

Qingli Ma, Ph.D.
Managing Scientist

Professional Profile

Dr. Qingli Ma is a Managing Scientist in Exponent's Health Sciences Center for Chemical Regulation and Food Safety. Dr. Ma is an experienced environmental scientist with expertise in environmental modeling and risk and exposure assessments. He has over 20 years experience in teaching, research, and consulting. He has conducted environmental and ecological assessments and monitoring of chemicals (e.g., pesticides and nutrients) to evaluate their potential environmental impacts and to support risk analyses, exposure characterizations and registrations and re-registrations.

Dr. Ma specializes in environmental fate modeling using complex research models as well as standard regulatory models, such as FIRST and PRZM/EXAMS (U.S. EPA), LEACHP (PMRA), RZWQM (USDA-ARS), among others. He has routinely used these models in chemical fate and transport modeling to characterize human exposure to chemicals in drinking water and potential exposure of non-target organisms to chemicals in different environmental media. He is especially experienced in modeling chemical fate and transport in agricultural systems and golf courses to characterize potential risk and exposure. In addition, he has experience in applying various best management practices (BMPs) and mitigation measures for risk management.

Dr. Ma is also skilled in integrating the standard regulatory screening-level assessment with higher-tier modeling and assessments (e.g., site-specific risk assessment and probability risk assessment) and higher-level statistical analyses of monitoring data to help address challenging environmental, ecological risk, and regulatory issues.

Dr. Ma is actively involved in model development and applications. He is the winner of the 2008 L.R. Ahuja Ag Systems Modeling Award. This award is presented to an early career scientist in recognition of distinguished contributions and demonstrated impacts in agricultural system models by Soil Science Society of America/American Society of Agronomy.

Academic Credentials and Professional Honors

Ph.D., Environmental Soil Physics, University of Georgia, 1998
M.S., Pesticide Environmental Fate and Chemistry, Zhejiang University, China, 1988
B.S., Chemistry, Shandong Normal University, China, 1985

L.R. Ahuja Ag Systems Modeling Award, 2008
Soil Science Society of America/American Society of Agronomy

Languages

Chinese

Publications

Ma QL. Handbook of Turfgrass Management and Physiology. Pessaraki M (ed). Book Review. Soil Sci Soc Am J 2009; 73:693.

Ma QL. New discoveries in agrochemicals. ACS Symposium Series, No. 892 Clark JM and Ohkawa H (eds). Book Review. Soil Sci Soc Am J 2006; 70:708–709.

Cohen SZ, Ma QL, Barnes NL, Jackson S. Pesticide and nutrient modeling. In: Water Quality and Quantity Issues for Turfgrass in Urban Landscapes. Beard JB and Kenna MP (eds), CAST, Ames, IA, pp. 153–170, 2006.

Ma QL, Wauchope RD, Rojas KW, Ahuja LR, Ma L, Malone RW. The pesticide module of the Root Zone Water Quality Model (RZWQM): Testing and sensitivity analysis of selected algorithms for pesticide fate and surface runoff. Pest Mgmt Sci 2004; 60:240–252.

Ma QL, Wauchope RD, Ma L, Ahuja LR, Malone RW, Rojas KW. Test of the Root Zone Water Quality Model (RZWQM) for predicting runoff of atrazine, alachlor and fenamiphos species from conventional-tillage corn mesoplots. Pest Mgmt Sci 2004; 60:267–276.

Malone RW, Ahuja LR, Ma L, Wauchope RD, Ma QL, Rojas KW. Application of the Root Zone Water Quality Model (RZWQM) to pesticide fate and transport: an overview. Pest Mgmt Sci 2004; 60: 205-221.

Wauchope RD, Rojas KW, Ahuja LR, Ma QL, Malone RW, Ma L. Documenting the pesticide processes module of the ARS RZWQM Agroecosystem Model. Pest Mgmt Sci 2004; 60:222–239.

Malone RW, Ma L, Wauchope RD, Ahuja LR, Rojas KW, Ma QL, Warner R, Byers M. Modeling hydrology, metribuzin degradation and metribuzin transport in macroporous tilled and no-till silt loam soil using RZWQM. Pest Mgmt Sci 2004; 60:253–266.

Malone RW, Weatherington-Rice J, Shipitalo MJ, Fausey N, Ma L, Ahuja LR, Wauchope RD, Ma QL. Herbicide leaching as affected by macropore flow and within-storm rainfall intensity variation: A RZWQM simulation. Pest Mgmt Sci 2004; 60:277–285.

Ma QL, Rahman A, Holland PT, James TK, McNaughton DE. Persistence of acetochlor in the field as affected by soil properties and application rates. J Environ Qual 2004; 33:930–938.

Ma QL, Rahman A, Holland PT, James TK, Rojas KW, Ahuja LR. Modeling dissipation of acetochlor and terbuthylazine in the field using the Root Zone Water Quality Model. Soil Sci Soc Am J 2004; 68:1491–1500.

Ma QL, Gan J, Papiernik SK, Becker JO, Yates SR. Degradation of two soil fumigants in a sandy loam soil as affected by concentration and temperature. *J Environ Qual* 2001; 30:1278–1286.

Ma QL, Gan J, Becker JO, Yates SR. Dose-response relationships between methyl isothiocyanate and citrus nematode *semipenetrans* T. in an Arlington sandy loam. *Pest Mgmt Sci* 2001; 57:781–786.

Ma QL, Wauchope RD, Hook JE, Johnson AW, Truman CC, Dowler CC, Gascho GJ, Davis JG, Sumner HR, Chandler LC. GLEAMS, Opus, PRZM2 β and PRZM3 simulations of atrazine runoff compared to field observations from a loamy sand soil under high-intensity rainfall conditions. *Soil Sci Soc Am J* 2000; 64:2070–2079.

Ma QL, Holland PT, James TK, McNaughton DE, Rahman A. Persistence and leaching of two herbicides in a volcanic soil: Observations versus PRZM-3 simulations. *Pest Mgmt Sci* 2000, 56:159–167.

Ma QL, Hook JE, Ahuja LR. Influence of parameter conversion methods between van Genuchten and Brooks-Corey functions on soil hydraulic properties and water-balance predictions. *Water Resour Res* 1999; 35:2571–2578.

Ma QL, Smith AE, Hook JE, Smith RE, Bridges DC. Water runoff and pesticide transport from a golf course fairway: observations vs. Opus model simulations. *J Environ Qual* 1999; 28:1463–1473.

Ma QL, Smith AE, Hook JE, Bridges DC. Surface transport of pesticides from small turf plots: Observations versus GLEAMS and PRZM-2 model simulations. *Pestic Sci* 1999; 55:423–433.

Ma QL, Hook JE, Wauchope RD. Evapotranspiration prediction: A comparison among GLEAMS, Opus, PRZM-2, and RZWQM models in a humid and thermic climate. *Agric Sys* 1999; 59:41–55.

Ma QL, Hook JE, Ahuja LR. Comparison of three conversion methods between van Genuchten and Brooks-Corey parameters for water-balance predictions. In: *Characterization and Measurement of Hydraulic Properties of Unsaturated Porous Media*. Th. van Genuchten M, Leij FJ, and Wu L (eds), pp.1131–1142, 1999.

Ma QL, Wauchope RD, Hook JE, Johnson AW, Truman CC, Dowler CC, Gascho GJ, Davis JG, Sumner HR, Chandler LC. GLEAMS, Opus, and PRZM-2 model-predicted versus measured runoff from a coastal plain loamy sand. *Trans ASAE* 1998; 41:77-88.

Ma QL, Wauchope RD, Hook JE, Johnson AW, Truman CC, Dowler CC, Gascho GJ, Davis JG, Sumner HR, Chandler LC. Influence of tractor wheel tracks and crusts/seals on runoff from a coastal plain loamy sand: Observations and simulations with the RZWQM model. *Agric Sys* 1998; 57:77–100.

Ma QL, Ahuja LR, Wauchope RD, Benjamin JG, Burgoa B. Comparison of instantaneous equilibrium and equilibrium-kinetic sorption models for simulating simultaneous leaching and runoff of pesticides. *Soil Sci* 1996; 161:646–655.

Ahuja LR, Ma QL, Rojas KW, Boesten JJTI, Farahani HJ. A field test of the Root Zone Water Quality Model—Pesticide and bromide behavior. *Pestic Sci* 1996; 48:101–108.

Ma QL, Ahuja LR, Rojas KW, Ferreira VA, DeCoursey DG. Measured and predicted atrazine dissipation and movement in a field soil. *Trans ASAE* 1995; 38:471–479.

Nash RG, Ma QL. Pesticide Dissipation Processes. In: *Root Zone Water Quality Model (v1.0, v1.5)*. Technical Documentation, USDA-ARS, Natural Resources Research Center, Fort Collins, CO, pp. 163–222, 1992.

Ma QL, Qi CJ. Applications of mathematical models in agro-environmental protection. *Agro-Environ Protection* 1991; 2:101–107.

Ma QL, Qi CJ. Evaluation of the methods for pesticide adsorption and desorption determinations. *Agro-Environ Protection* 1990; 4:221–227.

Ma QL, Chen HX, Fan DF. Determination of residual mathemidophos in soil and water using gas chromatography. *Agro-Environ Protection* 1990; 6:121–125.

Selected Presentations and Conference Proceedings

Ma QL, Reiss R, Habig C, Whatling P. Assessment of the potential risks of dimethoate to aquatic endangered species using the joint probability distribution analysis. Oral presentation (invited), 242th American Chemical Society national meeting, Denver, CO, 2011.

Ma QL, Cohen SZ. Improving model performance via model parameterization—A focus on RZWQM. Oral presentation (invited), 238th American Chemical Society national meeting, Washington, DC, 2009.

Ma QL, Baris R, Cohen SZ. Buffer width and nutrient and sediment removal efficiencies. Oral presentation, American Water Resources Association Summer Specialty Conference on Riparian Ecosystem and Buffers: Working at the Water's Edge, Virginia Beach, VA, 2008.

Ma QL, Cohen SZ, Barnes NL. Modeling offsite transport of turf-applied pesticides: model and data needs. Oral presentation, 230th American Chemical Society national meeting, Washington, DC, 2005.

Cohen SZ, Ma QL, Reid SS. Potential amphibian risks in vernal pools to golf course chemicals using PRZM/EXAMS models: part 2. Exposure assessment, poster presentation, 22nd SETAC Annual Meeting, Baltimore, MD, 2001.

Ma QL, Cohen SZ, Reid SS. Watershed/basin scale golf course risk assessments: Model scenario development. Poster presentation, Soil Science Society of America/American Society of Agronomy/Crop Science Society of America Annual Meeting, Charlotte, NC, 2001.

Ma QL, Baris R, Cohen SZ. Buffer width and nutrient and sediment removal efficiency. Proceedings, American Water Resources Association Summer Specialty Conf. on Riparian Ecosystem and Buffers: Working at the Water's Edge. Okay J, Todd A (eds), Virginia Beach, VA, 2008.

Ma QL, Ahuja LR, Rojas KW, Shaffer MJ, Hanson JD, Boesten JJTI, McMaster GS, Ferreira VA. Integrated-systems modeling of the effects of management on water quality: the Root Zone Water Quality Model (RZWQM). Proceedings, Conference on Agricultural Research to Protect Water Quality. Soil and Water Conservation Society, Ankeny, IA, pp. 367–369, 1993.

Peer Reviewer

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- J Environ Qual
- Soil Sci Soc Am J

Professional Affiliations

- American Chemical Society
- Soil Science Society of America
- American Society of Agronomy
- National Ground Water Association