Content and Format for NCERA-101 Station Reports – 2009 and beyond …

In 2006 the USDA North Central Regional Committees were requested to consolidate their accomplishments and impacts of their members and submit a single report that is posted on the National Information and Management and Support System (NIMSS). The 2007-2008 Annual Report and Impact Statements are available from the NCERA 101 website. The formatting guidelines for station reports are modified slightly in 2009, and are requesting an "**Impact Nugget"** to facilitate the compilation of the NIMSS annual report. The Executive Committee thanks you in advance for following these guidelines.

All members are requested to prepare a 1-3 page station report that summarizes the past year's activities, regardless of whether you will participate in the annual meeting and submit the report by mid-March to 2 individuals:

- As an **MS-Word** document to the current Secretary,
- and an **Adobe PDF** document to Tracy Dougher, Webmaster, tracyaod@montana.edu

Content for NCERA-101 Station Reports

1. Impact Nugget: A concise statement of advancements, accomplishments and impacts. (Limit to 1-2 sentences)

2 New Facilities and Equipment. Include sensors, instruments, and control systems purchased/installed.

3. Unique Plant Responses. Include noteworthy findings in controlled environment research.

4. Accomplishment Summaries. Draft one to three short paragraphs (2 to 5 sentences each) that summarize research or outreach accomplishments that relate to the NCERA-101 objectives (see below). Please use language that the general public can readily comprehend.

4. **Impact Statements**. Please draft 2 or 3 impact statement summaries related to the NCERA-101 objectives (listed below). Statements should be quantitative when possible and be oriented towards the general public. This is perhaps the most difficult yet most important part of the report. Two examples are listed below.

5. **Published Written Works**. Include scientific publications, trade magazine articles, books, posters, websites developed, and any other relevant printed works produced. Please use the formatting in the examples below.

6. **Scientific and Outreach Oral Presentations**. Include workshops, colloquia, conferences, symposia, and industry meetings in which you presented and/or organized. See below for formatting.

7. **Other relevant accomplishments and activities**.

Station reports will be posted on the NCERA-101 website. You are requested to bring paper copies of your station reports to distribute at the meeting. (Estimate 60 copies)

Examples of Impact Nuggets:

Michigan State University has developed and distributed software to bedding plant growers that can potentially reduce their energy consumption by up to 30% by optimizing temperature and light.

University of Georgia has developed recommendations for using automated irrigation controllers that may reduce water use by 40% to 70%.

Examples of Accomplishments

Purdue University grew five day-neutral or everbearing cultivars of strawberry plants with three different day/night temperature regimes in growth chambers or in a greenhouse. Chamber plants were hand pollinated, while greenhouse plants were pollinated by hand or by vibrating wand. The coolest temperatures (18 C days/10 C nights) produced more berries with better flavor. No effect of pollination method was found, possibly due to heavier insect loads on plants pollinated more intensively.

Rutgers University quantified the impact of a manually operated energy curtain on the recorded inside soil and air temperatures and daily light integrals during early season high tunnel production of tomato. Data collected from late March through mid-May for two New Jersey locations and two growing seasons revealed that the use of an energy curtain inside a high tunnel increased the inside nighttime air temperature on average by 1.4 °C (or 13%) compared to a tunnel without a curtain. The use of an energy curtain inside a high tunnel increased the inside nighttime soil temperature on average by 0.5°C (or 4%) compared to a tunnel without a curtain but also decreased the accumulated inside light by approximately 5%.

Examples of Impact Statements

Lighting and temperature studies at Michigan State University have quantified the effects of growing bedding plants under different greenhouse conditions. As a result, flowering time and plant quality can be more accurately predicted by commercial greenhouse growers to meet their scheduled market dates. This information can be incorporated with energy consumption models to predict the amount of energy consumed when crops are grown at different temperatures. Growers who optimize temperature and light can potentially reduce their energy consumption by up to 30%.

The availability of water for agricultural use is under pressure, and more efficient use of the available water is increasingly important. Research at the University of Georgia has shown that efficiency can be increased by applying water based on the actual needs of the crops. This can be done using automated irrigation controllers that maintain substrate water content at a grower-determined level. Research indicates that a substrate water content of 15% (v/v) is adequate for most crops. Using automated controllers to maintain this substrate water level may reduce water use by 40% to 70%.

Format for Published Works (arrange alphabetically)

Books
Hartmann, H.T., D.E. Kester, F.T. Davies, Jr. and R.L. Geneve. 2002. Hartmann and Kester's Plant Propagation: Principles and Practices. Seventh Edition. Prentice-Hall, Inc., Englewood Cliffs, NJ.

Book Chapters
Gent, M.P.N. and R.J. McAvoy. 2000. Plant growth retardants in ornamental horticulture. In: Plant Growth Regulators in Agriculture and Horticulture: Their Role and Commercial Uses. A.S. Basra, (ed.) Good Products Press, NY. pp. 89-146.

Refereed Journal Articles
Shimizu, H., E.S. Runkle, and R.D. Heins. 2004. A steady-state model for prediction of poinsettia plant shoot-tip temperature. J. Amer. Soc. Hort. Sci. 129:303-312.

Symposium Proceedings
Fleisher, D.H., H. Baruh and K.C. Ting. 2001. Model-based predictive control for biomass production in advanced life support. Proceedings of the 2nd IFAC-CIGR Workshop on Intelligent Control for Agricultural Applications, Bali, Indonesia. August 22-24. pp. 198-203.

Poster Presentations
Padhye, S., E.S. Runkle, and A.C. Cameron. 2005. Quantifying the vernalization response of *Dianthus gratianopolitanus* 'Bath's Pink'. HortScience 40:1013 (poster presentation).

Popular Articles
Albright, L.D., R.S. Gates, K.G. Arvanitis and A. E. Drysdale. 2001. Control strategies for plant shoot and root environments on Earth and in space. IEEE Control Systems Magazine: Agriculture and the Environment 21(5):28-47.

Fausey, B., E. Runkle, A.C. Cameron, R.D. Heins, W.H. Carlson. 2001. Herbaceous perennials: *Heuchera*. Greenhouse Grower 19(6):50-62.

Other Creative Works
Donnell, M. and T.H. Short. 2001. An interactive economic analysis and business plan for hydroponic lettuce production. Program was developed on an OSUE hydroponics homepage site.

Prenger J. and P.P. Ling. 2001. Greenhouse condensation control – understanding and using vapor pressure deficit (VPD). Ohio State University Extension Fact Sheet, AEX-804-2001. The Ohio State University, Columbus, OH 43210.

Format for Scientific and Outreach Presentations (arrange alphabetically)

Lopez, R.G. and E.S. Runkle. 2006. Quantifying the thermal tolerance of non-rooted *Impatiens hawkeri* cuttings and their subsequent performance. XXVII International Horticultural Congress, Seoul, Korea.

Runkle, E.S. 2005. Controlling plant growth and development with environment. International Plug & Cutting Conference, Dearborn, MI.

NCERA-101 Objectives

- □ Technical Advancement: Advance the technology of controlled or partially controlled environments for agricultural research and production. New ideas and advanced technology are shared and evaluated for potential use by those with research and production interests.

- □ Technology Transfer: Facilitate the transfer of technology among those involved with the design, management, manufacture and/or operation of controlled environment systems for both research and production agriculture.

- □ Quality Control: Develop quality assurance procedures for environmental control and monitoring in experimental and production facilities. These procedures provide a known and documented accuracy of environmental control in controlled environment facilities.

- □ Guidelines and Standards: Continue to develop and revise guidelines for measuring and reporting environmental parameters for experiments in controlled environments.

- □ Communication: Publish research, exchange information, prepare educational materials, and provide consultation and expertise for individuals engaged in controlled environment research and production activities.