California Garlic and Onion Research Advisory Board's PESP Strategy

Describe your Organization's Five-Year Goals Related to Pesticide Risk Reduction

The California Garlic and Onion Research Advisory Board's long term goal is to support sustainable pest management practices that are environmentally sound, science based, socially responsible and economically viable so that the production of garlic and processed onions can remain viable in the San Joaquin Valley despite the intense pressure placed upon our industry by foreign competition.

What do you envision doing (broadly) to try to resolve your major issues?

The California Garlic and Onion Research Board was established January 1, 2005 as a state marketing order under the supervision of the California Department of Food and Agriculture. The driving force behind the establishment of the marketing order was a concern by growers, processors and handlers to manage the rapidly spreading threat to Allium production areas by the fungal pathogen white rot (*Sclerotium cepivorum*). Through mandatory assessments, it is our goad to fund basic and applied research as well as demonstration projects to develop short and long term strategies for white rot management. It is the Boards goal to also conduct research and survey programs related to disease prevention, pest management, tillage, irrigation and harvesting as determined by our members. We are committed to developing sustainable, environmentally sound strategies to allow our industry to maintain California as the world leader in quality garlic and onion production, processing, distribution and food safety.

Goal 1 and Tactics

Focus resources on management of *Sclerotium cepivorum*, the white rot disease that affects garlic and processed onions by establishing a coordinated research program to minimize the effects of this fungal disease in *Allium* species in the U.S. Management of the white rot organism will include both short term research to evaluate chemical, cultural and biological control of the organism while long term research will focus on biotechnology with the net result a white rot resistant *Allium* plant.

We have already been successful, with EPA Biopesticide Division help, in registering a biostimulant, diallyl disulfide and have received a grant from CA DPR to assist in commercial development of the biostimulant concept. In cooperation with USDA researchers and the New Zealand Crop and Food Research Organization we are working to develop through biotechnology an Allium resistant/tolerant garlic and onion plant.

EPA could assist us with following research issues:

1. Funding to assist in commercial acceptance of use of biostimulant.
2. Assistance in using GPS technology to map infested fields and specific areas in fields where white rot has been observed
3. Support IR-4 registration of tebuconazole, boscalid and fludioxynl for in-furrow or seed treatment management of white rot.
4. Continue funding/staffing of state seed certification programs.
5. Refine spray drift mitigation regulations to prevent further damage to garlic and onions from drift.
6. Regulate heavy metal contamination on imported onions and garlic.

Goal 2 and Tactics

Evaluate the use of garlic oil as a replacement for the synthetic chemical DADS. Since white rot sclerotia germination is triggered by soil temperature and recognitions of sulfur compounds generated by roots of Allium crops, we intend to evaluate the utility of using garlic oil as a biostimulant and to determine if the garlic oil can be applied through chemigation to eliminate the need for a soil equipment applied.

Success of project can be evaluated in terms of number of growers willing to use the technique and our ability to go back into white rot infested fields and grow a commercially acceptable crop.

Goal 3 and Tactics

Iris yellow spot virus (IYSV) transmitted by thrips has the potential to become an economically devastating pest. Projected economic losses from IYSV and thrips could reach $ 60 million to $90 million based on a 10% and 15% yield loss. Cost of additional pesticide sprays to control thrips is estimated at $7.5 to $12.5 million. We request funding to be part of a multi-disciplinary team of university, USDA-ARS and industry members work on methods to control this threatening pest. We are currently funding a small scale project with Dr. Hanu Pappu at Washington State University to:

1. Conduct surveys for IYSV in onion crops for its incidence and impact in central and northern California
2. Determine alternate weed hosts for IYSV in California
3. Explore the feasibility of gene silencing as a mechanism for inducing resistance to IYSV

Goal 4 and Tactics

Educational Priorities

The public, including regulators and consumer groups, needs to be educated about the use of integrated pest management (IPM) in California garlic and processed onion production, and how this system optimizes production and ensures safety for workers and the environment. Along with this training, growers need to be educated about resistance management for all pesticides. White rot management techniques must be a key component of grower education and outreach activities.

- Reinforce white rot management through continuing grower education and outreach activities and by reinstituting the industry White Rot Management Plan.
- Provide education on movement of soil and equipment, especially during off years, and contamination of new fields.
- Communicate to the public how the garlic industry practices IPM (Integrated Pest Management) and employs a number of sustainable agriculture practices to maintain a high quality product.
- Participate with other specialty crop groups to organize field tours for state and federal regulators and other policy and decision makers to see current pest management problems.
- Conduct resistance management training for all pesticides.