PACIFIC AREA-WIDE PROGRAM: CURRENT STATUS OF THE CALIFORNIA PERENNIAL NURSERY SECTOR

B. Hanson[1], S. Gao[2], J. Gerik[2], D. Wang[2], R. Qin[1,2], J.A. Cabrera[2,3], A. Jhala[1]

[1]University of California, Davis; [2]USDA-ARS, Parlier, CA; [3]University of California, Riverside

The perennial crop nursery industry supplies over 60% of the total fruit, nut, and rose plants sold in the USA. Although methyl bromide (MB) use has decreased in many California industries due to the phaseout, perennial nursery producers largely continue to use MB under Critical Use Exemptions (CUE) and Quarantine/Preshipment (QPS) criteria allowed under the provisions of the Montreal Protocol. Recent meetings of the Parties to the Montreal Protocol have resulted in significant reductions in Critical Use Exemption MB use in several commodities and this trend may lead to substantial impacts on the California nursery industry. Additionally, while QPS use of MB is regulated by individual countries, the nursery industry is concerned that political pressures may eventually result in limitations on QPS uses of MB before viable alternatives are developed.

In comparison with other fumigation-dependant industries, perennial nursery stock producers face a more difficult transition to alternatives due to regulatory constraints and, clearly, adoption of MB alternatives in California nurseries has been slow (Zasada et al. 2010). The primary factor slowing adoption of MB alternatives in California are state regulations related to the Nursery Stock Nematode Certification program. In order to be certified as nematode-free (and, thus, saleable) nurseries must either use an approved treatment or undertake a comprehensive soil and root sampling program (CDFA 2010). The current threshold for parasitic nematodes in California nurseries is “detection”. Thus, if a certified treatment is not used and parasitic nematodes are detected in a nursery block at the end of the growing cycle, the planting stock is non-saleable which can result in complete economic loss of a crop valued at over $75,000 per hectare.

Project Evolution:

In the first several years of the Pacific Area-wide Pest Management Program, the perennial nursery project focused on testing and demonstrating emission reduction techniques while simultaneously evaluating the effects of these practices on pest control efficacy (field trials outlined in Hanson et al. 2009). During the final two years of the project, efforts will center on completing the initial multi-year projects and related spin-off research and are being redirected towards demonstration of viable alternative fumigants and herbicides for integrated pest management in commercial nursery fields. As the projects come to a close in 2012, technology transfer efforts will take the forefront in the project.

Integrated Approach:
In the long term, development and adoption of integrated approaches to soil-borne pest management will be critical. Fumigant options in perennial crop nurseries are severely limited by nematode certification, thus short-term solutions are likely to include chemical fumigants. However, as alternative fumigants and techniques are phased in for nematode control, other pest control issues are likely to emerge.

After nematode certification requirements, weed control remains one of the largest management issues and economic considerations in nursery pest control. Soil fumigation alone (even with MB) often does not provide and maintain a consistently high level of weed control over a 1 to 3-yr crop cycle because of weed species' biology, ecology, and response to environmental conditions (Hanson and Schneider, 2008). Most California nurseries rely on preplant fumigation followed by extensive tillage and hand weeding to maintain acceptable weed control during the growing season. Some growers also utilize herbicide applications; however, herbicide options are very limited in nurseries and many growers are not comfortable with the risk of crop injury. As alternative fumigants are phased in and labor and fuel costs continue to rise, herbicides are likely to become a more important weed management tool in perennial crop nurseries.

In the final phase of the perennial crop nursery sector's Area-wide project, we plan to continue technology transfer efforts and will develop and demonstrate integrated approaches which combine available and emerging fumigant alternatives with effective herbicides for management of the broad soil-borne pest spectrum found in open-field nurseries.

Literature Cited:
[CDFA] California Dept. of Food and Agriculture. 2010. Approved treatment and handling procedures to ensure against nematode pest infestation of nursery stock. Nursery Inspection Procedures Manual, Item #7. Available at: http://www.cdfa.ca.gov/phpps/PE/Nursery/pdfs/NIPM_7.pdf

Hanson, B.D. and S.M. Schneider. 2008. Evaluation of weed control and crop safety with herbicides in open field tree nurseries. Weed Technol. 22:493-498.

Hanson, B.D., S. Gao, J. Gerik, S. Schneider, R. Qin, and D. Wang. 2009. Perennial crop nursery sector progress - Pacific Area-Wide Program for MB Alternatives. Proc. Annual Int. Research Conf. on Methyl Bromide Alternatives and Emission Reductions p.32.

Zasada, I.A., T.W. Walters, and B.D. Hanson. 2010. Challenges in producing nematode-free perennial nursery crops. Outlooks on Pest Manage. (in press).