

**Plant and Soil Sciences  
CRIS Research Reports In-Progress  
for Agr Exp Station, Univ of Massachusetts  
Reporting Period 10/01/2001 to 09/30/2002**

**AD-421 Publications for Reports in-Progress and Submitted to CRIS for  
MAS as of 01/17/2003**

**Project Number: MAS00539**

***ROOTSTOCK AND INTERSTEM EFFECTS ON POME AND STONE FRUIT  
TREES***

**Performing Department: Plant & Soil Sciences -- 1825**

Autio, W.R. and J. Krupa. 2002. Performance of the V Series apple rootstocks during six growing seasons. *Fruit Notes of New England* 67(3):18-19.

Autio, W.R., J. Clements, and J. Krupa. 2002. Rootstock research in Massachusetts. UMass Extension Factsheet, 21 pp.

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**Project Number: MAS00647**

***Conservation and Utilization of Plant Genetic Resources***

**Performing Department: Plant & Soil Sciences -- 1825**

Bernatzky, R., J.H. Benton, and F.X. Mangan.. 2001. Improving aji dulce (sweet cherry pepper) for Massachusetts growers. *Horticultura Mexicana* 8(3):290.

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**Project Number: MAS00747**

***MULTIDISCIPLINARY EVALUATION OF NEW APPLE CULTIVARS***

**Performing Department: Plant & Soil Sciences -- 1825**

Greene, D. W. 2002. Evaluation of new apple varieties, 1998 observations: A report to the New England Tree Fruit Growers' Research Committee. *Fruit Notes* 67(2):13-19.

Weis, S. A., D. Greene, and W. Bramlage. 2002. Comparing the harvest and storage characteristics of Mutsu and Shizuka apples. *Fruit Notes* 67(3):1-4.

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**Project Number:** MAS00763

***ENVIRONMENTAL AND ECONOMIC IMPACTS OF NUTRIENT FLOWS IN DAIRY FORAGE SYSTEMS***

**Performing Department: Plant & Soil Sciences -- 1825**

Liu X.B., C.Y.Song, S.J. Herbert and B Xing, 2002. Ecological effects of cover crops. *Journal of Applied Ecology* 13(3):3654-368.

Liu, X.B., B.Xing and S.J.Herbert, 2001. Soil quality and its assessment indicators. *Scientific Series Chinese Sci. Assoc.* 18(2): 107-110.

Hashemi M. and S.J. Herbert. 2001. Prioritizing Fields for Manure Application. *Crops, Dairy, Livestock News.* 5(2):2-3.

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**Project Number:** MAS00772

***IRON CYCLING IN NEW ENGLAND LANDSCAPES***

**Performing Department: Plant & Soil Sciences -- 1825**

Blanchet, E.J. 2002. Soils, geochemistry, hydrology, and vegetation along a wet meadow hydrosequence in Western Massachusetts. M.S. thesis, University of Massachusetts, Amherst, MA. 170 pp.

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**Project Number:** MAS00773

***SORPTION OF ORGANIC CONTAMINANTS IN SOILS:MECHANISMS & IMPLICATIONS FOR DESORPTION & BIOAVAILABILITY***

**Performing Department: Plant & Soil Sciences -- 1825**

Chen, Z, B. Xing, W.B. McGill, M.J. Dudas, 1996. 1-Naphthol sorption as regulated by structure and composition of organic substances in soils and sediments. *Can. J. Soil Sci.* 76: 513-522.

Xing, B. 1997. The effect of the quality of soil organic matter on sorption of naphthalene. *Chemosphere* 35:633-642.

Xing, B. 1998. Nonlinearity and competitive sorption of hydrophobic organic compounds in humic substances. In: G. Davies and E. Ghabbour (eds.) *Humic*

Substances: Structures, properties, and uses, The Royal Society of Chemistry, Cambridge, UK, pp. 173-183.

Xing, B. 1998. Reaction of toluene with soil organic matter. *J. Environ. Sci. Health, Part B.* 33: 293-305.

Yuan, G. and B. Xing. 1999. Site-energy distribution analysis of organic chemical sorption by soil organic matter. *Soil Sci.* 164: 503-509.

Xing, B., J. Mao, W. Hu, K. Schmidt-Rohr, G. Davies, and E.A. Ghabbour. 1999. Evaluation of solid-state <sup>13</sup>C NMR techniques in characterization of humic acids. In: *Understanding Humic Substances: Advanced Methods, Properties and Applications*, The Royal Society of Chemistry, Cambridge, UK, pp. 49-62.

Xing, B. and Z. Chen. 1999. Spectroscopic evidence for condensed domains in soil organic matter. *Soil Sci.* 164: 40-47.

Jin, Z., S. Simkins, and B. Xing. 1999. Bioavailability of freshly added and aged naphthalene in soils under simulated gastric pH conditions. *Environ. Toxicol. Chem.* 18: 2751-2758.

Chen, Z, B. Xing, and W.B. McGill. 1999. A unified sorption variable for environmental applications of the Freundlich equation. *J. Environ. Qual.* 28: 1422-1428.

Mao, J., W.-G. Hu, K. Schmidt-Rohr, G. Davies, E.A. Davies, and B. Xing. 2000. Quantitative characterization of humic substances by solid-state <sup>13</sup>C NMR. *Soil Sci. Soc. Am. J.* 64: 873-884.

Hu, W.-G., J. Mao, B. Xing, and K. Schmidt-Rohr. 2000. Poly(methylene) crystallites in humic substances detected by nuclear magnetic resonance. *Environ. Sci. Technol.* 34: 530-534.

Xing, B. 2000. Processing of environmental samples containing organic chemicals using polymeric microfilters. *J. Environ. Qual.* 29: 221-224.

Mao, J.D., B. Xing, and K. Schmidt-Rohr. 2001. New information on a humic acid from two-dimensional <sup>1</sup>H-<sup>13</sup>C correlation solid-state nuclear magnetic resonance. *Environ. Sci. Technol.* 35: 1928-1934.

Yuan, G. and B. Xing. 2001. Effect of metal cations on sorption and desorption in soil humic acids. *Soil Sci.* 166: 107-115.

Xing, B. 2001. Sorption of naphthalene and phenanthrene by soil humic acids. *Environ. Pollut.* 111:303-309.

Xing, B. 2001. Sorption of anthropogenic organic compounds by soil organic matter: a mechanistic consideration. *Can. J. Soil Sci.* 81: 317-323.

Mao, J., G. Ding, B. Xing. 2002. Domain mobility of humic acids investigated with one-and two-dimensional nuclear magnetic resonance (NMR): Support for dual-mode sorption model. *Commun. Soil Sci. Plant Anal.* 33: 1679-1688.

Mao, J., W.G. Hu, G. Ding, K. Schmidt-Rohr, G. Davies, E.A. Ghabbour, and B. Xing. 2002. Suitability of different C-13 solid-state NMR techniques in the characterization of humic acids. *Intern. J. Environ. Anal. Chem.* 82: 183-196.

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**Project Number:** MAS00786

***APPLICATION OF RESEARCH TECHNOLOGY TO IMPROVE BEST MANAGEMENT PRACTICES IN FRESH MARKET AND PROCESSE***

**Performing Department: Plant & Soil Sciences -- 1825**

J. Howell, R. Bonano, J. Boucher, D. Ferro, and R. Wick (eds) 2002-2003. *New England Vegetable Management Guide*. New England Extension Systems. Published at the University of Massachusetts. Pp. 125. I was a contributing editor.

Carter, A. and J. Howell. 2002. "Irrigation". Pp.17-20. IN: J. Howell, R. Bonano, J. Boucher, D. Ferro, and R. Wick (eds) 2002-2003. *New England Vegetable Management Guide*. New England Extension Systems. Published at the University of Massachusetts. Pp. 125.

Rulevich, M. F. Mangan, and A. Carter. 2002. "Use of transplants, plastic, and row cover improves earliness and yield of two winter squash cultivars." *HortScience*. In press.

Casey, C.A., A.V. Barker, A.K. Carter, S.J. Herbert, F.X. Mangan. 2003. The Effect of Light Intensity and Nitrogen Fertilization on Plant Growth and Leaf Quality of Ngo Gai (*Eryngium foetidum* L.) in Massachusetts. *Acta Horticulturae*:(submitted).

Cook, R., A. Carter, P. Westgate and R. Hazzard. 2002. Direct silk applications of corn oil and Bt as a barrier to corn earworm larvae in sweet corn. *HortTechnology*:(submitted).

Howell, J. and A. Carter. 2002. Field-grown cut flowers - Soils and fertilizer: Trickle Irrigation. *Floral Notes*. 14(4):6-10.

Cook, R. and A. Carter. 2002. Corn oil can cause underdeveloped kernels at the tip of the ear. *Vegetable Notes*. 13(2):8-9.

Cook, R., A. Carter, R. Hazzard, and P. Westgate. 2002. Timing and efficacy of corn oil and Bt as a barrier to corn earworm in sweet corn. *Vegetable Notes*. 13(2):7-8.

Carter, A. 2001. Nuestras Raices: Nutrition, income and pride. *Khipu Kamayuq: Newsletter of the Latin American Studies Program, University of Massachusetts*. 25:9-10.

Hazzard, R., P. Westgate, A. Carter, and R. Cook. 2002. Implementing a Bio-Intensive Sweet Corn IPM Strategy:2001 Corn trials, NESARE Project report. January/2002. Pp 15.

Cook, R., A.K. Carter, R. Hazzard, and P. Westgate. 2002. *Bacillus thuringiensis* and corn oil as a barrier to corn earworm larvae in sweet corn: Timing and efficacy of treatment. Abstracts of the American Society of Horticultural Science. Northeast Regional Meeting. Philadelphia, PA. January/2002.

Cook, R., A. Carter, R. Hazzard, and P. Westgate. 2002. Use of direct silk treatment with corn oil and *Bacillus thuringiensis* for control of Lepidopteran pests of sweet corn:Timing effects on efficacy and ear development. Entomological Society Annual Conference. November/2002. Abstract.

Mangan, F., R. Bernatsky, and A. Carter. 1999. Aji dulce: A new pepper for the Northeast. New York Vegetable and Trade Show. Abstract.

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**Project Number:** MAS00807

***PRODUCTION OF MEDICINAL PLANTS AS ALTERNATIVE CROPS FOR NEW ENGLAND***

**Performing Department: Plant & Soil Sciences -- 1825**

Craker, L.E., and Giblette, Jean. 2002. Chinese medicinal plants. *New Crops* (Proceedings New Crops Symposium, Atlanta, August, 2001). pp. 491-496.

Ming, L.C., Craker, L.E., Scheffer, M.C., and Chaves, F.C.M. 2002. Proceeding of the First Latin-American Symposium on the Production of Medicinal, Aromatic, and Condiments Plants. *Acta Horticulturae* 569.

Bernath, J., Zamborine-Nemeth, E., Craker, L., and Kock, O. 2002. Proceedings of the International Conference on Medicinal and Aromatic Plant Produccion in the 21th Century. *Acta Horticulturae* 576.

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**Project Number: MAS00826**

***Best Management Practices for Turf Systems in the East***

**Performing Department: Plant & Soil Sciences -- 1825**

Bhowmik, P. C. 2001. Advances in weed management technology. Proc. International Conference on Pesticides, Environment and Food Security. Nov. 19-23, 2001. New Delhi, India. pp. 28-29.

Bhowmik, P. C. and D. Sanyal. 2002. Method for bioassaying isoxaflutole in soil. Proc. Northeast. Weed Sci. Soc. 56:8.

Carrier, S. A. 2002. Turfgrass management practices to minimize potential volatile and dislodgeable foliar residues following pesticide applications. Entomology, University of Massachusetts-Amherst. pp. 1-136.

Carrier, S.A. and Clark, J.M. 2001. "Management Practices to Minimize Volatile and Dislodgeable Foliar Residues of Turfgrass Pesticides." 222nd ACS Nat. Meeting, Chicago, IL. 8/26-30/01. Abst. No. 457770.

Clark, J.M. and Kenna, M. P. "Lawn and Turf: Management and Environmental Issues of Turfgrass Pesticides." In, Handbook of Pesticide Toxicology. (2nd Edition), Ed. R. Krieger, Academic Press, San Diego, CA. 2001. p. 203-241.

Clark, J.M., Putnam, R., and Edwards, R. 2001. Minimizing Exposure of Volatile and Dislodgeable Foliar Pesticides Residues and their Breakdown Products to Recreational Golfers. Proceedings, 2001 University of Massachusetts Turf Research Field Day, UMASS Extension, pp. 55-59.

Clark, J.M. 2001. Exposure to Turfgrass Pesticides. 2001 USGA Turfgrass and Environmental Research Executive Summary. USGA Green Section, Far Hills, NJ. Eds. Nus, J.L. and Kenna, M.P. pp. 23.

Elston, M. and P. C. Bhowmik. 2002. Effects of various products on the growth of *Xanthomonas campestris* pv. *poannua*. Proc. Northeast. Weed Sci. Soc. 56:117-122.

Elston, M. and P. C. Bhowmik. 2002. Biological activity of *Xanthomonas campestris* pv. *Poannua* as influenced by commonly used Turfgrass products. Proc. Northeast. Weed Sci. Soc. 56:117.

Elston, M. and P. C. Bhowmik. 2002. Effects commonly used turfgrass products on the growth of *Xanthomonas campestris* pv. *poannua*. Weed Sci. Soc. Amer. Abstr. No. 283.

Haith, D.A. and Clark, J.M. 2001. Development and Testing of Indices and Models of Pesticide Volatilization from Turfgrass. 2001 USGA Turfgrass and Environmental Research Executive Summary. USGA Green Section, Far Hills, NJ. Eds. Nus, J.L. and Kenna, M.P. pp. 22.

Haith, D.A., Lee, P.O., Clark, J.M. Roy, G.R. and Imboden, M.J. 2002. Modeling Pesticide Volatilization from Turf. J. Env. Qual. 31:724-729.

Inderjit and P. C. Bhowmik. 2002. Allelochemicals phytotoxicity in explaining weed invasiveness and their function as herbicide analogues. In: Inderjit and A. U. Mallik (Ed.) Chemical Ecology of Plants: Allelopathy in Aquatic and Terrestrial Ecosystems. pp. 187-197. Birkhauser Verlag, Switzerland.

Inderjit, C. L. Foy, P. C. Bhowmik, and M. Saini. 2002. Allelochemical interactions: Methodological Difficulties and Challenges. Weed Sci. Soc. Amer. Abstr. No. 169

Inderjit, H. Kaur, and P.C. Bhowmik. 2002. Significance of laboratory bioassays in determining the role of allelochemicals in plant growth inhibition. Third World Congress on Allelopathy, Abstr. No. S06-06, pp. 85

Mitra, S., J. Turner, P.C. Bhowmik, and M. Elston. 2001. Biological Control of *Poa annua* with *Xanthomonas campestris* pv. *poannua*. The British Crop Protection Council - Weeds 2001, Brighton, UK. Vol. 1:(2A-6) 49-54.

Swarcewicz, M.K., P.C. Bhowmik, and S. Mitra. 2002. Plant response to isoxaflutole residues in soil. Journal of the Polish Agricultural University. (Electronic journal).

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**Project Number: MAS00827**

***Genetic Improvement of Floricultural Crops***

**Performing Department: Plant & Soil Sciences -- 1825**

Karle, R., Parks, C.A., O'Leary, M.C., and Boyle, T.H. 2002. Polyploidy-induced changes in the breeding behavior of *Hatiora x graeseri* (Cactaceae). Jour. Amer. Soc. Hort. Sci. 127:397-403.

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**Project Number: MAS00828**

***Commodities, Consumers and Communities: Local Food Systems in a Globalizing Environment***

**Performing Department: Plant & Soil Sciences -- 1825**

Mangan, F. C. Casey, A. Rogers, C. Rounds, R. Hazzard, C. Anderson, M. Verson, R. vanDriesche, K. Stoner, K. Johnson, J. Bosch, H. Joseph, A. Heiderman, S. Sun, H. Merheb, J. Patton, E. Grossman, P. Fischer, K. Graham, and D. Webber. 2002. "Production and Marketing Activities on Asian Crops in Massachusetts, USA." Proceedings of the Interamerican Society for Tropical Horticulture 47th Meeting. Morelos, Mexico. Pp. 98-103.

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**Project Number:** MAS00830

***Sustainable Vegetable Crop Production in Massachusetts***

**Performing Department: Plant & Soil Sciences -- 1825**

Mangan, F. C. Casey, A. Rogers, C. Rounds, R. Hazzard, C. Anderson, M. Verson, R. vanDriesche, K. Stoner, K. Johnson, J. Bosch, H. Joseph, A. Heiderman, S. Sun, H. Merheb, J. Patton, E. Grossman, P. Fischer, K. Graham, and D. Webber. 2002. "Production and Marketing Activities on Asian Crops in Massachusetts, USA." Proceedings of the Interamerican Society for Tropical Horticulture 47th Meeting. Morelos, Mexico. Pp. 98-103.

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**Project Number:** MAS00841

***Application of Sewage Biosolids to Agricultural Soils in the Northeast: Long-Term Impacts and Benefit Uses***

**Performing Department: Plant & Soil Sciences -- 1825**

Stratton, M.L., G.L. Good, and A.V. Barker. 2001. The effects of nitrogen source and concentration on the growth and mineral composition of privet. J. Plant Nutr. 24:1745-1772.

Stratton, M.L., G.L. Good, and A.V. Barker. 2002. The effects of selected soil fungicides on nitrification and growth of privet in a pine bark medium. J. Plant Nutr. 25 (1):159-168.

You, W., and A.V. Barker. 2002. Herbicidal action of root applied glufosinate ammonium on tomato plants. J. Amer. Soc. Hort. Sci. 127:200-204.

Barker, A.V. and G.M. Bryson. 2002. Bioremediation of heavy metals and organic toxicants by composting. The Scientific World 2:407-420.

Bryson, G.M. and A.V. Barker. 2002. Sodium accumulation in soils and plants along Massachusetts Roadsides. *Commun. Soil Sci. Plant Analysis* 33:67-78.

Bryson, G.M. and A.V. Barker. 2002. Determination of optimal fertilizer concentration range for tomatoes grown in peat-based medium. *Commun. Soil Sci. Plant Analysis* 33:759-777.

O'Brien, T.A., S.J. Herbert, and A.V. Barker. 2002. Growth of corn in varying mixtures of paper mill sludge and soil. *Commun. Soil Sci. Plant Anal.*33:635-646.

Hamlin, R.L. 2002. An investigation of the relationships between mineral nutrition and the phytoextraction of zinc by Indian mustard (*Brassica juncea* Czern.). Doctoral Dissertation, University of Massachusetts, Amherst, Massachusetts.

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**Project Number:** MAS00843

***Morphological, physiological and molecular changes associated with ethylene-induced flowering in *Guzmania lingulata****

**Performing Department:** Plant & Soil Sciences -- 1825

Hawkins, S., S. Han, and R. Bernatzky. 2002. Expression of ethylene inducible genes involved in the early stages of floral evocation of *Guzmania lingulata*. *HortScience* 37(3): 440.

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**Project Number:** MAS09800798

***EFFECTS OF LONG-TERM TILLAGE AND COVER CROP SYSTEMS ON SOIL ORGANIC MATTER AND PESTICIDE SORPTION***

**Performing Department:** Plant & Soil Sciences -- 1825

Ding, G., J.M. Novak, D. Amarasiriwardena, P.G. Hunt, and B. Xing. 2002. Soil Organic matter characteristics as affected by tillage management. *Soil Sci. Soc. Am. J.* 66: 421-429.

Ding, G., J. Mao, S. Herbert, D. Amarasiriwardena, and B. Xing. 2001. Spectroscopic evaluation of humin changes in response to soil managements. In: *Humic Substances: Structures, Models and Functions*, The Royal Society of Chemistry, Cambridge, UK, pp. 271-279.

Ding, G., J.M. Novak, S. Herbert and B. Xing. 2002. Long-term tillage effect on soil metolachlor sorption and desorption behavior. *Chemosphere*, 48 (in press).

Gunasekara, A.S. and B. Xing. 2003. Sorption and Desorption of naphthalene by soil organic matter: Importance of aromatic and aliphatic components. *J. Environ. Qual.* 33: (in press).