**Minutes from the:**

**SAES-422 Multistate Research Project W2008:**

**Biology and Management of *Iris yellow spot virus* (IYSV), Other Diseases, and Thrips in Onions**

**ANNUAL MEETING**

**10:00 am – 2:00 pm**

Hilton Savannah DeSoto Hotel

15East Liberty Street,

**Savannah, Georgia**

**Meeting held in conjunction with the National Allium Research Conference (NARC) and**

**the National Onion Association (NOA)**

**December 3, 2016**

**W2008 Committee Officers – 2016:**

**Chair:** Tim Waters, Washington State University

**Vice-Chair:** Lindsey du Toit, Washington State University

**Secretary:** Christy Hoepting, Cornell University

**Past Chair:** Mark Uchanski, Colorado State University

**Participants:**

|  |  |  |
| --- | --- | --- |
| **Name** | **Affiliation** | **Email** |
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| Mary Ruth McDonald | University of Guelph | mrmcdona@uoguelph.ca |

Chair Tim Waters called the meeting to order at 10:00 am

**State Reports:**

**Georgia - Ron Gitaitis**

* Good crop overall (referring to the 2015 transplanted crops with 2016 harvest)
* *Iris Yellow Spot Virus* (IYSV) was negligible due to the winter being too cool for plants to express symptoms much
* Center rot caused by *Pantoea ananatis*
	+ In fall 2015 there was an extended period of occurrence of this disease. By spring of 2016, it was the No. 1 problem at harvest. It started in the seed beds in 2015, then November was unseasonably hotter and wetter than normal with lows that were higher than the 5-year average (even compared to March). There was also more rainfall in the fall. It is believed that the unusual weather greatly contributed to the center rot problems.
* Sour skin was severe in localized fields
* Yellow bud (a bacterial disease caused by a *Pseudomonas* sp.) is on the decline

**Colorado – Mark Uchanski** (also representing Mike Bartolo, Thad Gourd, Whitney Cranshaw)

* Uchanski transferred from New Mexico State University to Colorado State University one year ago
* W2008 Objective 1 (germplasm): Over 40 onion varieties were evaluated in northern and southern Colorado in 2016 for reaction to IYSV, thrips, and other pests/diseases, and viewed by stakeholders at field days
* W2008 Objective 2 (thrips):
	+ New products such as Minecto Pro are being trialed for efficacy against onion thrips.
	+ Mike Bartolo is working in collaboration with Claudia Nischwitz from Utah State University to investigate the relationship between soil potassium and IYSV. As the rate of application of K fertilizer increased to 750 g, IYS severity and the incidence of plants with IYSV by ELISA testing increased, but the nontreated control plots still had highest incidence of IYSV. This will be investigated further in 2017.
* W2008 Objective 3 (diseases): Thaddeus Gourd is investigating the effects of mychorrizal fungi on control of pink root. A summary of this project was presented during the NARC meeting; R.T. Sakata (onion grower) is collaborating on this project.
* W2008 Objective 4 (facilitate interaction):
	+ Colorado Fruit and Vegetable Growers Association (CFVGA) was recently formed.
	+ Mark has been reinvigorating the Specialty Crops Program, which includes onions, at Colorado State.

**New Mexico – Chris Cramer**

* There were a lot of losses for growers and at the NM research facility trials from hail
	+ IYSV is not a problem when onions do not have any leaves!
* W2008 Objective 1:
	+ Not a lot of activity due to lack of funding.
	+ New varieties will be released within another year.
	+ Made a lot of progress in evaluating and screening for resistance to Fusarium basal rot, particularly developing inoculation methods (graduate student in Chris’ program presented on this project during the NARC meeting).
* Homeowner in NM had garlic diagnosed with stem and bulb nematode, which has gotten the commercial Allium industry concerned. Homeowner is cooperating with the Department of Agriculture to take care of the problem.

**New York – Christy Hoepting** (also Steve Beer and Brian Nault)

* Bacterial disease research with Steve Beer, Jo Ann Asselin and Jean Bonasera:
	+ Etiology of bacterial diseases of onion – keeping their finger on the pulse of bacteria pathogenic to onion by isolating and identifying bacteria associated with decayed onion bulbs in NY.
	+ Characterized a new bacterium, a lactic acid bacterium, that appears to be pathogenic to onion (Bonasera NARC presentation).
	+ Fundamental mechanisms of bacterial diseases – submitted a proposal in collaboration with Bhabesh Dutta (UGA) to investigate the molecular mechanism of center rot development.
	+ Field-scale investigation into the potential of sodium hypochlorite sprays to manage bacterial bulb decay of onion (Beer NARC presentation).
* Onion Pests via Brian Nault and Ashley Leach:
	+ Onion maggot (OM): Lorsban furrow treatment still provides significant control of OM; Diazinon AG500 and Majestrone failed to control OM; Lorsban is not needed when seed is treated with FI500 based on the trial results.
	+ Efficacy of Radiant for onion thrips (OT) has been slipping in recent years. Consequently, a new product/product combo is needed that is as effective as Radiant, the useful longevity of Radiant needs to be preserved, and development of resistance to Radiant in OT populations needs to be understood better.
	+ In OT efficacy trials, a high rate (10 fl oz/A) of application of Minecto Pro provided as good control as medium rate of Radiant (8 fl oz/A). Although not significant, Radiant 8 fl oz and Minecto Pro 10 fl oz resulted in numerically fewer OT than Exirel 13.5 fl oz, application of which resulted in numerically fewer OT than that resulting from Agri-Mek SC 3.5 fl oz application.
	+ Single and double applications of Exirel at both low (13.5 fl oz/A) and high (20.5 fl oz/A) rates knocked down an OT pressure of 4.3 OT per leaf as effectively as did both the high (10 fl oz/A) and low (6 fl oz/A) rates of Radiant. A single application of Exirel at the high rate knocked down OT pressure of 9.3 OT per leaf as effectively as Radiant at 6 fl oz. The best ‘knockdown’ was achieved with high rate of Radiant. Exirel applied at a low rate had no effect on this high level of OT pressure.
	+ Applying single or double applications of Movento 5 fl oz/A at 0.2 OT per leaf compared to 1.0 OT per leaf had no significant effect on residual activity of Movento; the threshold of 1.0 OT per leaf following Movento was reached at the same time with all treatments evaluated. Cornell will continue to recommend using the 1.0 OT per leaf threshold to trigger first Movento application.
	+ Preliminary results indicate tremendous variability among thrips populations in their sensitivity to Radiant.
* In 2016, IYS appeared in early July in hotspots throughout several fields in Elba muck crops. In some fields, the incidence of symptomatic plants increased dramatically from first detection to 100% in a period of 2 weeks during August, despite thrips control being very good. In another field with very high thrips pressure, IYS symptom expression and development was delayed. IYS resulted in premature plant mortality in several fields.
* In M.S. candidate Ashley Leach’s trial in an Elba muck field, weekly application of insecticides resulted in numerically less IYS (incidence) than the action threshold insecticide program, both of which resulted in significantly less IYS than the nontreated control plots.

**Utah – Dan Drost** (also Claudia Nischwitz and Diane Alston)

* The research components of a WSARE project and a UAES project that investigated a systems approach to managing onion thrips and IYSV including nutrition, weeds and novel crop rotations have been completed and manuscripts are now being written.
* Key findings include: 1) weeds that most commonly harbor IYSV were bindweed, black medic, witchgrass, prickly lettuce, lamb’s quarters and hairy nightshade (all asymptomatically); 2) when onions are grown after corn there are less thrips than when onions are grown after wheat; 3) reduced nitrogen inputs resulted in lower thrips pressure (140 vs. 330 kg N/ha in each crop rotation, with split applications over 5 periods in each season). A corn-wheat-onion rotation for 2 rounds resulted in the best yields. Growing onion crops for 3 years sequentially after alfalfa resulted in the worst yields, as expected.
* Impacts: 1) A new trend in Utah is for onion growers to grow onion after corn. Although this presents challenges with corn crop residues, growers make it work because having lower thrips and IYSV pressure is worth it. They report fewer insecticide sprays using this rotation. 2) Onion growers are doing a better job of managing weeds along field edges. 3) Onion growers have reduced their rate of nitrogen fertilizer inputs by 20-25%, which can save on 2-3 insecticide applications/year.
* Claudia Nischwitz is studying the relationship between soil potassium and IYSV (NARC talk)
* A cultivar trial was completed in 2016, as is done each year.

**Washington – Tim Waters** (also Lindsey du Toit and Carrie Wohleb)

* More IYS has shown up in parts of central Washington (Columbia Basin) over the past couple of years in areas with both annual bulb crops and biennial seed crops, and there has been a lot of finger pointing to seed growers by bulb growers (green bridge effect). There has been increased acreage of bunching onion seed production, especially of CFC varieties (cross between *Allium cepa* and *Allium fistulosum*). *A. cepa* is the most susceptible to IYSV while *A. fistulosum* is relatively tolerant and CFC cultivars tend to be moderately susceptible. There is limited irrigated land base in the area and seed crops need to be isolated from each other to avoid cross pollination, making it a challenge to not grow bulbs and seed crops adjacent to each other.
	+ A project has been initiated to study how thrips move from bulb to seed crops and vice versa, with thrips being tested for viruliferous status (IYSV). It is a two-way migration from seed to bulb and from bulb to seed crops.
	+ Other projects are investigating thrips insecticide efficacy and insecticide application techniques.
* NOA reported that some onion fields in Washington were not harvested due to yellow nutsedge infestations.
* An unusually warm and early spring, followed by unseasonably cool and wet growing conditions in late spring resulted in downy mildew (DM) outbreaks that were rapidly followed by secondary infection by *Stemphylium vesicarium*, cause of Stemphylium leaf blight (DM-SLB), which caught the onion industry off guard. DM is unusual in this semi-arid region, and the DM infections were often misdiagnosed as SLB, resulting in growers only treating for SLB with fungicide applications. Field days and outreach were helpful to educate the industry to identify DM accurately.
* WSU Extension program (led by Carrie Wohleb) is looking to develop a scouting report to catch pest and disease outbreaks early, and provide scouting/diagnostic tips and appropriate recommendations across the Columbia Basin, similar to a potato pest monitoring program in place for this region.
* du Toit continues to investigate the feasibility of using mycorrhizae for enhancing onion production via large-scale on-farm trials. The objective is to identify if any particular products, formulations, and/or methods of application of AMF products are viable economically in this region, and the influence of fertilizer practices on AMF product viability/efficacy.
* Unlike in 2014 and 2015, internal dry scale of onion bulbs was not much of an issue. Stuart Reitz and Clint Shock have been working on understanding the environmental aspects in the Treasure Valley of OR/ID, as have du Toit and Waters in WA. The main factor associated with internal dry scale appears to be very hot temperatures. For example, 2015 saw 22 days when temperatures were greater than 100°F, with the maximum temperature being 113°F in June. In WA, the focus of field trials is to see if irrigation can be used to mitigate internal dry scale.

**Wisconsin – Mike Havey**

* Has been studying the relationship between wax type, amounts, and constituents in relationship to thrips/IYSV tolerance in selections deemed to have less onion thrips and IYSV.
	+ There are several types of waxes on onion leaves and only one kind is visible to the naked eye – ketone waxes. There are some semi-gloss varieties that have more wax than some waxy varieties. Glossy onion cultivars or breeding lines usually have less wax, but not always because ketone waxes are visual but other waxes are different. If ketones make up <35% of the total cumulative waxes, the leaves don’t build up a glossy appearance. Thrips damage was assessed in replicated field trials. Anything with 35% ketone wax usually gets severe thrips injury. Semi-glossy types usually have lower thrips damage. You can’t tell visually with the eye the amount of wax on the leaf, which contradicts some of the understanding about visual vs. actual wax content of onion cultivars. The key is that anything that has less than 35% ketone waxes will have more thrip injury.

**Final business:**

**Nomination of new secretary:**

* Brian Nault nominated Beth Gugino as secretary and Bhabesh Dutta as secretary elect (as neither W2008 member had yet served as an officer).
* Seconded by Ron Gitaitis.
* Moved and approved.

**2017 officers:**

**Chair:** Lindsey du Toit, Washington State University (responsible to chair 2017 W3008 Annual Meeting)

**Vice-Chair:** Christy Hoepting, Cornell University (responsible for writing/submitting annual project report)

**Secretary:** Beth Gugino, Pennsylvania State University (responsible for writing/submitting annual meeting minutes)

**Past-Chair:** Tim Waters, Washington State University

**Secretary Elect:** Bhabesh Dutta, University of Georgia

**Location of W3008 First Annual Meeting:**

Open discussion:

* Possibility of meeting jointly with NOA in Santa Fe, NM, but the location is expensive and was deemed difficult to get to as many researchers want to be able to make the trip as quickly as possible.
* It was decided the group needs a full day to enable researchers to give 30-minute presentations.
* The group preferred a location where a W2008 member is in the region to help make local arrangements.
* Mike Havey volunteered to help organize a meeting in Chicago (popular airport city), in collaboration with the W2008 chair (Lindsey), on Friday, Dec. 8th of 2017.
* The best attendance of a stand-alone W2008 meeting (without NOA), that had highest industry and grower participation, occurred in Denver in 2013 when the meeting was organized by the Colorado Onion Growers Association (R.T. Sakata). Next best attendance was in 2015 in Salt Lake City when organized by Dan Drost who invited growers.
* Mary Hausbeck suggested that the 2017 annual meeting be held in conjunction with the Great Lakes Expo in Grand Rapids, MI on Monday, December 4 of 2017 or later that week. This may conveniently draw local (Midwestern) onion growers to attend the meeting.

A motion was moved by Dan Drost for the Executive Committee to discuss this, reach a decision, and announce the next meeting location and date.

Seconded by Mark Uchanski.

Moved and approved.

11:54 am BREAK for lunch

**1:15 pm W3008 grant proposal**

Thank you to Brian Nault for leading the charge to write a grant proposal to continue W2008 = W3008 with the new title “W3008: Integrated Onion Pest and Disease Management”, with the following revised objectives:

1. Evaluate onion germplasm for resistance or tolerance to key pathogens and insect pests;
2. Investigate the biology, ecology and management of onion thrips and other pests;
3. Investigate the biology, epidemiology and management of onion diseases; and
4. Facilitate discussions among W3008 participants and onion stakeholders that will advance onion pest and disease management.
* Brian Nault sent out a near complete final draft of W3008 proposal prior to the meeting, which several members helped edit.
* Steve Loring, Administrative Advisor for the W2008 said that the proposal is in good shape overall. The submission deadline is January 15, 2017.
* Now that the objectives have been finalized, Steve will enter them into the system and let everyone know that they can sign up to be members. This will generate an Appendix E for the proposal. **Action item:** When email notice is received for this Appendix E, W2008 members need to sign up to become members of W3008. Steve recommends this be done in a timely manner.
* W2008 will need an impact statement to help tell the story of this 5-year project at the national level. Loring will take the lead on this by pulling impact statements from our previous annual reports. If he needs additional information, he will be in touch with this group.
* Multistate project proposals will be reviewed in the spring, and then there will be a call for additional information and a decision made in June/July about establishing this new project.
* Loring will submit a nomination of the W2008 for a federal award for an outstanding multistate project. Feedback from a previous nomination for this award will be considered in developing the nomination.
* Nault will continue to edit the W3008 proposal for one more week, and request a support letter from NOA.
* The Alliumnet and Onion ipmPIPE websites do not appear to have been updated since Howard Schwartz retired. **Action item:** Mark Uchanski will follow up to see if these websites can be changed to become static or whether they should be removed.
* **Action item:** Mark Uchanski will check with NOA to see if W1008 to W3008 reports may be housed on the NOA website.
* **Action item:** Lindsey du Toit needs state reports for the 2016 annual report submitted before Christmas, so she can compile the annual report and get it submitted before January 10th, after which she’ll be traveling overseas for 2 weeks (the deadline is January 15th). Lindsey will send an email reminder to the primary contact from each state.
* **Action item:** Steve Loring suggestedwe compile a list of suggested reviewers for the W3008. Howard Schwartz can be recommended.

Other:

* Lindsey du Toit offered to lead the writing of a USDA SCRI grant proposal on onion diseases, including bacterial diseases, pink root, Stemphylium leaf blight, and others, for submission in November 2017. **Action item:** Let Lindsey know if you are interested in being involved in the proposal, and what particular diseases you would be interested in working on and helping write for the proposal. Lindsey will send an email to a key contact from each state to get the discussion started.

W3008 annual meeting:

Further discussion was held on the location of the W3008 meeting. Mary Hausbeck noted that, if the group would like to meet in conjunction with the Great Lakes Expo in Grand Rapids, MI, there are at least three options for a room where the group could meet all day on Monday, Dec. 4th: 1) the conference center, 2) the Amway Hotel (which has conference rooms), and 3) the Courtyard Marriott conference rooms. Mary said we could work with Ben Werling for the arrangements. This would also enable some W3008 members to participate in/speak at the Great Lakes Expo, which has an onion session.

Tim Waters ADJOURNED the meeting at 2:08 pm.

Minutes respectfully submitted by Christy Hoepting, with edits by Lindsey du Toit, on December 8, 2016