NE-1026 Meeting Portland Oregon February 8, 2011

Attending: John Masiunus (Chair), Karen Renner (notes), Dan Brainard, Corey Ransom, Robin Bellinder, Carlene Chase, Mark VanGessel, Thomas Bjorkman (phone), Chuck Mohler (phone), Fred Servello - Admin Advisor

Minutes approved from 2010 Denver meeting: Renner approved, 2nd by Brainard.

Election of chair for 2012 (expires 9-30-2011). No action until approval of new project. The project ends in October and the committee must write a renewal this summer.

Reports are needed from 2007 (*Haar*) and 2008 (*Chase*). Please look if you have these reports.

2010 Report must be completed by next week. Please send John your 2010 research reports.

Servello's report: Fred Servello became the advisor last year at this time. His role is to bring the current project to conclusion with administration detail, and secondly to guide us in writing a new project. He anticipates an opportunity to report on the current project at the upcoming NERA meeting and asked that everyone make particular note of integrated protocols, joint study designs, sharing samples, etc. in today's reports.

The deadline for the request to submit a proposal is February 25th. Full proposals are due June 17th.

John Comments: Reports all due in this month. Common research across sites is important. However, university funding is quite minimal with Hatch funds.

Objective 1: Natural product herbicides

Brainard reported that an article was submitted to Weed Technology. Research was over a 3 year period, multiple states, multiple sites. Eight on the committee were involved with the field trials. There was variation based on environmental conditions. The article needs to be resubmitted with the statistical data analysis completed as a rate response across twenty different sites. Funding has now been leveraged by *Lanini, Bellinder, Brainard*, and others for more work in this area. There are new products coming out (*Bellinder*) including a preemergence product and a new 'glyphosate' type herbicide. For stale seedbed use *Brainard* has had limited efficacy to date: broadleaf burndown has been good when applied early to small weeds; grasses are poorly controlled. Vinegar has now been registered for stale seedbed. OAREI – Integrated Peach Project *(Ransom reporting)* had work in the tree rows with mulches and organic herbicides arranged as a split plot design. Straw mulch worked the best except for seed in the straw. None of the organic herbicides alone were effective, even when applied four times. Acetic acid at 15% was the most effective of the herbicides. *Lanini* is also doing work in CA.

Future plans: *Brainard* may do stale seedbed, prior to carrots. *Ransom* will continue his work in the peach project. *Bellinder* will repeat work with stem protectants on transplanted crops. *Lanini* was not in attendance but committee members commented that he is actively working in this area.

Objective 2: Cover Crops

Masiunus and his graduate student completed research determining if buckwheat would improve weed management and cucumber production with a mid-summer planting of the cucumbers. There were two sites in IL. Results: buckwheat had to be incorporated; mowing alone was not adequate. Preemergence herbicides were needed to get adequate weed control. Buckwheat residues could be inhibitory to cucumber growth, possibly due to nitrogen tie up by the buckwheat residue decomposition.

A second project involved planting sudangrass as a management tool to suppress Canada thistle. There were multiple farmer sites. The key date for planting sudangrass was prior to June 15th for stand establishment. Sudangrass was mowed when it reached four foot in height.

A third project involved using mustards as biofumigants. There was no change in the population of common lambsquarters in his research. Planting date for mustard was mid-March for central IL. There was not enough biomass produced at the later planting dates. Florida Broadleaf, Pacific Gold, and Ida Gold were the three varieties. All three mustards had excellent growth. Fall planting (end of September) of mustards and other cover crops was also completed. There was some suppression of winter annuals, which was cover crop species dependent.

Bjorkman Mid May produced adequate biomass on mustard. Later planting dates were not as effective. Weed emergence was not suppressed, but weed growth was suppressed? There were fall planting dates also. Sudangrass was…. Fall… Incorporation of cover crops… RAMP spring mustard crop followed by pumpkins and … Weed and crop growth were recorded. There was a reduction in the stand of the cucurbits. There was no change in the time of weed emergence by planting a cover crop; i.e. there was no meaningful effect on the use of cover crops for weed management. However, cover crops helped to maintain a low weed seed bank. In another project, rye was compared to …. and the grassy cover crops were tilled and then vegetable crops planted three weeks later. All cover crops suppressed crop? or weed? Growth. More research is needed on the stage of cereal growth. In another study, cover crops were planted when the pumpkin leaves were killed by frost. Establishment of these cover crops is the focus of this study.

Bellinder Yellow mustard, oil seed radish, and rapeseed grew 4-6 weeks and then were mowed and incorporated at two sites with two different soil types. Weed weight and density were reduced from all three cover crops for the first two weeks and then weeds were not suppressed. Corn and beans were less damaged than beets and cucumbers, and cover crops had limited effect on growth of corn, beans, beets, and cucumbers at the site with more clay and organic matter. All crops grew out of their initial injury.

Brainard has completed buckwheat and mustard cover crop research. In coordinated work with Bellinder, peas, lettuce, and chard were suppressed by cover crops when planted too close to the time of cover crop kill, but snap beans were not Several weeds were suppressed including galinsoga ciliata. These results have been published in Hort Sci. They also have looked at suppression of winter annuals in

wheat if a cover crop was planted prior to wheat. Overwinter mortality of summer annual weed seeds in buckwheat vs bare soil was also studied. Treatments included fungicides, nitrogen, etc. There was no effect of buckwheat cover crop on the persistence of weed seeds (article submitted). He is currently working on buckwheat, sorghum sudan, and mustard (Ida Gold and Tilney), with a coordinated trial with NY and IL to maximize cover crop growth and weed suppression in vegetable crops. In contrast to IL, there were no problems with planting these cover crops through early May. Ida Gold produced more biomass than Tilney across all states, and more weed suppression than Ida Gold. Funding support is through OREI. Their work is also in snap bean systems.

Renner MSU has initiated a three-year study with cover crops in black bean production. Four different cover crop treatments have been initiated at two organic MSU research farm sites. These cover crops are: oilseed radish, red clover, rye, and no cover. There are ten on- farm locations also; each farmer has one of these cover crops planted. The influence of cover crops on soil N, black bean production and quality, weed management, and other production issues will be studied.

Masiunus: In IL, where soils have more clay and SOM, there are few problems with crop injury following incorporation of cover crops.

Cover Crop Suppression of Phytopthera: *Masiunus* reported that in laboratory tests there is some suppression of Phytopthera and this may be somewhat related to glucosinalates. They have not seen this suppression in the field.

Mohler: They have completed a three year study to determine if cover crops inhibit weed seedling emergence because of an increase in soil pathogens. They have found from day 1-4 there is some suppression of weed seedling emergence. By day 8 there is no longer suppression of weed seedlingemergence. They have studied numerous crops and weed species.

In summary: *Bjorkman, Brainard,* and *Masiunus* have an OREI for cover crop planting dates (buckwheat, sudangrass, and mustard) in vegetable production systems. This project includes planting dates and methodology of kill of the cover crops. *Renner* has an OREI for cover crops (oilseed radish, red clover, and rye) in black bean production systems.

Objective 3: Mineral Nutrition

Mohler: Poultry compost and other nutrient sources were used. There was a weed response to the compost and not to the surrogates. The soil pH at this farm is 7.7. Possibly the phosphate from the bone char is being immobilized. This work will be continued in 2011.

Objective 4: Mortality and Cultivation Work

VanGessel is working with cultivation with lima beans. ALS resistant pigweed is the focus.

TUESDAY EVENING DISCUSSION

The request to submit a proposal to NERA is due in approximately 18 days (Feb 25) and then a new project is due June 17th. The discussion at the evening meeting centered around what the new project should include.

Servello stated that this multi-state group's successful initiative to develop a coordinated study that ran in several states under coordinated protocols is a strong positive and similar initiatives could be the basis of a new multi-state project. At this point, he recommended that the group focus on the proposal development process to have a new project in place by October 1.

In response to a question about the financial implications of multi-state projects to our institutions, Servello noted that federal regulations require that 25% of Hatch funds must be expended on multi-state projects. Fr some institutions it is a challenge; other institutions do not have a problem reaching this 25% requirement.

Weed Management Strategies for Sustainable Cropping Systems is the current title.

In the paragraph request for a new project it must describe the Issues and Justification for the multistate activity and include:

The need as indicated by stakeholders
The importance of the work and what the consequences are if it is not done
The technical feasibility of the research
The advantages for doing the work as a multistate effort
What the likely impacts will be from successfully completing the work
Targeted outcomes:

Plans for the new project: Discussion centered around weed seed bank work in relation to cover crops and compost and contribution of late season weeds to the weed seed bank or weeds that missed control practices. There was discussion of the *Renner, Taylor, Sprague* poster at the WSSA where the authors compared seed viability of three weed species based on time and method of weed removal as related to flowering.

Masunius will write a paragraph and send it out to the committee for comment.

A full proposal for a new project will be due in June.

Several potential themes/objectives for new project were discussed:

1. Effects of cover crop residues on weed seed persistence. Mohler outlined ideas and will take lead on coordinating future discussion. Idea is to bury seeds of various weed species in cover crop residues varying in C:N ratio. Exclosures will be used to help assess potential role of predators. Fungal pathogen effects will also be evaluated. Mulitple states would allow assessment of environmental and soil type effects.

2. Management of late-season weed seed production. Van Gessel will take lead on coordinating. Various ideas were discussed including assessment of seed production from post harvest weed re-growth; after-ripening of seeds on weeds pulled when immature (Renner) etc.
3. Mechanical weed control tools. Gallandt was not present, but he has strong interest in this area. High residue cultivation?