The IR-4 Project
Pest Management Solutions for Specialty Crops and Specialty Uses

Newsletter

Vol. 47 No. 3 Summer 2016

Crop Grouping Updates

— by Bill Barney, IR-4 Senior Coordinator, Food, Crop Grouping Manager, and Biopesticides

The IR-4 Project is pleased to announce that US EPA has approved the fourth in a series of updates of the crop groups.

The approval was posted as a Final Rule in the Federal Register, see http://bit.ly/EPA_IR4CropGroup.

Crop grouping enables the establishment of pesticide residue tolerances for a group of crops based on residue data for certain key crops that are representative of the group. It increases pest control options and is a better utilization of scarce resources, and the international benefits of crop grouping allows for better regulatory harmonization, facilitates trade and extends the seasonal availability of fruits and vegetables.

This revision creates new crop groups for Stalk, Stem and Leaf Petiole Vegetables Crop Group 22 and Tropical/ Subtropical Fruit including an Edible Peel Group 23 and an Inedible Peel Group 24. Revised crop groups include Leafy Vegetable Group 4-16 including 2 subgroups, 4-16A Leafy Greens subgroup and 4-16B Brassica Leafy Greens subgroup and Brassica Head and Stem Vegetable Group 5-16. There are also revised crop group definitions for

broccoli and sugar apple and new definitions for edible Fiddlehead Fern, guava and palm hearts. These revisions will promote greater use of crop groupings domestically and internationally with countries that export food to the United States.

EPA expects these revisions to promote greater use of crop groupings for tolerance-setting purposes, which will assist in retaining or making available pesticides for minor crop uses.

This crop grouping expansion will benefit US/NAFTA regions, because Canada's Pest Management Regulatory Agency (PMRA) works cooperatively with EPA on this effort for better harmonization of imports and exports.

The goals of these activities remain at minimizing differences within and among the United States and Codex groups and to develop representative commodities for each group that will be acceptable on an international basis, which can lead to increased harmonization of tolerances and MRL recommendations. These groups are posted on the IR-4 website at http://bit.ly/cropgrouping.

Inside this issue...

Executive Director Notes

Dear Friends

I cannot believe it, another quarter of the year has come and gone. It seems like just yesterday we were preparing the Spring issue of the newsletter. Remember the old saying, "time flies when you are having fun".

It has been quite a ride over the past three months. Several of us have been traveling to visit with the crop protection companies to update them on the status of ongoing IR-4 research and regulatory efforts as well as to discuss future opportunities. This is a critical component in the research planning prior to the IR-4 Biopesticide and Food Workshops being held September 21-23 in Orlando, FL. Due to the increased number of companies now in North Carolina, the IR-4 team traveled there over the course of three weeks. We also had company related trips to Indianapolis, IN and Wilmington, DE. Some companies traveled to IR-4 Headquarters and met in our offices. The following are take-home points from this year's crop protection industry meetings:

- Industry is very impressed with IR-4's record-breaking 1175 new registrations, considering the existing regulatory environment
- Mergers and consolidations in the industry (actual and proposed) are impacting company decisions regarding proposed IR-4 actions
- There is a drought of potential new products with new modes of action for future use in specialty crops. This may be due to the recently documented cost estimate of close to $300 million to register a new active ingredient in this regulatory environment of significant uncertainty.

In May, IR-4 hosted an Organizational Assessment Panel (OAP) that was charged to evaluate the organizational structure of IR-4's field sites, analytical laboratories and coordination units both within the state universities and USDA-ARS. They provided recommendations to the IR-4 Project Management Committee on the current organizational structure and recommended opportunities to increase overall project efficiencies.The next step for the PMC involves a comprehensive review of the OAP recommendations and development of action steps. The OAP recommendations along with other Path Forward Process items will be the majority of the discussions at the PMC's mid-July meeting.

On June 22, IR-4 hosted an agriculture tour for EPA employees. Forty Office of Pesticide Program members attended this year's edition of this popular tour. The attendees ranged from EPA employees who have been with EPA for weeks to the Office Director (Jack Housenger) who has worked for EPA for 39 years. The primary goal of these tours is to show the EPA staff specialty crop agriculture and let them know that decisions they make do have significant impacts on farmers and their ability to grow food and ornamental crops. This tour also gives the EPA group a chance to get to know IR-4 and learn more about what we do. Over the years, great working relationships have been forged from these tours. Read and see more about the tour on page 10.

The Commodity Liaison Committee (CLC) has established a sub-committee that focuses on interactions with Congress. The sub-committee is Chaired by Bob Simerly and includes Lori Berger, Allen Mize, Laura Phelps, Keith Pitts, Steve Salisbury and Dennis Tristao. Some of the initial actions of the sub-committee are to provide the full CLC with adequate tools to allow members to effectively visit with Congress to inform and educate them on the resource needs of IR-4.

In closing, please remember to nominate a worthy candidate for the IR-4 SOAR Award (see pg 5).

That's all for now,
Jerry

New Product Corner

This is for informational purposes only as IR-4 does not endorse a particular product or registrant.

Benzovindiflupyr (Solatenol™ Fungicide – Syngenta Crop Protection, LLC)

Introduction: Registration for Syngenta's new active ingredient benzovindiflupyr (Solatenol™) was granted by the EPA in August 2015 for various food uses. It was a joint review with Canada's PMRA and Mexico's COFEPRIS, which provides harmonized tolerances. Registration of benzovindiflupyr provides growers with a new third-generation succinate dehydrogenase inhibitor (SDHI), broad-spectrum fungicide for use in controlling various foliar diseases and soil pathogens. It provides fungicidal activity by strongly binding to a plant's wax layer and penetrating into plant tissue, resulting in excellent disease control, is highly effective at very low use rates and complements growers' resistance management programs. Benzovindiflupyr is classified by the Fungicide Resistance Action Committee (FRAC) as a Group 7 fungicide.

Other global registrations: Late last year benzovindiflupyr was launched in Latin America as Elatus™, especially to combat soybean rust. Regulatory approvals are being pursued in various other global markets, including the EU. Registration was achieved in Canada.

US trade names/formulations/labeled crops: Aprovia® Fungicide (0.83 lb ai/gal) – for uses on lowbush blueberries, grape and other subgroup 13-07F commodities, pome fruit crop group 11-10; Aprovia® Top Fungicide (0.65 lb benzovindiflupyr and 0.95 lb difenoconazole/gal) – for uses on lowbush blueberries, fruiting vegetables – crop group 8-10, cucurbit vegetables – crop group 9, pea and bean (dried shelled, except soybean) – subgroup 6C, tuberous and corm vegetables (except potato) – crop subgroup 1D; Trivapro™ A (0.83 lb ai/gal) – for uses on wheat, barley, oats, triticale, rye, field corn, popcorn, sweet corn, soybean; Elatus® Fungicide (0.15 lb benzovindiflupyr and 0.30 lb azoxystrobin/lb) – for uses on rapeseed subgroup 20A, cottonseed subgroup 20C, sweet corn, peanuts, potatoes; Mural® Fungicide (0.15 lb benzovindiflupyr and 0.30 lb azoxystrobin/lb) - for uses in ornamental horticulture crops grown in greenhouses and nurseries and for vegetable transplants grown for retail sale to consumers (cucurbit vegetables – crop group 9 and fruiting vegetables – crop group 8-10). See labels for specific crops, use patterns and other general directions for use.

Labeled pest spectrum: leaf spots, leaf rusts, powdery mildews, Alternaria rot, anthracnose, black rot, leaf blights, apple/pear scab, cedar apple and quince rust, flyspeck, sooty blotch, belly rot, gummy stem blight, target spot, Rhizoctonia stem rot, black mold, leaf mold, early blight, Rhizoctonia fruit rot, stem rust, leaf and glume blotch, net blotch, barley scald, black spot, black leg/Phoma, head and pod rot, eye spot, white mold, limb rot, pepper spot, etc.

Ornamental horticulture uses and projects: Benzovindifluypyr is registered for ornamental horticulture uses under the product name Mural®. The IR-4 Ornamental Horticulture Program has been involved in testing of Mural Fungicide. Multiple efficacy and crop safety trials were conducted and generated valuable information for the construction and refinement of use directions for commercial greenhouse and nursery crop growers.

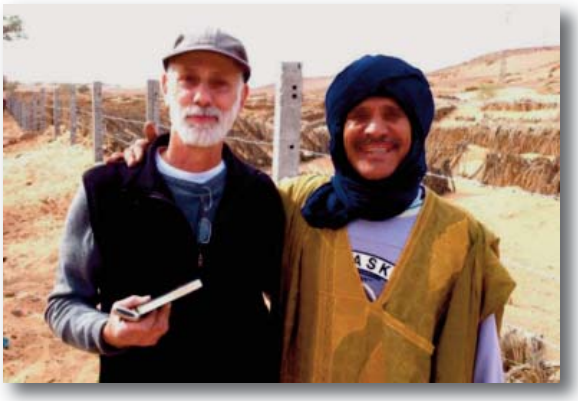
Ongoing IR-4 residue project (PR#): 2013 – onion (11130, joint with Canada; covers the crop subgroups 3-07A and 3-07B, including garlic [11129]) - submitted to EPA June 2016

Other IR-4 database requests (PR#): cranberry (11811 - researchable), grasses grown for seed (11749 – MFG objective)

eNewsletter is Available

Please let Sherri Novack know if you no longer wish to receive a hard copy Newsletter. She can be reached at 732.932.9575 x 4632 or via email at novack@aesop.rutgers.edu

Joe DeFrancesco — The Nonpareil Researcher



— by Western Region Assistant RFC, Stephen Flanagan

There's something about Joe. On a recent June morning Joe DeFrancesco was poking around a plum orchard in Monmouth, Oregon. There's nothing unusual about Joe out in his element working with a new miticide for Oregon growers. Joe's professional life embodies the IR-4 mission of facilitating new registrations for growers and in particular representing the needs of Oregon farmers.

Joe's responsibilities at Oregon State have included key roles as a field researcher and state liaison representative for IR-4. Although Joe is known as the go to expert for Pacific Northwest berry crops, he's also been involved with a plethora of other unique Oregon crops. Joe's involvement and support of growers has translated into helping Willamette Valley specialty seed growers and also included crops as divergent as wasabi, cranberries, rhubarb, turnips and ornamental Horticulture.

In 2014 Joe DeFrancesco received IR-4's SOAR award which recognizes outstanding Service, Outreach, Altruism and Research within the IR-4 program. Joe's thirty years of work at Oregon State have encompassed multiple aspects of SOAR. Joe's research program at Oregon has identified multiple crop protection solutions which have been pursued by IR-4. With Gina Koskela & Peter Sturman at the North Willamette Research and Education Center, Joe has maintained and built a solid team of specialty crop researchers.

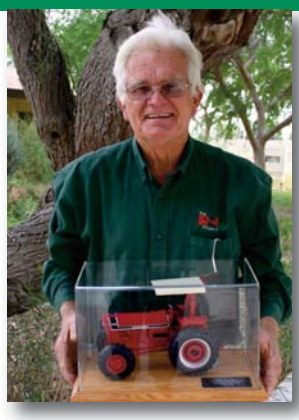
How many national and regional IR-4 meetings has Joe attended? Wait, what about his leadership in local meetings of the North Willamette Horticultural Society, or for that matter his efforts with the Foreign Ag Service? Joe at the Food Use Workshop, Joe at the Portland Horticultural Society meetings, Joe in Rome at the Minor Use Summit, Joe in Africa, Joe at countless internal and university groups: Yes the list goes on. Joe is someone who has participated at all these levels with the perseverance and preparation of a key player who comes ready to support the overall effort.

In all these activities, there's just something about this guy that always stands out. Is it that hint of his native New York City upbringing? Is it that sophisticated world traveler with a Pacific Northwest foodie undertone? Is it that long-term knowledge of projects successful and not so successful? Or is it just Joe smoothly executing this unique job with the kindness and aplomb of a graceful and decent human being?

Maybe it's something like a master juggler and mentalist who waltzes into the room and pulls it all off without missing a beat that marks the Joe DeFrancesco we've had the privilege of knowing these 30 years. Yes, Joe is retiring, but like most key players he's not letting go completely. He will continue to support Oregon berry growers on pesticide issues and also forge on with IR-4 international programs. Joe's a bit concerned he may have too much on his plate for retirement, but he'll certainly bring his spirit of dedication, his perseverance and his extensive experience to these new endeavors. We give our best to Joe as he heads off on his next endeavors and also our lasting gratitude to our fond colleague for his legacy of excellence at IR-4.

Brent Boutwell — Desert Man

— by Western Region Assistant RFC, Stephen Flanagan



Brent Boutwell is one tough character who has weathered the scorching southern California desert. Maybe Brent's early career working construction in Phoenix, Arizona prepared him for the rigors of desert agriculture in Holtville, California. Growing anything in the desert is a challenge and Brent Boutwell managed to grow standards like winter lettuce and tomatoes along with more unusual crops like cilantro, dill and hot peppers.

Many of us in the western region have Brent stories which usually centered on exactly how hot it was and how long a given study took to complete. During infamous herbicide studies that managed to stunt cilantro plants into four inch miniatures, I can recall the two of us harvesting every inch of those green micro-cilantro stalks to make a sample weight. Sampling on our knees, and many other similar desert research tales are true markers of Brent Boutwell's days as the lone ranger field research director in Holtville, California.

Growing crops in the Imperial Valley is no picnic as the land has remarkably heavy clay soils with high soil salinity. Herbicides behave differently here than other places. Brent worked diligently with local extension and industry experts to successfully produce production quality harvests. Between whitefly outbreaks, howling winds and too-salty soil, Brent did his share of re-planting and scrambling to get his trials completed. There were more than the fair share of challenges but Brent always welcomed visitors happy to show off the interesting things in his neck of the world.

Brent and his family own a horse boarding facility, and it's a sure bet that Brent will be spending more time catching up on the fixit list and enjoying time with his grandkids. Thanks to Brent for a string of years generating desert data in support of IR-4 projects and our best as you ride off into the sunset.

Call for Nominations

IR-4 is pleased to announce that it has opened nominations for the 2016 SOAR Award. The award recognizes a person for their Service, Outreach, Altruism, and Research related to the IR-4 mission of facilitating registration of sustainable pest management tools for specialty crops and specialty uses.

The selected awardee(s) will demonstrate excellence in 3 of the 4 elements: **Service:** Such as participation in standing committees and ad hoc committees, participation in advisory panels, or participation in similar activities which enhance the direction and mission of IR-4

Outreach: Such as being a consistent vocal supporter of IR-4 with growers and/or lawmakers, and/or routinely including recognition of IR-4 in print and visual media thus elevating IR-4's profile in the grower community.

Altruism: Such as donations of time, extra research, or plant materials.

Research: Such as participation in IR-4 Program for a minimum of 3 years, and consistently producing stellar and timely research where research results contributed to new or enhanced product labels

Deadline for nominations is **August 31, 2016**. For more information visit http://bit.ly/16SOAR.

Past Award Winners

2011— John Ahrens, Lori Berger
2012 — Dan Botts
2013 — Mike Benson
2014 — Joe DeFrancesco, Meg McGrath
2015 — Mary Hausbeck, Robin Bellinder

Pest Alert - All

Allium leafminer (also known as the onion leafminer) has recently been confirmed from infested leeks and onions collected in December 2015 from Lancaster County, Pennsylvania. This is the first confirmed infestation in the Western Hemisphere. Your assistance is needed for monitoring and controlling this new invasive species.

Host Plants and Damage Symptoms

The allium leafminer has been reported to infest species in the genus *Allium*. Leeks (*A. porrum*) tend to be described as the most damaged host, which may be influenced by the timing of the second generation and the planting of leeks. Infestations have also been reported in onion (*A. cepa*), garlic (*A. sativum*), chive (*A. schoenoprasum*), shallot (*A. cepa*), and green onion (*A. fistulosum*). There are many ornamental species of *Allium*, some wild species are common weeds, and at least one species is endangered (*A. munzii* in California). Current literature varies in reporting damage in ornamental and wild *Allium* spp. The full host range is unknown.

Wavy, curled and distorted leaves from the allium leafminer. Photo: L. Donovall.

Adult females make repeated punctures in leaf tissue with their ovipositor, and both females and males feed on the plant exudates. Leaf punctures arranged in a linear pattern towards the distal end of leaves may be the first sign of damage. Leaves can be wavy, curled and distorted. Larvae mine leaves, and move towards and into bulbs and leaf sheathes where they pupate. Leaf mines are most evident in species with thin leaves (chives). In species with larger leaves, it is often necessary to peel back the leaves to find the insect. Both the leaf punctures and mines serve as entry routes for bacterial and fungal pathogens. High rates of infestation have been reported: from 20 to 100 pupae per plant, and 100% of plants in fields. The literature suggests organic production and market garden production systems tend to be most at risk, perhaps due to insecticidal control in conventional production systems. Leafminers as a pest in *Allium* crops has rapidly increased following introduction of allium leafminer.

Allium Leafminer pupa embedded in leaf tissue from a field in Lancaster PA. Photo L. Donovall.

Distribution

The allium leafminer was first described in 1858 from Poland, and is native to Poland and Germany. Recently, the geographic range has been rapidly expanding. It is now present throughout Europe, reaching the United Kingdom in 2004. It has recently been reported in Asia, Turkey, and parts of Russia and Turkmenistan, and it is now in eastern US.

Identification

Adults: Small (~3 mm) long grey or mat-black colored flies with a distinctive yellow or orange patch on the top and front. Yellow color also present on side of abdomen. Wings held horizontally over abdomen when at rest. Legs with distinctive yellow "knees" (at femur-tibia junction). White halteres. Although adults are fairly distinctive,male genitalia are required to confirm identity.

- Eggs: White, 0.5 mm long, and slightly curved.
- Larvae: White, cream, or yellowish maggots, headless, up to 8 mm long at their final instar.
- Pupa: Dark brown, 3.5 mm long, with a pair of posterior spiracles with 18-20 bulbs per spiracle.

Adult Allium Leafminer

Allium Leafminer pupa. Photo by L.Donovall.

Life History

Allium leafminers overwinter as pupae in plant tissue or surrounding soil. Adults emerge in late winter (March) into spring (throughout April, perhaps into May), and lay eggs at the base of plant stems. Larvae mine leaves, and move downward into the base of leaves or into bulbs, where they pupate. Pupae may move into soil. These 1st generation pupae undergo a diapause or aestivation period which lasts throughout the summer, and then they develop into adults that emerge in the autumn (September / October). This 2nd generation of adults lay eggs into

ium Leafminer

Allium spp., which develop through the larval and into the pupal stage. These 2nd generation pupae will overwinter. Egg-to-adult development is estimated to require 1,090 degree-days using a 5.1°C/41.2°F threshold, or 1,225 degree-days using a 3.2°C/37.8°F threshold.

Monitoring and Management

Adults have been captured using yellow sticky cards or yellow plastic bowls containing soapy water.

Covering plants in February, prior to the emergence of adults, and keeping plants covered during spring emergence, can be used to exclude the pest. Avoiding the adult oviposition period by delaying planting (after mid-May in Poland) has also been suggested to reduce infestation rates. Covering fall plantings during the 2nd generation flight can be effective. Growing leeks as far as possible from chives has been suggested. Continuous cultivation of Allium species (such as chives) provides the pest with a continuous food source.

Systemic and contact insecticides can be effective. EPA registrations vary, however, among *Allium* crops for food and ornamental horticulture uses. Check labels to ensure the crop and use site is listed, and for rates and days-to-harvest intervals. Options labelled for leafminers or dipteran leafminers that may be effective include azadirachtin (Aza-Direct, Molt X, Ornazin, or other formulations), cyromazine (Citation, Triguard), dinotefuran (Safari, Scorpion), lambda-cyhalothrin (Scimitar, Warrior II or other formulations), spinetoram (Radiant), spinosad (Conserve, Entrust or other formulations), and zeta-cypermethrin (Mustang or other formulations). Other materials labelled for Liriomyza leafminers or thrips that may be effective include abamectin (Agri-Mek, Avid, or other formulations), acetamiprid (Assail, Tristar), and cyantraniliprole (Exirel, Mainspring). Among these, the Entrust formulation of spinosad is allowable for certified organic production if allowed by your certifying organization.

Taxonomy

- Scientific Name: *Phytomyza gymnostoma* Loew (Family Agromyzidae)
- Common Names: Allium leafminer, onion leafminer
- Recent Synonyms: *Napomyza gymnostoma* Loew

Reporting a Possible Detection

If you believe you may have observed damage or a life stage of the allium leafminer, please contact a plant inspector in the regional Department of Agriculture office or an Extension Educator or Diagnostic Laboratory in the local Cooperative Extension Office. In Pennsylvania, contact the plant inspector in your regional office of the Pennsylvania Department of Agriculture [http://goo.gl/wd8Sg9] or an Extension Educator in the local Penn State Extension office [http://extension.psu.edu/counties]

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Loew: Onion leafminer. 7 pp.

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Authors: This pest alert was written by Shelby Fleischer, Department of Entomology, Penn State, University Park, PA, and Tim Elkner, Penn State Extension, Lancaster County. Edited by D. Gilrein, Cornell Cooperative Extension of Suffolk County. April 11, 2016.

This was amended by IR-4 to include the trade names for ornamental horticulture.

Dan Kunkel Receives IUPAC International Award for Advances in Harmonized Approaches to Crop Protection Chemistry

On March 21, 2016, the International Union of Pure and Applied Chemistry (IUPAC) announced that the 2016 Advances in Crop Protection Chemistry Award will be presented later this year to Dr. Daniel L. Kunkel of the IR-4 Project. The following is an excerpt from the announcement found at http://bit.ly/KunkelAward.

The award recognizes individuals in government, intergovernmental organizations, industry, and academia who have exercised personal leadership for outstanding contributions to international harmonization for the regulation of crop protection chemistry. Awardees receive an honorarium plus travel and per diem reimbursement to attend the presentation ceremony. The 2016 award will be presented to Dr. Kunkel during a symposium to be organized by the Agrochemicals Division as part of the American Chemical Society's national meeting in Philadelphia,

Kunkel has been active for the past 25 years in advancing innovative research and harmonized approaches for regulation of crop protection chemicals and establishment of food residue standards supporting minor uses and specialty crops. He currently serves as Associate Director of IR-4's Food and International Programs, where he has been on staff since 1991. The IR-4 Project is a publicly funded (USDA) research program that provides safe and effective pest management tools to growers of specialty crops through the generation of high quality data for regulatory approvals. For many years, Dr. Kunkel and the IR-4 Project have led efforts to develop field residue trial data to achieve registration approvals and support harmonized maximum residue limits (MRLs) for specialty crops as established by U.S. EPA and other national regulatory authorities to support trade. In the process, he has promoted adoption of cross-regional data sharing, streamlined assessment approaches, and worked tirelessly to resolve scientific issues. One of the hallmarks of Kunkel's efforts has been the highly collaborative nature of his work. As noted by one of his nominators: "Dan has played a pivotal role in coordinating efforts of the grower community, government regulators, crop protection industry, academic researchers and institutions, and policymakers worldwide in garnering, maintaining and improving support for crop protection uses for specialty products."

Dr. Kunkel's early international efforts were focused on harmonization projects involving Canada, Mexico, and the U.S. as a lead scientist with the NAFTA Technical Working Group. He also has been active in promoting the development of harmonized approaches for minor use registrations through IR-4's cooperative agreements with Canada and other countries including Brazil, Colombia, Costa Rica, and New Zealand, and in addition has supported development of a minor use program in the EU. Kunkel's global influence has been applied for the past decade through his active engagement with intergovernmental organizations including OECD and Codex. Through the OECD's Expert Group on Minor Uses, he has contributed to development of a number of critical guidance documents and surveys, and, through several working groups operating under the Codex Committee on Pesticide Residues, he has advanced the establishment of improved assessment processes that include more minor use Codex MRL standards of global significance.

Leadership of global cooperation efforts through the Global Minor Use Summit (GMUS) has been one

continued on next page

2016 MRL Harmonization Workshop

– by Gary W. Van Sickle, Executive Director, California Specialty Crops Council

The 2016 MRL Harmonization Workshop was held in San Francisco on June 1-2, 2016. Approximately 120 attendees were present for the day and a half event. The program included 20 speakers, of whom six (6) were from various international locations and reported on the MRL situation in their respective home countries. Leading the program was Jay Vroom, President of CropLife America. He discussed the relationship between food waste and the need for MRL harmonization. He pointed out that 80 billion pounds per year of food waste contributes 20% of the landfill content. He noted a 15% reduction of the US food waste could feed 25 million hungry people. He said, growers need crop protection tools and without the ability to defend their crops from pests and diseases, the volume of produce waste would increase.

Jay Vroom,CropLife America President and Cheif Executive Officer

Dr. Caroline Harris, from the UK, provided an update on the European Union. She noted there is a trend away from risk assessments to hazard assessments. This change will subject crop care materials to greater scrutiny when determining their tolerances (MRL) for the materials and will require some growers to eliminate a few materials that may have some minute potential for a hazard. She also informed attendees that supermarkets are setting standards that are more stringent than regulatory standards. She summarized that all of these changes in the EU will lead to increasing food costs.

Caroline Harris, Corporate Vice President, Center Director & Principal Scientist Chemical Regulation & Food Safety

Cindy Baker-Smith, Senior Vice-President with AMVAC, discussed current issues that are affecting harmonization. She referenced that many countries are now setting their own MRLs. While the US has been driven by statutory requirements to set MRLs, other countries, such as Taiwan and South Korea, are now moving in that direction. This is leading to differing requirements and standards in these countries. Cindy also pointed out the cost of bringing a new "a.i." to the market is now approaching $300 million, a 50% increase since 2000. Time to market has increased from 8 years in 1995 to 11 years in 2014. And there are increased costs to defend existing products.

Jerry Baron, Executive Director for the IR-4 program, provided the IR-4 update. He noted the program conducts 70 residue studies per year on approximately 40 chemistries. From this the program prepares 80 study reports for EPA. EPA then reviews and usually will establish tolerances (MRLs) on 20 or more chemicals per year. He summarized that through crop group extrapolations the data supports an average of more than 700 new uses per year.

International speakers representing Canada, Chile, Brazil, South Korea and India also reported the status of positive list development and approved MRLs in their respective countries. Also a panel provided their perspective on "How Harmonized are MRLs since 2005 and Lessons Learned". The program speakers presented diverse perspectives and contributed to a very successful 2016 MRL Workshop.

Dan

of Kunkel's most significant international contributions. Three of these unique gatherings, involving hundreds of participants from more than 50 countries, have yielded new global consensus and collaborative action plans for advancing harmonization efforts related to minor use registrations and MRLs. As recognized by other award nominators "Dr. Kunkel has been a champion of international harmonization of regulatory standards…" and "Dan personally has been relentless in developing the infrastructure and personal relationships around the globe to facilitate mutual understanding and respect in addressing MRL issues." For all these reasons IUPAC is pleased to recognize Dr. Daniel L. Kunkel.

A Look at Central Maryland Agriculture

— by Van Starner, IR-4 Assistant Director

On June 22, 2016, IR-4 hosted a daylong tour looking at specialty crop agriculture in central and northcentral Maryland. This was the 18th tour that IR-4 Headquarters has offered as an educational opportunity for colleagues from all divisions of OPP at EPA who make regulatory decisions about new uses for various pest management tools for growers. Participants experienced a personal look at

farming practices and heard first-hand from growers about their pest issues and challenges. This year, tour participants visited four specialty crop farms, each with a unique operation and consumer target for their products.

The first stop was at Larriland Farms in Woodbine, MD, where participants rode tractor-pulled wagons with straw bale seats and learned about fruit and vegetable production (like strawberries, cherries, caneberries, peaches, apples, spinach, beets, tomatoes, potatoes, broccoli, etc.) on a 95% "pick your own" farm, where more than 5 acres are dedicated for customer parking! Tourgoers heard about the farm's reliance on Integrated Pest Management practices to manage insect, disease and weed pests, using pesticides as-needed based on crop scouting and often only as a last resort. Strict adherence to product PHIs (pre-harvest intervals) is critical, with u-pick customers in the orchards and fields daily.

At the second stop, Baugher's Orchards near Westminster, MD, participants took another wagon ride tour of tree fruit, small fruit and vegetable production, hearing about their pest management issues and challenges. Baugher's sell much of their produce through their retail farm market and restaurant, some pick-your-own, and some

wholesale and shipping from their packing operation. Tourgoers watched a "Smart Sprayer" airblast demonstration, a hi-tech sprayer with sensors that turn off the spray mechanism when it senses gaps in tree rows. Participants also were exposed to various boom sprayers used to apply various pest control products - from a 100-ft boom, Hi-boy rig used in sweet corn, to a custom made shielded sprayer for applying herbicides to control weeds between black-plastic covered strawberry beds.

First time tourgoers (l-r) Andrew Reighart, Vince Chen and Nathan Sell.

Following a BBQ lunch and browsing Baugher's market, the tour moved on to the next stop at One Straw Farm in Whitehall, MD. This 175-acre vegetable operation supplies customers with organically-grown produce. Participants learned how organic growers manage pest issues using, as needed, pesticides certified for use in organic agriculture, and about the Community Supported Agriculture (CSA) program which serves as the primary outlet for their produce (in addition to direct sale to local restaurants and at various farmers' markets in the Baltimore/D.C. area). During a leisurely walk around the farm, tourgoers saw the CSA packing house, hoop houses where they grow some vegetables and all their seedlings for transplant into the field, and row upon row of crops like potatoes, kale, broccoli, cabbage, onions, leeks and sweet corn. The nutritive and water-preserving value of compost was also highlighted.

The last stop on the tour was Bell Nursery in Burtonsville, MD. Through a grower network of 40 family farms, Bell grows annuals, perennials, trees, shrubs and other specialty plants exclusively for The Home Depot in the mid-Atlantic region and bordering states. In a brief video and walking tour, participants learned about Bell's plant production processes and challenges they face in managing pest issues while adhering to the standards required by their customers (such as no use of neonicotinoid insecticides). Bell described work they have been

continued on next page

Q Resurgence

— by Cristi Palmer, IR-4 Ornamental Horticulture Manager

Q biotype whiteflies (Q), more properly known as *Bemisia tabaci* MED, have been in the United States for approximately a dozen years. First found on poinsettia during fall 2004 in AZ, Q has since been identified from greenhouse-grown ornamental horticulture plants in 26 states. Growers have been able to manage Q populations using rotations of several biologicals and chemical classes including some of the more highly water soluble neonicotinoids. While Q may have a propensity for developing resistance, the recommended rotational program has limited appearances of tolerance to Safari (dinotefuran), Kontos (spirotetramat), Judo (spiromesifen), and other newer active ingredients. Problems with and identification of Q have been contained to plants produced in greenhouses.

This, however, changed in spring 2016. Landscapers in FL noticed whiteflies on hibiscus plantings in residential neighborhoods. These whiteflies were identified as Q using genetic testing – one of two ways to distinguish these from other biotypes because it is impossible to tell them apart by morphology. Samples of whiteflies from landscapes, retail outlets, wholesale nurseries and vegetable fields were sent to Dr. Cindy McKenzie for biotyping. So far whiteflies from only ornamental horticulture plants, most notably hibiscus, tested positive for Q. The samples from vegetable fields were identified as the B biotype. The Q biotype whitefly so far has been found on landscape and nursery plants in 7 different counties throughout FL (Broward, Duval, Highlands, Martin, Palm Beach, Pinellas, Seminole).

We won't fully know the reason for Q emerging in landscapes, but there are a couple of factors involved. Because growers have been so successful in managing Q, they may have gotten complacent and less vigilant in implementing solid whitefly management strategies. In addition, due to pressure from big box stores to eliminate neonicotinoids, rather than using them judiciously, many growers may have relied on active ingredients less likely to manage Q populations which are resistant to pyrethroids, organophosphates, carbamates, and many other classes. Biological control, biopesticides, and natural products (oils, soaps) can provide management of low populations, but when whitefly populations are not manageable with these tools, targeted designed chemistry should be utilized or growers should voluntarily destroy their crop to prevent further spread of Q.

Because FL growers ship plants and plugs nationwide, it is possible that Q has hitchhiked to retail and wholesale locations in other states. Given the potential to receive Q on outdoor plants, growers and retailers need to be extra vigilant while inspecting plant materials when received. If whitefly adults and nymphs are observed, sequester plants and contact Dr. McKenzie (Cindy.McKenzie@ars.usda.gov) for instructions on sending her samples for analysis. Contact your supplier, let them know you've found whiteflies, and ask them about their pest management program. It is critical to find out what your supplier used, so that you can treat with a different mode of action. Follow the Whitefly Management Plan posted at bit.ly/ornhortlit, and include some of the newer materials in your rotation such as Mainspring (cyantraniliprole), Rycar (pyrfluquinazon) and XXpire (spinetoram + sulfoxaflor). The Whitefly Management Plan is also posted at the UFL website and http://bit.ly/whitefly along with many other resources and recommendations for managing Q in landscapes.

Spotlight on Orn. Hort.

Bemisia tabaci **whitefly, photo by Lance Osborne, University of Florida.**

Tour

doing regarding safety to our pollinators, including results that support the premise that loss of honey bee colonies is due to a complex of stresses, including Varroa mites, hive beetles and other bee hive pests, loss of habitat and depletion of nutritional resources, exposure to pesticides, the stress of being moved all over the country for pollination of crops, etc.

After an enlightening but way too short visit at Bell Nursery, participants enjoyed a Tex-Mex buffet dinner in Burtonsville, wrapping up a long day that was information-packed and further strengthened the relationship between IR-4 and colleagues at the EPA.

Tolerance Successes Apr.-May

Federal Register: April 8, 2016

Fluazinam **Trade Name:** Omega
Crop: Mayhaw, Cabbage, Tuberous and corm vegetable subgroup 1C, Cucurbit vegetable group 9
PR#: 06796, 07093, 11618, 08916, 09238, 09269, 09555

Federal Register: May 2, 2016

Abamectin **Trade Name:** Agri-Mek, Epi-Mek
Crop: Fruiting vegetable group 8-10 (addition of greenhouse grown tomato), Caneberry subgroup 13-07A, Citrus fruit group 10-10, Small vine-climbing fruit except fuzzy kiwifruit subgroup 13-07F, Low growing berry subgroup 13-07G, Stone fruit group 12-12, Pome fruit group 11-10, Tree nut group 14-12, Papaya, Star apple, Black sapote, Sapodilla, Canistel, Mamey sapote, Guava, Feijoa, Jaboticaba, Wax jambu, Starfruit (Carambola), Passionfruit, Acerola, Lychee, Longan, Spanish lime, Rambutan, Pulasan, Pineapple, Bean, Green onion subgroup 3-07B
PR#: 05076, 11058, 06475, 11057, 11059, 11186, 11184, 11242, 11185, 04078, 07825, 07826, 07827, 07828, 07829, 06435, 11578, 07832, 07833, 07819, 07835, 07836, 07831, 11574, 11575, 11576, 11577, 08439, 05478, 07271, A4068

Carfentrazone-ethyl
Trade Name: Aim
Crop: Globe artichoke, Asparagus, Mint, Teff, Banana (amended tolerance), Bulb vegetable group 3-07, Fruiting vegetable group 8-10, Citrus fruit group 10-10, Pome fruit group 11-10, Stone fruit group 12-12, Caneberry subgroup 13-07A, Bushberry subgroup 13-07B, Small vine-climbing fruit except fuzzy kiwifruit subgroup 13-07F, Low growing berry subgroup 13-07G, Tree nut group 14-12, Psyllium, Quinoa, Rapeseed subgroup 20A, Sunflower subgroup 20B, Cottonseed subgroup 20C
PR#: 10721, 10278, 09427, 10196, 11486, 11487, 11488, 11489, 11490, 11491, 11492, 11493, 11494, 11495, 11850, 11851, 11145, 11496

Federal Register: May 6, 2016

Clethodim **Trade Name:** Select
Crop: Pome fruit group 11-10, Stone fruit group 12-12, Low growing berry subgroup 13-07G except cranberry, Cottonseed subgroup 20C, Bulb onion subgroup 3-07A, Stevia (dried leaves), Fruiting vegetable group 8-10, Rapeseed subgroup 20A except flaxseed, Sunflower subgroup 20B
PR#: 06873, 06874, 06876, 06877, 06878, 06948, 09127, 10546, 11613, 10545, 11205, 10373, 10543, 09748, 10210, 10544, 11612

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