

Minutes of 2004 NCR 101 Committee Meeting
Joint International Meeting of the Australasian Controlled Environment Working
Group, UK Controlled Environment Users Group, and North American NCR-101
held in Brisbane, Australia, March 16, 2004

Attendance (listed in no particular order):

Dave Fleisher (USDA), Chieri Kubota (U. of Arizona), Reg Quiring (Conviron), Ramesh Kanwar (Iowa St.), A.J. Both (Rutgers U.), Henry Imberti (Percival Scientific), Peter Ling (Ohio St. U.), Dick Gladon (Iowa St.), Bruce Kettner (Econair), Mark Theroux (Econair), Mark Romer (McGill U.), Rob Kerslake (CSIRO, AU), Joel L. Cuello (U. of Arizona), Ian Flitcraft (U. of Georgia), Desmond Mortley (Tuskegee U.), Ray Wheeler (NASA-KSC), Ted Tibbitts (U. of Wisconsin), Conrad Bonsi (Tuskegee U.), Erik Runkle (Michigan St. U.), Joey Norikane (U. of Kentucky), Lou Albright (Cornell U.), Cary Mitchell (Perdue U.), John Wierzchowski (EGC), Wade Berry (UCLA), Neil Yorio (NASA-KSC), Jeff Werner (U. of Alaska), Meriam Karlsson (U. of Alaska), Paul Austin (HortResearch, NZ), Gary Stutte (NASA-KSC), Yoshiaki Kitaya (Osaka Prefecture U.), John Sager (NASA-KSC), Garry Taylor (Sanyo Gallenkamp), L.D. Incoll (U. of Leeds, UK), Richard Denis (Agritechnove Inc.), Bruce Bugbee (Utah State), Tony Agostino (CSIRO), Alex Turkewitsch (Greenhouse Engineering), Alec Mackenzie (Argus Controls), Marlene Meckazo (Argus Controls), Dennis Greer (Charles Sturt U., AU), Lance Hoare (SARDI, AU)

Executive Committee

Reg Quiring, Chair
Chieri Kubota, Vice-Chair
Dave Fleisher, Secretary
David Tremmel, Past Chair

Meeting Synopsis

The 2004 NCR-101 committee meeting was conducted as part of an international conference in conjunction with the UKCEUG (United Kingdom Controlled Environment Users Group) and ACEWG (Australasian Controlled Environment Working Group). The joint meeting was held in recognition of the rapid technological changes occurring with controlled environment industry, the diversity of use for such technology, and the need to strengthen ties and disseminate information with international colleagues and industrial partners. The breadth of topics covered by the conference participants (appendix 3) demonstrates the success the committee had in addressing these needs.

Opening Remarks

-Reg Quiring opened the NCR-101 Business Meeting at 5:50 pm on Monday, March 15. Greetings were extended to the group and special thanks were extended to Chieri Kubota, Dan Schmoltdt, Ray Wheeler, and Ramesh Kanwar for their efforts in securing travel funding for this year's meeting from USDA CSREES sources.

Introductions

-Reg Quiring welcomed the participants and asked that the attendees introduce themselves and indicate their affiliation. The strong international presence was noted.

General Announcements / Events (members)

-Erik Runkle announced to the group that the International Symposium on Artificial Lighting in Horticulture on Recent Advances in Horticultural Lighting, sponsored by ISHS, will be held in Lillehammer, Norway, June 21-24, 2005. Abstracts for the conference are due by end of December, 2004.

-Lynton Incoll invited all the NCR-101 members to participate in the annual controlled environment meeting of the UK group. The 2 ½ day meeting and workshop will be held at the University of Leicester, UK, in September 12-14, 2004. The workshop is on 'Understanding and measuring light in controlled environments' (link: <http://www.biology.leeds.ac.uk/school/societies/ceug/ANNOUNC04.htm>). There will be representatives and demonstrations from different manufacturers. The NCR-101 instrument package will be used as an example of sensor calibration.

-Peter Ling announced the following three conferences /workshops:

a) An International Symposium on Herbaceous Ornamental Plant Germplasm Conservation and Utilization will be held July 6-9, 2005 in Columbus, OH.

b) The Ohio Florist's Association short course will be held on July 9-12, 2005 in Columbus, Ohio

c) An International Symposium on Greenhouse Systems and Energy Conservation sponsored by ISHS will be held following the short course from July 13-15, 2005 in Columbus, Ohio.

-Peter Ling also acknowledge the February retirement of Ted Short who has been a faculty of Ohio State University for 34 years. Ted will be returning as a part-time faculty.

Minutes, 2003 Meeting (Chieri Kubota)

-As the 2003 minutes had been posted on the NCR-101 website for members to read, a formal reading of the minutes was dispensed with. **Alex Turkewitsch moved that the minutes be accepted, Bruce Bugbee seconded the motion and the minutes were accepted by a general vote.**

Administrative Advisor's Report (Ramesh Kanwar)

-Dr. Ramesh Kanwar (administrative advisor to the NCR-101) commended both Rob Kerslake and colleagues (the Australian conference organizers) and the U.S. agricultural station directors for support for the conference. He expressed appreciation for the large NCR-101 group turnout and support of travel expenses primarily through the efforts of Chieri Kubota and Dan Schmoltdt for their efforts in securing USDA CSREES funding.

-Funding sources in the groups' area of expertise such as the USDA NRI program were increasing in size each year for competitive grants. Granting programs from NSF, NASA, and DOD should be viewed as other potential funding sources. Dr. Kanwar

emphasized research in controls and sensing technologies as critical areas likely to be supported by other agencies.

-Dr. Kanwar has expressed to the U.S. Agricultural Extension directors the longevity of the NCR-101 committee (over 30 years) and the success that the committee has had in facilitating information exchange. He emphasized the strong international ties the committee has fostered, including two major international conferences (2001 Norwich, UK and 2004, Brisbane, AU) in the last 5 years and believes the committee has done an excellent job in reflecting the global nature of controlled environment technology and information exchange. Dr. Kanwar further stated that the committee has made a great impact in terms of organizing international conferences and has delivered strong outcomes in the development of group standards and guidelines for reporting work and technology use in controlled environments. The depth and involvement of industry was also demonstrated by the amount of industrial representatives at the present meeting and was indicative of the success of the committee.

-Dr. Kanwar suggested future ideas for including more industrial partners in the meeting. Continued planning of rotating US and international conferences was suggested. Dr. Kanwar wished the committee success for the rest of the meeting.

Mailing List and Membership Report (Mark Romer)

- Mark Romer thanked Dr. Kanwar for his report and efforts in helping the committee meet overseas. He emphasized that we have actually had 3 international conferences in the past 4 years, including the 2003 NCR-101 meeting held at the University of Guelph, Canada.

-There was no change in membership or institutes as of last year. NCR-101 current membership includes 132 members and 93 institutes. The institutes include 12 phytotrons and controlled environment facilities, 42 university departments and agricultural experiment stations, 16 government organizations and contractors, and 23 industry representatives (appendix i).

-Due to the closing of the Duke phytotron the home of the NCR-101 website was unclear beyond 2004. Mark mentioned that he and Tracy Dougher had volunteered to support the website should access to the server at Duke disappear. All members were encouraged to look over the new changes implemented on the web site (<http://www.ncr101.duke.edu>), including links to the instrument package, meeting places, pictures of current events, institution links, and updated station report contact information (including USDA station representatives).

-Chieri Kubota and Desmond Mortley also reported they had difficulty in finding station reports on the website. Mark explained that the member site has its own page with a *.pdf of each station report. Mark asked for suggestions to improve navigation of website.

-Mark requested that all members email station reports to the NCR-101 secretary and Dave Tremmel. Dave Fleisher explained that he had only received 10 reports prior to traveling to the meeting.

NCR 101 Instrument Package Reporting (Bruce Bugbee)

-Bruce Bugbee reported two uses for the package in 2003, Mark van Irsel and Henry Imberti. He reported the budget as \$1500. The Apogee Instruments spectroradiometer package is available and is being shipped with a laptop. Information can be found on the NCR-101 website. Both packages are easy to use. Both packages ((1) portable spectroradiometer with laptop and (2) the datalogger with 3 Li-Cor calibrated quantum sensors)) can be borrowed together for approximately 2 weeks at a cost of \$450 or \$300 when borrowed separately. The advantage of using the quantum sensor package is for calibration of quantum sensors in situ (as distinct from calibrating each sensor separately from LiCor). He also mentioned that other instruments, including a pyranometer, anemometer, R / FR sensors, and a UV meter can be made available.

Minimum Reporting Guidelines Brochure (Ted Tibbitts and A.J. Both)

-Ted Tibbitts explained the background on developing the guidelines for measuring and reporting environmental parameters for experiments on plants in growth rooms and chambers. The history is that a revision of the guidelines was encouraged in Norwich 2001 meeting. A 16 person international committee was developed with the focus of developing a set of minimum reporting guidelines that would be used by industrial, academic, and university partners. Ted Tibbitts was the chair of the committee. Three people were representatives from different international groups (A.J. Both, Lynton Incoll, and Paul Austin). Paul Austin assumed responsibility to set up the guidelines in preparation for printing. In the U.S., industry sponsors Conviron, Econair and Percival contributed \$200 a piece to support printing costs for the guideline brochures.

-Brochure copies (appendix ii) were developed, including 3400 copies in America, 6000 copies in Australia and 10,600 copies in New Zealand. Ted Tibbitts requested that NCR-101 members take copies back with them and distribute them.

-Ted Tibbitts discussed some remaining issues with the standards distribution, including feasibility of developing double-sized brochures for wall hanging in laboratories and facilities and opportunities for getting the standards published in professional journals. The idea would be to get the standards published without any copyright or restrictions on the material. The following people had previously volunteered to investigate the feasibility of getting the standards published by professional journals.

Don Krizcek: ASHS guidelines

Ted Tibbitts and Keith Ingram: Agronomy Society

The following people volunteered at this meeting:

Gary Stutte - Plant growth society

Lou Albright - ASHRAE

Mark Romer - Canadian Journal of Plant Physiology
Ted Tibbitts - Biotronics
Yoshiaki Kitaya - Journal of Japanese Society of Environment Control in Biology
Carey Mitchell - Habitation

-Some discussion was held on making up a standards poster at professional meetings. The poster could include distributable pamphlets. A.J. Both agreed to take the lead on this project and asked for interested parties to contact him (both@aesop.rutgers.edu).

-Alex Turkewitsch asked about the ASAE summer meeting but the group decided that it was too late to submit an abstract for the 2004 meeting.

-Ted Tibbitts said the standards would be put up on the NCR 101 website.

-Lynton Incoll suggested the standards not be put up on the NCR-101 website until all members had a copy. Mark Romer agreed to wait until members received the pamphlets first. Mark Romer and A.J. Both agreed to facilitate efforts to distribute pamphlets in the U.S..

-Peter Ling suggested that each person bring copies to their agricultural station director. Ramesh Kanwar agreed this was a great way to demonstrate committee impact.

-Lynton Incoll brought up the fact that tissue culture guidelines had been developed and that Jeff Heldridge would take the lead in the UK to distribute them. Ted asked who will work with Jeff to develop the guidelines. Chieri Kubota volunteered and Lynton asked members to contact him if interested.

Old Business / Other Committee Reports

-Chieri Kubota discussed the travel grant funding status. Monies from USDA CSREES were used to support registration fees of station representatives, speakers, and NCR-101 officers. A total of \$10,000 dollars was awarded, of this, 26 registration fees and international transaction fees were paid, leaving a balance of \$1671.24 dollars. The balance may be used to support proceeding publications from this conference, but this needed to be decided.

-A \$10,000 request to the USDA NRI program was submitted on January 21, 2003. The proposal is still under review and the status will be determined in April. The NRI reviewers said it was not unusual for funding to be received after the conference was held. The money would be used to reimburse conference travel costs for speakers and junior members (approximately \$500 for 17 people).

-Reg Quiring asked if we could combine the balance from USDA CSREES money. Rob Kerslake said he would like to see conference proceedings published with some of the funds and asked for input on what journals, such as Biotronics, would be appropriate. Dennis Greer suggested a four page extended abstract rather than a full paper. Gary Stutte asked whether we should have a group discussion on how to spend the dollars for

publication or not. Ramesh Kanwar stated that it probably was not possible to mix grants but that some of the dollars could be used to support publication efforts.

-Lynton Incoll brought up some publication issues with the 2001 Norwich conference proceedings which were still in the process of being finalized. At the meeting, the group decision was not to proceed with publication, but to setup a website with links to the speaker presentations. John Lea-Cox offered to work on the website. Due to delays in editing, speakers submitting their presentations, and other activities, the website is still under development. Lynton emphasized this was a lot of effort and asked whether a book or website is actually feasible. Lynton said the final product will be out shortly, but asked that the group consider the time associated with doing a similar type of publication for this meeting. Lynton asked if extra USDA CSREES funding could be used to support student salary for web design. Chieri Kubota asked if there would be time to discuss with larger group at the conference and Rob Kerslake agreed.

Growth Chamber Handbook Update

-Reg Quiring asked A.J. Both about the status of the growth chamber handbook revision. A.J. Both reported that little progress had been done due to guidelines taking precedence. He told the group that Marc van Iersel and Corey Rutzke are also committee members.

-Mark Romer asked if an Adobe pdf document on website is a copyright infringement and, if not, suggested the entire handbook could be uploaded and available via the NCR-101 website. He asked how Iowa State University (the publisher of the handbook)) would view this. Ramesh Kanwar said the publisher had been privatized and that the current executives could follow up on this and get information to the committee about publication copyright issues.

-Ted Tibbitts requested copy of the lighting symposium and Mark Romer volunteered to put up the proceedings as *.pdf on the NCR-101 website since the work was not copyrighted. Chieri Kubota expressed some concern over the size of the document and Mark Romer suggested that he will separate the volume into different chapters.

-Ramesh Kanwar suggested that the committee generate a news release about the group's activity in Brisbane. The release would emphasize to station directors the enthusiasm and international character of the scientists and industry associated with the NCR-101 committee. Reg Quiring offered to prepare the blurb, and Ramesh offered to identify release methods. This news release could be used as an outcome assessment of the committee.

-Lynton Incoll and Mark Romer suggested we use list of participants and the conference program as part of the minutes. Reg Quiring agreed that the topic list from the program would make a good appendix.

Station Reports

-Oral station reports were not presented. Instead, attendees made oral presentations on a topic of research (appendix iii). Written station reports were provided from Alaska,

Arizona, Georgia, Indiana, Kentucky, Michigan, New Jersey, New York, Ohio, Wisconsin and the USDA (Maryland).

New Business

-The nominating committee, composed of Reg Quiring, Dave Tremmel, Chieri Kubota, and Dave Fleisher had previously nominated Desmond Mortley as incoming executive member. **Desmond Mortley's nomination to incoming secretary was approved collectively by the entire committee.**

Future Meetings

-Reg Quiring mentioned that the University of Arizona was a backup for the Australian meeting should the Australian meeting not be held. Ohio State University and Kennedy Space Center had also been mentioned. Reg Quiring asked if University of Arizona will hold the 2005 meeting. Chieri Kubota agreed that Arizona would hold the 2005 meeting from March 12 through 15. A ½ day tour of an appropriate Arizona facility and a 1 day tour on the 15th of the greenhouse industry was proposed. Joel Cuello agreed to see if arrangements could be made with Biosphere II facilities for a visit. However, the status of the facility is uncertain and will need to be investigated.

-Bruce Bugbee motioned to accept the meeting at Arizona, Peter Ling seconded, and the committee supported the motion.

-Ted Tibbitts asked about discussion for a 2006 meeting and suggested the officers have some ideas for 2006 prior to the 2005 meeting. Ray Wheeler suggested that the next international meeting be held in North America in 2007. Mark Romer asked whether Kennedy Space Center would be interested to host the meeting. One issue would be security concerns with technical tours. Ray Wheeler was amenable to hosting the conference in 2007 and believed the security issues would not present too much of a problem. Lynton Incoll also expressed his support for a 2007 meeting at NASA-KSC. Dennis Greer believed it should be a good draw from the Australian group as well.

Mark Romer thanked Reg Quiring for all his work as chair.

Reg Quiring motioned to close the meeting, Gary Stutte seconded the motion, and the meeting was adjourned by general vote.

Respectfully submitted,

Dave Fleisher
NCR-101 Secretary