. 2006. Apples - to your health. 2006 Great Lakes EXPO, 6 Dec. 2006, Grand Rapids, MI.

Scheerens, J.C. and D.D. Miller. 2006. Apples – to your health. Ohio Fruit Growers Congress, 18 Jan. 2006, Columbus, OH.

Green, T. P., F.J. Wyzgoski, R.N. Reese, P.L. Rinaldi, M. Ozgen, A.Z. Tulio Jr., A.R. Miller and J.C. Scheerens. 2005. Identification of biologically active metabolic constituents of black raspberry using HPLC, NMR and multiple correlations with biochemical and bioassay data. 230th American Chemical Society National Meeting, Washington, DC, Aug. 28-Sept. 1, 2005, AGFD-086.

Ozgen, M., A.Z. Tulio Jr., A.Gazula, J.C. Scheerens, R.N. Reese, A.R Miller, S.R. Wright, B.L. Black and I.M. Fordham. 2005. Comparison of autumnberry and cornelian cherry antioxidant potential with that of well-known fruit crops. HortScience 40:466.

Ozgen, M., A.Z. Tulio, Jr., A.R. Miller, R.N. Reese and J.C. Scheerens. 2005. Comparison of methods to determine antioxidant levels in fruit. HortScience 40:468.

Scheerens, J.C., T.E. Steiner, A.Z. Tulio Jr., M.Ozgen, D.D. Miller, R.N. Reese, A.R. Miller and D.C. Ferree. 2005. The commercial potential and antioxidant characteristics of unique varietal grape juices. HortScience 40:386.

Tulio Jr., A.Z., M. Ozgen, R.N. Reese, S.J. Schwartz, Q. Tian, G.D. Stoner, A.R. Miller and J.C. Scheerens. 2005. Anthocyanins as Primary Antioxidants in Black Raspberries. HortScience 40:467.

Tulio Jr., A.Z., M.Ozgen, R.N.Reese, A.R. Miller and J.C. Scheerens. 2005. An improved ABTS assay to measure antioxidant power of selected fruit samples and comparison to FRAP and DPPH assays. FAV Health 2005: International Symposium on Human Health Effects of Fruits and Vegetables. Quebec City, Quebec, Canada. August 17-20, 2005, Abstracts of Papers pp. 60.

Wyzgoski, F.J., R.N. Reese, P.L. Rinaldi, T.P. Green, M. Ozgen, A.Z. Tulio, Jr., A.R. Miller, J.C. Scheerens and D.V. Reddy. 2005. NMR characterization of black raspberry cultivars identifying biologically active metabolic constituents correlating with biochemical and bioassay data. Abstracts of Papers, 230th American Chemical Society National Meeting, Washington, DC, Aug. 28-Sept. 1, 2005, AGFD-175.

Kovach, J., M. Ozgen, L. Harper, S. Wright and J.C. Scheerens. 2005. Can consumers tell the difference between organically and conventionally grown strawberries? Ann. Meet. Entomological Soc. Amer. Fort Lauderdale, FL.

Stanton, M.A. and J.C. Scheerens. 2005. Introduction to blackberry production. Ohio Fruit Growers Congress, 21 Jan. 2005, Toledo, OH.

Gazula, A., M.D. Kleinhenz, J.C. Scheerens, P.P. Ling, P. P and J.G. Streeter, J. 2004. Variety and planting date effects on anthocyanin concentrations in field-grown lettuce (*Lactuca sativa*). HortScience 39:870.

Gazula, A., M.D. Kleinhenz, J.C. Scheerens, P.P. Ling, P. P and J.G. Streeter, J. 2004. Temperature and genotype affect anthocyanin concentrations in lettuce (*Lactuca sativa*). HortScience 39:864.

Gazula, A., M.D. Kleinhenz, J.C. Scheerens, P.P. Ling, P. P and J.G. Streeter, J. 2004. Managing abiotic and genetic factors to increase the potential health and market value of leafy vegetables: studies of anthocyanin levels, consumer response and instrumented color evaluation in lettuce. 17th International Lettuce and Leafy Vegetable Conference, 28-31 August, 2004, Montreal, QU, Canada. Summaries and Program pp. 13.

Stanton, M.A. and J.C. Scheerens. 2004. Primocane-fruited blackberries – a potential crop for Ohio. Ohio Fruit Growers Summer Tour, 29 June 2004, Wooster, OH.

Polter, S.B., D.J. Doohan and J.C. Scheerens. 2003. The effect of irrigation on strawberry tolerance to terbacil. 43rd Mtg. Weed Science Society of America. Jacksonville, FL.

Ferree, D.C., T.E. Steiner, D.M. Scurlock, J.F. Gallander and J.C. Scheerens. 2003. Cultural practices to improve grape and wine quality. International Conference on Quality in Chains, an Integrated View on Fruit and Vegetable Quality. 6-9 July 2003. Wageningen, The Netherlands.

Kleinhenz, M.D., T. Radovich, D. French, A. Gazula, A. Sanchez-Vela, A. Wszelaki, J.C. Scheerens, J.F. Delwiche and P.P. Ling. 2003. From farm to consumer- linking vegetable crop physiology and production with buyer-oriented quality. International Conference on Quality in Chains, an Integrated View on Fruit and Vegetable Quality. 6-9 July 2003. Wageningen, The Netherlands.

Scheerens, J.C., D.D. Miller and A. Sanchez-Vela. 2003. Pasteurization improves the safety and acceptability of grape juice. International Conference on Quality in Chains, an Integrated View on Fruit and Vegetable Quality. 6-9 July 2003. Wageningen, The Netherlands.

Scheerens, J.C. and T.M. Rivera. 2003. Growing elderberries, currants, gooseberries and jostaberries. 2003 International Master Gardener Conference, 19 June 2003, Covington, KY.

Scheerens J.C. and M.A. Stanton. 2003. Primocane-fruited blackberries – a potential crop for Ohio. OSU South Centers Berry Twilight Meeting, 9 June 2003, Piketon, OH.

Scheerens, J.C., D.D. Miller and A. Sanchez-Vela. 2003. Comparison of methods influencing grape juice safety and quality. Ohio Grape-Wine Short Course, 11 Feb. 2003, Columbus, OH.

Scheerens, J.C. 2003. Ohio cider contest results and trends. Ohio Fruit Growers Congress, 17 Jan. 2003, Toledo, OH.

Scheerens, J.C. 2003. Discussion of ozone-treated cider. Ohio Fruit Growers Congress, 17 Jan. 2003, Toledo, OH.