

9 October 2008

Going wild with pumpkins

While parents and youngsters in many places are busy carving lanterns in preparation for Halloween, agricultural research is hard at work on another way to use the popular yellow-orange plant. Pumpkin (*Cucurbita maxima/moschata*) is one of underutilized crops with high potential for smallholder farmers in developing countries.

The total acreage of pumpkin and gourd in Asia and Africa is 1.1M ha, which accounts for 74% of world total. Malnutrition like Vitamin A deficiency is a serious problem in the tropic and sub-tropic countries. Pumpkin, sweet potato, and papaya are good sources for carotenoids. Pumpkin fruits from improved cultivars are rich in provitamin A, including α - and β -carotenes. The tender leaves and shoots are good sources of micronutrients including provitamin A and minerals Ca, Fe, and Zn.

One of the biggest constraints in cultivating pumpkin is its low productivity. Compared to the cultivation areas in temperate climates such as Europe or North America, average pumpkin yields in Africa and South Asia are low.

Improving tropical pumpkin has not been on the agenda of typical pumpkin research, although it has potential to contribute significantly to livelihoods and food security by providing fruits, leaves, flowers, and seeds for consumption in Africa and Asia. In 2007 AVRDC – The World Vegetable Center launched its cucurbit breeding

diseases that are caused by viruses and fungi.

In sub-Saharan Africa, for example, pumpkin production relies on seed from landraces that have been maintained by farmers for generations. It is typically intercropped with maize and other crops, and farmers base their preference rankings mostly on the

taste of both the fruit and the leaves after cooking, tolerance to pests and fruit size. “The collection of such indigenous knowledge and conservation of landraces is an essential prerequisite for pumpkin breeding and improvement,” says Zhanyong Sun. “Our breeding objective is to develop multiple virus resistant pumpkin lines for the tropics which have a high nutritional content that is comparable with commercial varieties grown

successfully in temperate climates.” Having been launched two years ago, the Center’s cucurbit program is growing further. The project on Vegetable Breeding and Seed Systems in sub-Saharan Africa (vBSS) has recently appointed a pumpkin breeder, Dr Martin Yeboah, based in Madagascar.



Out of Africa: Pumpkin trails at the Regional Center for Africa (AVRDC-RCA)

program which aims to impact such productivity gaps.

“Tropical pumpkin has not been subject to any serious breeding efforts, and due to the lack of genetic improvement, yields in the tropics are not what they could be,” says Dr Zhanyong Sun who is leading the Center’s cucurbit breeding activities. The major causes of low yields are foliage

The LIBRARY



New publications

...recent articles received by the Library

Singh, N., Nakaura, Y., Inouchi, N., Nishinari, K. (2008). Structure and viscoelastic properties of starches separated from different legumes. *STARCH/STAERKE*. v.60:349-357.

Spurr, C.J., Fulton, D.A., Brown, P.H., Clark, R.J. (2002). Changes in seed yield and quality with maturity in onion (*Allium cepa* L., cv. 'Early Cream Gold'). *JOURNAL OF AGRONOMY AND CROP SCIENCE*. v.188(4):275-280.

Wang, L.Z. (1998). Crop productivity and sustainable development in China. *JOURNAL OF CROP PRODUCTION*. v.1 (1):301-308.

Zhang, H.B., Choi, S.D., Woo, S.S., Li, Z.K., Wing, R.A. (1996). Construction and characterization of two rice bacterial artificial chromosome libraries from the parents of a permanent recombinant inbred mapping

population. *MOLECULAR BREEDING*. v.2(1):11-24.

Chadwick, C.I., Lumpkin, T.A., Elbersen, L.R. (1993). The botany, uses and production of *Wasabia japonica* (Miq.) (Cruciferae) Matsum. *ECONOMIC BOTANY*. v.47(2):113-135.

Macedo, M.L.R., Andrade, L.B.S., Moraes, R.A., Xavier-Filho, J. (1993). Vicilin variants and the resistance of cowpea (*Vigna unguiculata*) seeds to the cowpea weevil (*Callosobruchus maculatus*). *COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY, C: COMPARATIVE PHARMACOLOGY*. v.105C(1):89-94.

Bouis, H. (1990). Evaluating demand for calories for urban and rural populations in the Philippines: implications for nutrition policy under economic recovery. *WORLD DEVELOPMENT*. v.18(2):281-299.

Lester, R.N., Niakan, L. (1986). Origin and domestication of the scarlet eggplant, *Solanum aethiopicum*, from *S. anguivi* in Africa. In: *Solanaceae: biology and systematics.* / ed. by Dy, W. G.; New York: Columbia University Press. p.433-456. Mc Cammon, K.R., Honma, S. (1984). Genetics of the "umbrella" branching habit in *Capsicum annum* L. *THEORETICAL AND APPLIED GENETICS*. v.68:541-545.

... from Center staff

謝雪琴, 林世雯, 陳金全, Gniffke, P. (2008). 彩色甜椒的品種與整枝栽培. *FARMER'S FRIEND (農友)*. v.59(10):11-15.

Web Link of the Week: Conference Alerts – Academic Conferences Worldwide

"Conference Alert" brings together two groups of people – conference organizers, and academics who like to be informed about conferences. It works with both small first-time conference organizers and established professional societies to ensure that

notification of their conferences reach specifically interested parties. The website is hosted in South Africa, but operates as a global organization, maintaining an extensive, constantly updated database of conferences all over the world.

Please visit

[http://
www.conferencealerts.com/
agri.htm](http://www.conferencealerts.com/agri.htm)

– Fang-chin Chen, Editorial and Library

FOCUS: AVRDC—REGIONAL CENTER FOR SOUTH ASIA (RCSA), INDIA

Bhumi Pujan initiates a new regional headquarters



Proposed model for the AVRDC-RCSA building

Next year the regional headquarters for AVRDC—RCSA will look very different. Dr William D Dar, Director General of ICRISAT, along with Dr ML Chadha, Director, AVRDC-RCSA performed the ground breaking (Bhumi Pujan) ceremony for a new building on Friday, 3 October. Located on ICRISAT campus at Patancheru, the new regional headquarters building is expected to be completed by March 2009. The brief ceremony was also attended by ICRISAT management, AVRDC staff and associates.



Dr William D. Dar and Dr ML Chadha during the Bhumi Pujan ceremony along with other staff members

— Dr ML Chadha, Director, AVRDC-RCSA

Tata project supports inaugural vegetable training



Training participants, Jharkhand

Vegetable production in the impoverished areas of Jharkhand and Punjab in northern India received a boost from a recent training program. Entitled “Varietal Evaluation and Integrated Pest Management” it was run by AVRDC-RCSA in collaboration with national partners Brisa Agricultural University (BAU) and Horticulture and Agro Forestry (HARP), Ranchi, Jharkhand. A total of 39 people from the university, NGOs, national

partners and farmers participated in the program from 29 September to 2 October at BAU, Ranchi. Drs Peter Hanson, Jaw-fen Wang and R. Srinivasan from AVRDC HQs, along with BAU, HARP, RCSA provided training. The program is part of the project “Improving vegetable production and consumption for sustainable rural livelihoods in Jharkhand and Punjab, India” funded by the Sir Ratan Tata Trust.



A news article regarding the training in a local newspaper

Vegetable Soybean Field day promotes a new crop



Interacting participants in the soybean field, HARP, ICAR Research Complex for Eastern Region, Ranchi, Jharkhand

Over 100 people saw and discussed the benefits of vegetable soybeans at a field day on 30 September at Ranchi in northern India. The featured vegetable soybean variety Swarna Vasundhara was developed from AVRDC breeding material. More than 100 participants including 62 farmers from six different villages in the Khunti and Ranchi districts and 39 extension staff from nine NGOs and five NARS institutions participated. Staff from AVRDC and

national partners explained the vegetable soybean trials, how to grow the crop and emphasized its value for nutrition, income and soil management. Dr Chadha discussed the global importance of the crop and future plans to promote it regionally. The crop has great potential for addressing local problems of malnutrition. Most of the farmers showed keen interest in cultivating vegetable soybean, and special dishes made from the crop were prepared for the field day and enjoyed by participants as a taste of things to come.



Participants for the soybean Field Day

SKETCH



Name: Tina Yang

Home: Tainan, Taiwan

Position: Officer in Financial Services at Headquarters

Why do you do what you do?

From early childhood on I was fascinated with numbers. Since elementary school I loved mathematics more than any other subject. Therefore it was almost a natural decision to study accounting when I made the decision to enter university. I achieved my B.A. in accounting and an MBA as well at the University of the Incarnate Word, Texas.

Why do you do it at AVRDC? It all started with a lucky coincidence. While still being in the USA, I was looking for a job. AVRDC got interested in me, and the idea of applying my skills in an international and English speaking work environment was very intriguing for me. Besides I had the chance to see my friends and family again who are all in Taiwan. I like the international atmosphere of working with people from all over the world.

Research? I'm not a researcher, but accounting has something in common with research. First of all it's about accuracy. A comma at the wrong place can have a lot of consequences, as you all know. It can make you poor or a millionaire from one second to another. I key in all the transactions to the Center's accounting system, and am responsible for handling the financial statements for all projects funded by the Taiwan Council of Agriculture as well for some funded by GTZ and occasionally by other donors. I also act in place of the

cashier when she is on leave.

What's next? Me gusta mucho aprender el Español. Sorry, I better say it in English: I really hope to master Spanish one day. I like the language since my first visit to Central America seven years ago. I have friends living in Mexico, so it will be great to communicate with them in Spanish - and teach them Chinese in return.

Favorite Taiwan or AVRDC experience

Taiwan is my home. However, regarding life at the Center beyond the daily work routine itself, I still smile about the success of AVRDC's team at this year's dragon boat race festival. Unfortunately I missed to attend it and cheer for the team with my friends, especially since the course of the race was not only exciting but unpredictable.

Favorite vegetable? Tomato. I prefer them just fresh like in a tomato salad or Italian caprese with buffalo mozzarella, not cooked or fried.

PEOPLE

Welcome



Mr Ted Palada, Research Intern from the U.S.A. arrived at Center HQ on Monday, 6 October 2008 for one year of

training. Mr Palada will learn skills and gain experience in germplasm evaluation, variety testing, integrated crop management, technology transfer, crop production and information technology in the Global

Technology Dissemination group under the supervision of Dr Gregory Luther. Ted Palada can be contacted at 566 (office) and 827 (apartment), email: tpalada@hotmail.com

— Lydia Wu,
Global Technology Dissemination

Ms Simone Kathrin Kriesemer started work on 1 October as a Research Associate (Socioeconomics)/Postdoc at AVRDC—Regional Center for South Asia, India. The objective of her research is to contribute to a better

understanding of factors influencing adoption of integrated pest management practices that will reduce pesticide use and enhance food safety. Ms. Kriesemer received her PhD research at the University of Hohenheim,

Department of Agricultural Communication and Extension and will defend her thesis in December 2008. She is funded under the GTZ/BMZ postdoc program. (simone.kriesemer@worldveg.org)

— Human Resources