

NE-1035 Annual Meeting
The University of Connecticut, Storrs CT
Minutes of business meeting, 26-27 June 2012

Introductions: The meeting was convened at 8:30 am by host Rich McAvoy, who detailed the logistics for the two-day meeting and introduced Neil Mattson (Cornell University), current chairperson of the NE-1035 project.

Participants in the room introduced themselves:

Tony Kieffer, MaineAsia
Amy Power, MaineAsia
Tom Manning, Rutgers University
Rich McAvoy, University of Connecticut
Martin Gent, Connecticut Agricultural Experiment Station (emeritus)
Stacy Adams, University of Nebraska
Blair Harlan, Michigan State University
Ed Ashworth, University of Maine (Administrative liaison)
Robert Hansen, Ohio Agricultural Research and Development Center
Melissa Brechner, Cornell University
John Bartok, University of Connecticut (emeritus)
Lois Berg Stack, University of Maine
Neil Mattson, Cornell University
George Elliott, University of Connecticut (and his two graduate students)
Bill Bauerle, Ohio Agricultural Research and Development Center (emeritus)

Distant participants, connected by polycom, introduced themselves:

Joyce Latimer, Virginia Tech
Peter Ling, Ohio State University
Gene Giacomelli, Arizona State University
Murat Kacira, Arizona State University

NE-1035 mailing list: Neil reviewed the email list and members of NE-1035, and asked participants to notify him of any people who should be added to the group, any new stations that might be invited to participate, and any suggestions of ways to encourage industry participation.

Approval of 2011 meeting minutes: Martin moved to approve the minutes; Ed seconded the motion; the minutes were approved by unanimous vote.

Update from Ed Ashworth: Jonathan Franz has moved from Maine back to Ohio, to his previous ARS position in which he will be again more active in greenhouse work. Neil will extend an invitation to Jonathan to remain with NE-1035.

The NE-1035 project is scheduled to end 30 September 2013, at the end of the current 5-year term. The group must complete renewal paperwork in order for the project to continue. As a Northeast project, the proposal will be reviewed by the Northeast Experiment Station Directors, who review projects three times each year. There is an August 31 deadline for the September meeting. The following meeting will be in spring 2013; Ed will check the deadline for submitting the proposal to be reviewed at that meeting. The group must decide if it wants to write a new proposal; and if so, what objectives are pertinent, and who will be on the writing team. If there is no desire to go forward, the group can disband. There are

alternate multistate projects like NCR-101, and a fairly new group, NC-1186 (water management for ornamental crop production), and a southern group 1051 which is related to sustainable practices in greenhouse/nursery production (primarily a business/economic/marketing project). Ed can provide information on those projects for this group's review. If the group wishes to move forward, there is a need to justify how the new project will benefit individual states and experiment stations.

Neil asked if there is any news about funding on the federal level; Ed replied that the Senate passed the Farm Bill with 2% reductions in formula funding. There is a lot of election year activity, and there will likely not be clarity until after the election. The federal financial sequestration issue might impact this; it will likely push back decisions another year. It is not clear how this will impact public higher education. There is much pressure to control the costs of higher education, much information in the press about rising tuition costs, and debt loads for graduates are increasing. Some state comments were added: Connecticut is hiring 200+ new faculty members, funded in part by increased tuition in the next three years, with a target of a student:faculty ratio of 13:1. It is expected that the new faculty members will generate significant research funds. Cornell is hiring 100 new faculty members over the next few years, but numbers in agriculture and natural resources have declined. University of Nebraska is aiming to raise the quality of students; this involves hiring about 100 new staff, which is tied to the aging of current faculty members.

Collaborative effort: trade journal technical article series:

Neil noted that the group is now 2/3 of the way through the series of *Greenhouse Grower* articles. This series provides a good way to collaborate on a topic that is broad enough to include everyone. The original plan was a series of 12-13 articles; Neil worked with *Greenhouse Grower* to print the series. The magazine's management team looked for commercial sponsors for the series, and succeeded in finding enough advertisers to sponsor 9 articles. The NE1035 group chose the 9 articles that were printed. *Greenhouse Grower* provided a \$300 honorarium per article, shared among authors.

During the group's discussion, Neil conveyed *Greenhouse Grower's* invitation to the group to produce a webinar on greenhouse irrigation, with 2-3 people from NE-1035 answering attendees' questions about the series of articles. Melissa noted that the article series is very broad, and that a focus on a primary subtopic would be good for the webinar. She asked if *Greenhouse Grower* might conduct a Survey Monkey vote to their readers, to help prioritize topics for a webinar. Neil pointed out that the magazine often asks a question-of-the-week for response to an article; this might be another approach. He suggested hydroponic vegetable production as a prioritized topic, as it's a hot topic in the industry. John pointed out the commercial importance of vegetable production in greenhouses, in response to organic markets and winter farmer's markets, and the federally funded high tunnel projects. John works with the Connecticut NOFA group, where attendance has tripled to 600+ per meeting in the past three years, evidence of a lot of interest. John added that ornamental producers are turning to food crops in their off seasons.

In response to Neil's suggestion that the group list some topics from the series to be inserted into the publication's survey, these four topics were chosen:

<i>Topic:</i>	<i>Suggested participants:</i>
1- Automation and sensors	Stephanie Burnett, Jordan Meyer (MSU), Marc van Iersel, Peter Ling
2- Hydroponics in vegetable production	Martin Gent, Gen Giacomelli, Murat Kacira, Bob Hansen, Melissa Brechner
3- Plant nutrition and fertilization	Martin Gent, Bob Hansen, Neil Mattson, Melissa Brechner, AJ Both, Bill Bauerle
4- Irrigation systems (top-down, bottom-	Martin Gent, George Elliott, Ellen Papparozzi, Rich McAvoy

up, and capillary mats

It was suggested that the series be uploaded onto the NE-1035 website. Group members would achieve more results from this exposure.

Neil asked the group if there was desire for another collaborative effort, perhaps a book or website or *HortTechnology* article. Martin noted that a similar series to the first one, focused on greenhouse vegetable production, would be good. Group members have done a lot of research that would support such a series.

In further discussion, Bob asked if there was any reader feedback on the *Greenhouse Grower* articles; Neil responded that the editors were enthusiastic. Neil will ask the editors if they've received any feedback. Neil will ask *Greenhouse Grower's* new editor if there has been feedback. Bob noted that each article's space is limited to about 1500 words, which limits the ability to explain research findings. In the new series, each article should be more specific to allow inclusion of research findings. Possible topics include a series of 6 articles on greenhouse greens and tomatoes, with 2-3 articles on each crop. Defining target audiences will help determine the focus of each series; the reader feedback will help. Perhaps the focus might be: "As a greenhouse ornamental producer, how might you transition to greenhouse vegetable production?" Such growers already have experience in greenhouse system management. A better publication might be *Greenhouse Management*, which might reach more people who are in the transition from flowers to vegetables; a good end article might address the economics of which crops might be most profitable at various seasons. The group needs to determine which publication is best; in addition to *Greenhouse Grower* and *Greenhouse Management*, other options are *GrowerTalks*, *American Vegetable Grower*, any of the Meister publications, and *Greenhouse Product News*. A group was established to investigate contacting the trade publications to determine which might be interested in this project: Gene, Melissa, Martin, John and AJ (provisionally until he is able to respond). Gene will email these people to get started, and will connect with the broader group in identifying the articles and determining how to proceed.

Collaborative effort: webpage:

Melissa initiated this topic by commenting that people contact her office about how to start a new business for greenhouse vegetable production, with questions like "What type of system is optimal?" and "Which crops should I grow". There are many new growers with high tunnels. Stacy noted that UNL is compiling a series of extension publications, addressing cost analysis, structures and site selection; she suggested that this might be a good basis for collaboration. Rich noted that the group has expertise in production and structures, but not in economics and profitability. Neil suggested developing a new website; the current website is: <http://nimss.umd.edu/homepages/home.cfm?trackID=10197>

Neil pointed out that the NCR-101 group has a more fully developed website, and suggested that the NE-1035 group might do the same. John said that a list of available publications was once listed; the group could update that list and put it online again. Neil suggested posting .pdf versions of NE-1035-generated publications that could be linked to members' individual state websites; the group could request that those sites cite NE-1035 as the source of the publications. In view of the group's interest in developing this webpage, Melissa, Murat and Neil volunteered to form a committee, and Neil suggested AJ as an additional member, since AJ mentioned developing such a website at last year's meeting. Melissa suggested these topics as a focus for the online publications: irrigation, vegetable production, energy sources and conservation, ventilation control, sensors and control systems (four of these topics derive from NE-1035's last 5-year proposal). John suggested a peer review process for new articles on the website.

NE-1035 Leadership:

Bob motioned and Martin seconded the proposal that Stephanie chair the committee according to established protocol; this was unanimously approved. The new secretary will become chairperson after one year. The incoming secretary is expected to be an important team member in writing the new 5-year proposal. Murat and Gene will check with Chieri Kubota to determine her interest. Neil will check with AJ. Murat offered to take on this responsibility if no one else is found. Martin motioned, Neil seconded and the group approved unanimously to proceed with this approach.

Discussion of NE-1035 collaborations:

Martin congratulated Neil on coordinating the *Greenhouse Grower* series of articles. Bob added that this was a first for this group. Other collaborations include:

Peter reported that a higher education challenge grant supports collaborative work with Murat, Chieri, Gene, AJ, Emily, Robin, Peg and Peter in developing horticultural engineering/technology modules to be incorporated into courses. These modules target 4-year curricula, but are also being used in outreach efforts. This is the second year of this 3-year project.

Bill works as a mentor to an applied hydroponics project that addresses nutrient management; the project involves growers.

John is conducting greenhouse audits, and is working on three research projects: use of corn burners to heat Massachusetts high tunnels; a Connecticut Ag Experiment Station project for screening *Drosophila* on fruits; and a Vermont bubble greenhouse project.

Martin and Rich are working with commercial growers in a project that addresses management of disease in ebb-and-flow systems.

Neil works with Stephanie on organic substrates and fertilizer. He collaborates with Roberto Lopez (Purdue) on cold finishing of bedding plants and baskets in high tunnels. He contributed to an SCRI proposal with Murat, Melissa, Peter and Jonathan Franz to look at the carbon footprint of greenhouses/high tunnels; this did not go forward because of difficulties with the match requirement, but they will try again.

Mark and Stephanie continue their collaboration on irrigation.

Discussion of the future of NE-1035:

If NE-1035 is to continue, a request must be filed by August 31.

The discussion of whether or not the NE-1035 should continue included comparison of NE-1035 and NCR-101. NCR-101 is not a research group, but rather an information exchange vehicle, with much time dedicated to controlled environments and instrumentations and growth chambers, and with more focus on vegetables. NE-1035 focuses more on production greenhouses. Stacy reported that the Nebraska team is looking at labor, fuel blending for higher output, and food production. Rich and the UConn group is interested in alternative energy. Tom noted that the Rutgers group is interested in continuing this collaboration; it makes sense to have the broader NE-1035 group continue because individual groups are decreasing in size and it's hard to gain a broad perspective without interstate collaboration. Peter said the OSU group would like to continue the NE-1035 project; they work on more tightly controlled environments with the NCR-101 group, the NE-1035 group's industry-oriented work provides good

balance, and there's not a lot of overlap between the two groups' work. Gene noted the benefit of both groups; NCR-101 focuses on technical controls while NE-1035 focuses on less controlled environments, even high tunnels. The groups have similar goals of good crop production and yield, but through different approaches. Murat reported that he, Chieri and Gene are active in both groups; they would like to strengthen collaborative efforts in the future, and see the group continue. Joyce said that the Virginia Tech group is motivated to develop collaborations, including continuation of NE-1035. Neil would like to continue the collaborations on water/nutrients and production systems for saving energy. Lois said Stephanie wants to see the group continue. Stacy pointed out that impending retirements make it important to continue inter-institutional collaborations like NE-1035. Ed repeated that there is a need to file a request to continue; this effort would require at least two institutions in the Northeast, and typically a minimum of six total institutions to form a critical mass of collaborators. An outline is needed by the end of August, to be reviewed in September, and a full proposal would be needed for the March meeting of the Directors. Perhaps University of Kentucky would become active again if approached.

Discussion of future emphases:

Neil noted that retirements might cause the group to be smaller; in looking forward, the group should not take on more than will be possible. Areas of strong potential for collaboration should be identified. Ed added that current collaborations might be a starting point: water, nutrient management, energy management, food production in high tunnels, possibly urban agriculture. Stephanie will file the documents for continuation. Gene also noted that a DC-area workshop later this year will focus on urban agriculture and vertical farming. The intent is to open-mindedly assess whether urban agriculture is financially or environmentally feasible. Gene will forward information to the group. [Note: information about this workshop was forwarded to group members on August 22.]

Stephanie as incoming president of the group, plus Murat, Neil and AJ, will work on the proposal process. Rich suggested that people take the lead on individual objectives they're involved in, and send information to Stephanie for fine-tuning. This is a similar approach to the last cycle. Ed noted that the group's last proposal was about 20 pages plus references.

Section editors for this proposal are:

- (1) Water, fertilizers, and BMPs for waste-water management (Rich, Neil)
- (2) Alternative energy and conservation (AJ, Tom).
- (3) Vegetable production systems, including Best Management Practices, food safety (GAP), urban agriculture systems. (Martin, Bob) They will also solicit collaboration from Peter and Lou Albright on energy-saving methods in closed greenhouses and high tunnels in small-scale production systems.
- (4) Sensors, sensor networks, control systems, precision management, climate control and strategy development (Murat).

Meeting location for 2013: The group supported incorporating a telephone connection like Rich provided this year, to allow distance participation. Next year's NCR-101 meeting will be March 9-12 at Purdue, hosted by Cary Mitchell. For NE-1035, Murat offered Arizona as a host; his group will work on the best timing for the meeting, considering weather and teaching schedules.

Bob motioned; Rich seconded; the group unanimously voted to adjourn the meeting at 12:13 pm.

Respectfully submitted by Lois Stack (on behalf of Stephanie Burnett)