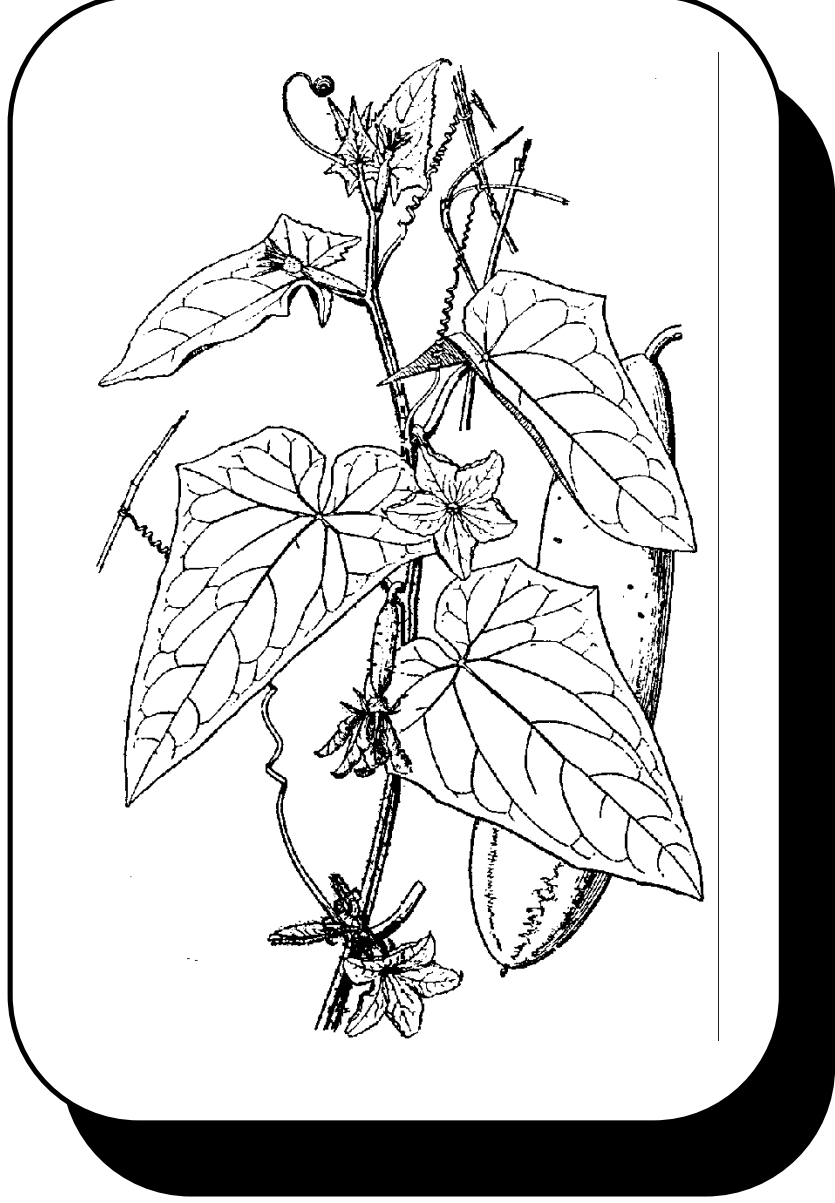


Cucurbit Genetics Cooperative

2002



25

Cucurbit *Genetics* Cooperative



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The **Cucurbit Genetics Cooperative (CGC)** was organized in 1977 to develop and advance the genetics of economically important cucurbits. Membership to CGC is voluntary and open to individuals who have an interest in cucurbit genetics and breeding. CGC membership is on a biennial basis. For more information on CGC and its membership rates, visit our website (<http://ars-genome.cornell.edu/cgc/>) or contact Tim Ng at (301) 405-4345 or tn5@umail.umd.edu.

CGC Reports are issued on an annual basis. The Reports include articles submitted by CGC members for the use of CGC members. None of the information in the annual report may be used in publications without the consent of the respective authors for a period of five years.

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Cucurbit Genetics Cooperative News!!

Timothy J Ng, CGC Chair
University of Maryland, USA

Apologies are in order for the delay of CGC 25 (2002). We had anticipated that the 25th anniversary issue of the CGC Report would have been issued at the regular time in the regular manner. Unfortunately, a combination of events including the 11 September 2001 attacks (the University of Maryland is in the Washington DC area), a tornado that severely damaged the University of Maryland campus shortly thereafter, the unanticipated loss of our webspace on the U.S. Plant Genome server, and unexpected delays all served to lengthen the time between the issuance of CGC 24 and CGC 25. As a means of apology, all CGC members who were paid up through 2001 or who joined in 2002/2003 will have their membership extended an additional year free of charge.

For your information, CGC 24 (2001) was mailed approximately a week before the 11 September attack on the US. Unfortunately, as mentioned earlier the University of Maryland is located in the Washington DC area and some of our mail goes through the Washington DC Brentwood post office. This was the post office that was shut down due to several workers dying from the anthrax attack, and mail was held there for a considerable period of time while the building underwent a thorough decontamination. If you did not receive your copy of CGC 24, please notify Tim Ng and he will send a replacement copy.

CGC 26 (2003) is currently on schedule for mailing in August. At that time, it will probably be accompanied by a mail/email ballot for members to vote on a change in our by-laws. The primary reason for this is that the responsibilities of the CGC Chair has increased considerably over the past 25 year, to the point where the CGC Coordinating Committee feels that the duties should be more equitably divided among three CGC members, one for administrative efforts such as CGC membership renewals and correspondence, one for development and maintenance of the CGC website, and one for final editing and publication of the CGC Report. Since this represents a change in the structure of CGC, it requires a majority vote from the CGC membership prior to implementation.

Meanwhile, we are pleased to announce two winners of the CGC logo contest. Amanda Neill of the Botanical Research Institute of Texas designed the watermelon/DNA design which is reproduced on the front cover of CGC 25, and Tarek Kapiel of Cairo University in Egypt designed the new CGC/DNA logo which is now on the homepage of the CGC website. Both Amanda and Tarek will receive two-year memberships in CGC for their efforts. Our thanks to all who participated in the CC logo contest!

Comments.....

From the CGC Coordinating Committee: CGC Report No. 26 will be published in August 2003. Contributors to the CGC Report should check the website (<http://www.umresearch.umd.edu/cgc>) for deadlines, and for instructions on preparing and submitting manuscripts. As always, we are eager to hear from CGC members regarding our current activities and future direction of CGC.

From the CGC Gene List Committee: Lists of known genes for the Cucurbitaceae have been published previously in HortScience and in reports of the Cucurbit Genetics Cooperative. CGC is currently publishing complete lists of known genes for cucumber (*Cucumis sativus*), melon (*Cucumis melo*), watermelon (*Citrullus lanatus*), and *Cucurbita* spp. on a rotating basis.

It is hoped that scientists will consult these lists as well as the rules of gene nomenclature for the Cucurbitaceae before selecting a gene name and symbol. Thus, inadvertent duplication of gene names and symbols will be prevented. The rules of gene nomenclature (published in each CGC Report) were adopted in order to provide guidelines for the naming and symbolizing of genes previously reported and those which will be reported in the future. Scientists are urged to contact members of the Gene List Committee regarding questions in interpreting the nomenclature rules and in naming and symbolizing new genes.

From the CGC Gene Curators: CGC has appointed curators for the four major cultivated crops: cucumber, melon, watermelon and *Cucurbita* spp. Curators are responsible for

collecting, maintaining, and distributing upon request stocks of know marker genes. CGC members are requested to forward samples of currently held gene stocks to the respective Curator.

IInd International Symposium on Cucurbits – Tsukuba, Japan

Kajim Abak, chief of the ISHS Cucurbit Working Group
Shigeo Nishimura, Convener

The IInd International Symposium on cucurbits was held from September 28 until October 1, 2001 at Tsukuba Science city in Japan under the sponsorship of the International Society of Horticultural Science (ISHS) and the Japanese Society of Horticultural Science. The one hundred sixty eight participants came from 25 different countries. Recent results of research on all aspects of science and technology on cucurbits were presented and actively discussed in 36 oral and 59 poster presentations. The program was divided into 5 sessions, namely: Biotechnology, Genetics and Breeding, Environmental Physiology, Disease Resistance and Post-Harvest.

Many interesting studies were reported. In the Biotechnology session, for instance, technologies for an efficient haploid and doubled haploid production in melon were presented as well as information on DNA markers and genetic maps of melon and watermelon, and on fruit development and maturation mechanisms.

During the Genetics and Breeding session among other subjects the India origin of the no-netted melons in Asia, as well as the small seeded melons such as the variety Makuwa, widely produced in east Asia, was disclosed. In the Environmental Physiology session interesting information was presented on the modeling of greenhouse cucumber production based on studies about the partitioning of photo-assimilates within a plant. Also results of research were reported on a marked change of the cytokinin composition by grafting of cucumber and on the possible involvement of auxin-inducible genes in the hydrotropic response of the clinorotated roots.

Classification of pathogenesis in 21 strains of *Pseudoperonospora cubensis* in cucurbits collected from European countries was presented in the

Disease Resistance session, and in the Post Harvest session, amongst other items guidelines for quality maintenance of melon in USA were given as well as information on extension of the shelf life of melon fruit by the ethylene inhibitor 1-methylcyclopropene and on nondestructive evaluation methods of fruit qualities using laser.

In all sessions there was a marked increase of presentations on molecular studies in cucurbits as is the case in other fields.

The highlight of the Symposium was the open forum entitled “Cucurbits of Silk Road” which was specially planned by the Organizing Committee because the cucurbits symposium was held in Asia for the first time. In the forum, five Asian researchers gave interesting introductions to the participants of the symposium and the citizens of Tsukuba city on many varieties of Asian cucurbits and their research topics from Turkmenistan, India, China, Korea and Japan. In the general discussion, the importance of the maintenance of genetic diversity in these regions was stressed by many participants. It was concluded that efforts to this effect should be made.

Participants were offered a professional tour to visit cucurbit farmers around Tsukuba city. A typical Japanese cucumber farmer we visited produced cucumbers all year round using plastic houses. We also had the opportunity to inspect an automatic packing station managed by a farmer’s union in the region. If cucumber farmers used this facility, he only had to harvest his cucumbers and bring them to this station. We also visited a melon farmer, who quite uniquely owns an open market with regional restaurant by himself and sells the produce including melons to tourists coming around. Finally we had a farewell party at a farmer’s open market in a heartwarming environment. We are sure that everyone had a pleasant time in this professional tour.

It was decided to meet each other again after 4 years in IIIrd International Symposium on cucurbits either in Australia or in China. (Editors note: the IIIrd International Symposium on Cucurbits is now scheduled for 2005 in Australia. Meanwhile, the Proceedings for the IInd International Symposium on Cucurbits is available from ISHS as Acta Horticulturae 588; see

<http://www.actahort.org/books/588/> for more details.

Watermelon Research and Development Working Group

22nd Annual Meeting – 2002

Benny D. Bruton, Chairman
USDA/ARS, Lane, Oklahoma

The Annual Meeting of the Watermelon Research & Development Working Group (WRDWG) was on Sunday, February 3, 2002 in Kissimmee, Florida. The meeting was held at the Hyatt Orlando in conjunction with The Southern Association of Agricultural Scientists (S.A.A.S.) and the Southern Region American Society for Horticultural Sciences (SR: ASHS). We had an excellent program this year with an attendance of approximately 75 people. As per the request of the members, we met for a full day this year.

The program began with a welcome from Benny Bruton, Chair, who provided an update on the WRDWG webpage at <http://www.lane-ag.org/h2omelon/watermelon.htm>. He asked members to update their email addresses and phone numbers, and encouraged non-members to fill out the forms at the website and submit them for processing into the WRDWG database for Scientists and Areas of Expertise. He also encouraged all members and interested parties to submit information on hot topics such as new diseases or new releases.

Seed company releases were provided by Don Dobbs (Willhite Seed), Glen Ruttencutter (S8unSeeds), Brenda Lanini (Harris Moran), Fred McChouston (Seminis), Tom Williams (Syngenta) and Pete Suddarth (Abbot & Cobb).

For the 2001 statewide watermelon trials, the following presentations were made:

Rich Hassell, Clemson University Coastal Research Station, South Carolina, “*Watermelon Cultivar Evaluations in Oklahoma*”

Warren Roberts, Oklahoma State University, Lane, Oklahoma. “*Watermelon cultivar Evaluations in Oklahoma*”

Don Maynard, University of Florida, Bradenton, FL, “*Review of the Florida Statewide Watermelon Trials*”

Frank Dainello, Texas A&M University, College Station, “*Review of the Texas Statewide Watermelon Trials*”

Dan S. Egel, Southwest Purdue Ag Center, Vincennes, “*Review of the Indiana Statewide Watermelon Trials*”

George Boyhan, University of Georgia, Statesboro, Georgia. “*Statewide Watermelon Trials for Georgia, 2001*”

J.R. Schultheis, North Carolina State University, Horticultural Science Dept., “*2001 Watermelon Cultivar Trial Results, North Carolina*”

Bob and Maggie Kent of Kent Honeybees, Inc. (Edinburg TX) then gave a talk on bees and pollination entitled “You Grow It – We Buzz It.”

Following the lunch break, two miscellaneous reports were presented:

Robert L. Jarrett, USDA/ARS, Plant Genetic Resources Unit, Griffin, GA. “*Watermelon Germplasm: Past, present and future*”

Diana Musto, Research Associate, National Watermelon Promotion Board, Orlando, FL. “*Review of 2001 Research Projects*”

These presentations were followed by research reports:

Levi, A. U.S. Vegetable Laboratory, USDA-ARS, 2875 Savannah Highway, Charleston, SC 29414-5334; “Progress in Constructing Linkage Map for Watermelon”

Davis, A., Fish, W., and Perkins-Veazie, P. US Department of Agriculture-Agricultural Research Service, Lane, OK; “*Spectrophotometric Method of Lycopene Quantitation in Watermelon*”

Perkins-Veazie, P., Collins, J.K., Edward, A. and Clevidence, B. U.S. Department of Agriculture-Agricultural Research Service, Lane, OK; “*Uptake*”

of watermelon Lycopene by Humans and Other New Lycopene News

Leskovar, D.I.,¹ *Bang, H.J.,¹ Kolenda, K.,¹ Franco, J.A.,² and Perkins-Veazie, P.³ ¹ Texas Agricultural Experiment Station, Dept. Horticultural Sciences, Texas A&M University, Uvalde, TX 78801;² Departamento de Produccion Agraria, Universidad Politecnica de Cartagena, Cartagena, Spain; ³ USDA ARS, SCARL, Lane, OK 74555; “*Limited Irrigation Influences Yield, Fruit Quality and Lycopene Content of Watermelon*”

Thies, J.A.* and Levi, A. U.S. Vegetable Laboratory, USDA-ARS, 2875 Savannah Highway, Charleston, SC 29414-5334; “*Response of Selected Citrullus Plant Introductions to the Peanut Root-knot Nematode (Meloidogyne Arenaria Race I)*”

Gerald Holmes, G¹ and Schultheis, J.R.² North Carolina State University, (1) Dept. Plant Pathology, (2) Horticultural Science Dept. “*Relative Susceptibility of Watermelon Cultigens to Ozone in North Carolina, 2000-2001*”

Guner, N., Wehner, T.C., an Pesic-Van Esbroeck, Z. North Carolina State University, Raleigh, NC “*Screening for PRSV-W Resistance in Watermelon*”

Gusmini, G. and Wehner, T.C. North Carolina State University, Raleigh, NC “*Screening for GSB Resistance in Watermelon*”

Neppl, G.P. and Wehner, T.C. North Carolina State University, Raleigh, NC “*Effect of Plot Size on Yield Variation in Watermelon*”

Egel, D.S., Ramasubramaniam, H., and Barber, S. SW Purdue Ag Program, Vincennes, IN 47591; “*Mature Watermelon Vine Decline Update*”

Roberts, W. Oklahoma State University, Lane, Oklahoma “*Cultivar Evaluations: Consistency among Investigators*”

Bruton, B.D. USDA-ARS, Lane, Oklahoma. “*Squash Bug: Vector of Serratia marcescens, Causal Agent of Cucurbit Yellow Vine Disease*”

These reports were followed by a discussion of seed sources for fusarium wilt differentials, then

refreshments complements of the National Watermelon Promotion Board (Kissimmee FL).

Report to the Watermelon Research Group Submitted to WRDWG on 3 February 2002

R.L. Jarrett, USDA/ARS. Griffin, GA

Personnel: Personnel currently assigned to the maintenance of the *Citrullus* collection include the curator (RLJ) and Field Services personnel in Griffin and Byron GA.

Inventory and Regeneration: The current inventory of the *Citrullus* collection can be viewed at www.ars-grin.gov/npgs/searchgrin.html. Copies of pe-GRIN can be obtained by contacting the curator (770/228-7303) or the database operator (770/229-3297). This portable database is available free of charge and can be searched using your office PC.

The *Citrullus* collection inventory remains at about 1,600 accessions. The Griffin location is making headway in dealing with the backlog of materials awaiting regeneration. In 2001, 150 *Citrullus* Plant Introductions (PIs) were regenerated with controlled pollination in Byron. Average seed yield per cage averaged 2,000 to 5,000, sufficient for local seed stock replenishment and long-term backup.

At the present time, approximately 95% of the *Citrullus* PIs are available for distribution. We hope to increase this number to 99% in 2002. Sixty-six duplicate accessions among the heirloom cultivars maintained at Fort Collins were eliminated in 2001.

Germplasm Acquisition: No *Citrullus* germplasm was acquired via plant exploration in 2001. To the curator's knowledge, no *Citrullus* exploration proposals were submitted for funding in 2001.

Germplasm Characterization: All *Citrullus* germplasm grown for regeneration in 2001 was characterized using the morphological descriptors as listed on the ARS-GRIN web site. We would like to expand on the value of the descriptor data by adding characteristics (or character states) that the user community finds useful. Please forward any suggestions or comments regarding descriptors to the curator.

Citrullus Core Collection: We continue to encourage the use of the core collection as a starting point in future germplasm evaluation studies. Accessions belonging to the core collection are flagged as such on GRIN.

Plans for 2001: In 2002, we intend to continue with our previously established regeneration/characterization plan. Space permitting, we will begin regenerating accessions of heirloom cultivars currently maintained only at NSSI.

Contacts:

Curator: R.L. Jarret – bjjarret@gaes.griffin.peachnet.edu

Database Operator: M. Spinks – s9ms@ars-grin.gov

Research Leader: G. Pederson – gpederson@ars-grin.gov

Cucurbit Crop Germplasm Committee

James D. McCreight

Chair, Cucurbit Crop Germplasm Committee

Jimccreight@pw.ars.usda.gov

Germplasm Evaluation Proposals – FY 2004

Each year the U.S. National Plant Germplasm System (NPGS) funds a limited number of proposals for evaluation of crop germplasm. Proposals are reviewed by the appropriate Crop Germplasm Committee (CGC) and forwarded to the USDA, ARS National Program Staff for the final funding decision. Proposals will only be approved for germplasm evaluation *per se*, not for the selection, enhancement, or improvement. All proposals are evaluated on the national need for evaluation data, the likelihood of success, and the likelihood that the data will be entered into GRIN and shared with the user community. Cucurbit evaluation proposals for funding in FY 2004 are due to the Cucurbit CGC by **August 1, 2003**. Contact the CCGC Chair for details including proposal guidelines and timeline for submission and review.

Plant Exploration and Exchange Proposals – 2004

Each year the U.S. Department of Agriculture, Agricultural Research Service (USDA, ARS)

solicits proposals for plant explorations and exchanges to acquire germplasm for inclusion in the U.S. National Plant Germplasm System (NPGS). Plant exploration proposals are for foreign and domestic (U.S.A.) germplasm exploration. Plant exchange proposals fund foreign trips to arrange germplasm exchanges with foreign genebanks. Any qualified U.S. scientist may submit a proposal.

According to the USDA, ARS, Plant Exchange Office (PEO), National Germplasm Resources Laboratory statistics, an average of 10 explorations were funded each year during the last 10 years (1993-2002). NPGS funded three explorations for cucurbits while the number of explorations for other crops during this time ranged from zero to 13.

A proposal may be for a specific exploration or exchange, or it may be combined with another exploration or exchange, respectively, designed primarily to collect or exchange other species. Combined explorations or exchanges, where feasible, help to reduce costs and increase efficiency of money available for explorations and exchanges. Combined explorations and exchanges enable scientists to remain at home and concentrate on their field research while someone carries out the often arduous task of collecting and documenting.

All plant exploration and exchange proposals must be supported by the appropriate Crop Germplasm Committee (CGC). The Cucurbit CGC reviews proposals for collection of cucurbits and forwards them to the PEO for final review and decision by the Plant Germplasm Operations Committee and approval by the USDA, ARS National Program Staff.

The guidelines for plant exploration and exchange proposals are designed to guide prospective explorers and exchangers through the necessary background study required to obtain the information necessary for sound planning and effective implementation of explorations and exchanges.

Those contemplating an exploration or exchange are advised to contact the Chair, Cucurbit CGC (above) regarding Cucurbit CGC exploration priorities and review.

Upcoming Meetings

Organization/Meeting	Date(s)	Location	Contact
Cucurbit Genetics Cooperative (In conjunction with the ASHS 2003 Centennial Conference)	3 Oct 2003 1:30 to 2:30 p.m.	Rhode Island Convention Center Room 550B Providence, Rhode Island	Timothy J. Ng tn5@umail.umd.edu http://www.umresearch.umd.edu/cgc
Pickling Cucumber Improvement Committee (PCIC) (in conjunction with the 2003 Pickle Packers International Annual Meeting and Trade Show)	22 Oct 2003	Sheraton Hotel & Convention Ctr New Orleans, Louisiana, USA	James Adkins Adkins@udel.edu
Watermelon Research & Development Working Group (in conjunction with the 2003 Southern Association of Agricultural Scientists Meeting)	13-18 Feb 2004	Tulsa, Oklahoma, USA	Benny Bruton bbruton-usda@lane-ag.org http://www.lane-ag.org/H2omelon/watermelon.htm
8th Eucarpia Cucurbitaceae 2004	July 2004	Czech Republic	Ales Lebeda lebeda@prfholnt.upol.cz http://www.cucurbitaceae.upol.cz/
2nd International Oil Pumpkin Conference (in connection with 8th EUCARPIA Cucurbitaceae 2004)	July 2004	Czech Republic	Penelope Lichtenecker (pslicht@nexta.it) Harry Paris (hsparis@volcani.agri.gov.il) Tamas Lelley (lelley@ifa-tulln.ac.at) Thomas Andres (tom@andres.com)
3rd ISHS International Symposium on Cucurbits Cucurbitaceae 2006	2005 2006	Australia North Carolina, USA	Gordon Rogers Gordon@ahr.com.au Gerald Holmes (Gerald_Holmes@ncsu.edu) Jonathan Schultheis (Jonathan_Schultheis@ncsu.edu) Todd Wehner (Todd_Wehner@ncsu.edu) http://cuke.hort.ncsu.edu/cucurbit/meetings/ccrbitaceae06mtg.html