The World Vegetable Center Newsletter

21 November 2008

Published by Public Awareness and Information

Leaving behind the backstreets: Indigenous African eggplant is becoming popular with African seed companies, farmers, and consumers

African eggplant is a traditional indigenous crop grown across sub-Saharan Africa. More locally adapted than its distant relative, the tomato, it is hardier and easier to grow and has the added benefit of producing a harvest every week for seven months or longer, creating a reliable income for farmers. Improved lines selected and promoted by AVRDC — The World Vegetable Center are highly sought after in local markets. Using the Center's improved management system, farmers can earn up to twice as much compared to growing tomatoes, turning an almost forgotten indigenous crop into a major source of income.

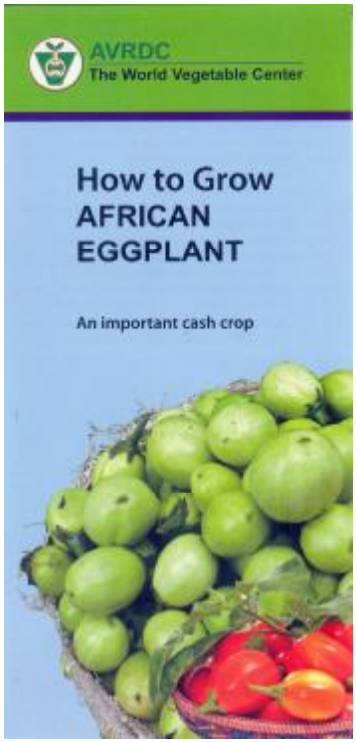
The oval-shaped African eggplant fruit can be eaten raw or cooked. It is a traditional ingredient in many African dishes and grows naturally in the savannas and humid forests of East and Central Africa and the Sahel.

For years "garden eggs" (as they are commonly known in Tanzania) were literally just that—a backyard crop ignored as a potential income earner because of low-quality varieties. They were perceived as food for the poor and were subject to competition from exotic crops like tomatoes. Although maize and vegetable crops like beans or peppers are popular, African eggplant has unrivalled features that make it competitive: It's hardy and produces regularly throughout the growing season, reducing risks for poor farmers.

Selection work conducted at the Center identified several lines as having good market potential: Tengeru White and the premium-priced, sweet-tasting DB3, AB2, and RW14.

Promoted widely during the Center's training courses for farmers and technicians in Tanzania, Malawi, and Uganda, the improved lines have out-yielded most traditional bitter-tasting lines. Demand from urban consumers has created a new market for DB3 and AB2.

The Center has developed an entire integrated management package for African eggplant to assist farmers and address their questions about spacing, fertilization, watering, cultivation and more.



The LIBRARY

New publications

...from the Bacterial Wilt SDI Bulletin

Aggarwal, P., Sood, A.K., Kumar, P. (2008). Performance of tomato (*Lycopersicon esculentum*) cultivars against bacterial wilt. INDIAN JOURNAL OF AGRICULTURAL SCIENCES. v.78 (4):379-381.

Hase, S., Takahashi, S., Nakaho, K., Arie, T., Seo, S., Ohashi, Y., Takahashi, H. (2008). Involvement of jasmonic acid signalling in bacterial wilt disease resistance induced by biocontrol agent *Pythium oligandrum* in tomato. PLANT PATHOLOGY. v.57(5):870-876.

Igawa, T., Ide, M., Nion, Y.A., Toyota, K., Kuroda, T., Masuda, K. (2008). Effect of the addition of lysine and biocontrol agents to hydroponic culture using a pumice medium on bacterial wilt of tomato. SOIL MICROORGANISMS. v.62 (1):9-14.

Lin, Y.M., Chou, I.C., Cheng, C.P. (2008). A highly efficient bioassay system for screening *Ralstonia solanacearum* mutants with altered virulence. TAIWANIA. v.53(2):116-123.

Nara, Y., Kato, K., Kawarazaki, H., Tabuchi, H., Goto, M., Teraoka, T., Arie, T., Kijima, T. (2008). Isolation of endophytic bacteria promoting the resistance to bacterial wilt and the growth of tomato. SOIL ICROORGANISMS. v.62(1):33-41.

Ustun, N., Ozakman, M., Karahan, A. (2008). First report of bacterial wilt caused by *Ralstonia solanacearum* biovar 2 on tomato in Turkey. PLANT PATHOLOGY. v.57(4):773.

Xu, J., Chen, L., Xu, J.S., Zhang, Z., Zhang, H., Feng, J. (2008). Prediction of potential distribution area of *Ralstonia solanacearum* race 2 in China. ACTA PHYTOPHYLACICA SINICA. v.35 (3):233-238.

Zhang, C.L., Zhao, Y.Q., Yu, X.Q., Zhang, W., Xie, Y.M., Li, X.D., Zhang, C.L. (2008). Screening and identification of antagonistic *Actinomyces* strains against *Ralstonia solanacearum*. ACTA PHYTOPATHOLOGICA SINICA. v.38(4):414-419.

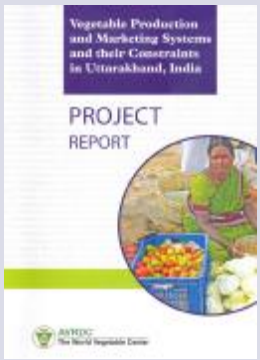
Biswas, S., Singh, N.P. (2007). Effect of host genotypes and cultural practices for the management of bacterial wilt in brinjal (*Solanum melongena* L.). INDIAN PHYTOPATHOLOGY. v.60(4):438-441.

Heuer, H., Yin, Y.N., Xue, Q.Y., Smalla, K., Guo, J.H. (2007). Repeat domain diversity of avrBs3-like genes in *Ralstonia solanacearum* strains and association with host preferences in the field. APPLIED AND ENVIRONMENTAL MICROBIOLOGY. v.73(13):4379-4384.

...from Center staff

Weinberger, K., Genova II, C., Acedo, A. (2008). Quantifying postharvest loss in vegetables along the supply chain in Vietnam, Cambodia and Laos. INTERNATIONAL JOURNAL OF POSTHARVEST TECHNOLOGY AND INNOVATION. v.1(3):288-297.

New book available



AVRDC — The World Vegetable Center. (2008). *Project Report on Vegetable Production and Marketing Systems and their Constraints in Uttarakhand, India.* This exploratory survey examines current practices, opportunities and constraints in the production and marketing of vegetables in Uttarakhand, India. Shanhua, Tainan: AVRDC — The World Vegetable Center. 68 pp.

— Fang-chin Chen, Editorial and Library

FOCUS: MADAGASCAR, AFRICA

Addressing the challenges of vegetable production in Madagascar

Two AVRDC colleagues, **Drs. Mathew Abang** and **Zhanyong Sun**, visited the vBSS Program's RBU/Liaison Office in Madagascar from 18 to 21 October 2008. Dr. Abang, vBSS Plant Pathologist, conducted a survey of vegetable pests and diseases in the four major vegetable growing regions of Madagascar: Itasy, Vakinankaratra (Antsirabe), Analamanga (Antananarivo), and Alaotra. Cucurbit breeder Dr. Sun reviewed the market and research needs for cucurbit crops.

Pests and diseases are major vegetable production constraints during the dry season in Madagascar. Red spider mite (RSM) at Itasy, Vakinankaratra, and Analamanga (photo 1), fruit fly (*Neoceratitis cyanescens*) at Alaotra (photo 2a&b), and fruit worm at Itasy are the main insect pests of tomato. Early blight

Severe red spider mite infestation in tomato

(*Alternaria solani*) at all four regions surveyed and Fusarium wilt at Alaotra are the major diseases. Thrips, *Alternaria* and *Stemphylium* at Antsirabe, and *Sclerotium cepivorum* at Alaotra are the most important pests and diseases of onion. Viruses (photo 3) and powdery mildew are common and damaging diseases in summer squash production fields.

The tomato fruit fly - 2a (*Neoceratitis cyanescens*) and damaged tomato fruit – 2b

Diamondback moth (DBM) is the most important pest of cabbage.

Elite acyl sugar-rich tomato lines that have been shown to be promising sources of RSM resistance have been made available to the Madagascar RBU for screening in Alaotra and other hotspots. Thrip samples from Itasy, Vakinankaratra, and Alaotra have been collected and handed over to the Entomology Unit for phylogenetic analysis. Summer squash leaf samples were collected and sent to the Virology Unit for diagnosis. The introduction of the biological control agent against DBM was discussed with the Madagascar NARS and is supported by the Plant Protection Service. Additional germplasm with targeted pest and disease resistance will be collected and introduced next season. In addition, Madagascar RBU will conduct a detailed and comprehensive survey to solicit and document farmers' perception and knowledge of vegetable pests and diseases, and their control. The knowledge generated from this survey will guide vBSS and its partners in the development and deployment of integrated pest and disease management strategies in the future.

— Mr. Benjamin Rakotoarisoa, Drs. Martin Yeboah, Mathew Abang, and Zhanyong Sun

Severe foliar chlorosis in summer squash due to viruses.

2007 World Food Prize Laureate visits the Center

Dr Philip E Nelson, the 2007 World Food Prize Laureate and currently Scholle Chair Professor in Food Processing at Purdue University, visited the Center on Wednesday with James Wu from the National Taiwan University. Dr Jackie Hughes welcomed the visitors and their wives, and Dr Paul Sun, Chair of the Center's Board of Directors. In the brief visit, Dr Hughes described the Center's work, and focused on where there were joint areas of interest such as aseptic food processing with further discussions with Drs Ray-yu Yang and Katinka Weinberger.

Dr Nelson expressed his interest in the Center, having been unaware of the scope of its activities, and brought up the possibility of working with our Center in his proposed global postharvest work. Both Dr & Mrs Nelson were very appreciative of the clear presentation of the Center and its goals, and regretted being unable to stay longer to tell the Center more about the work which resulted in the award of the World Food Prize to Dr Nelson.

— Dr. Jackie Hughes,
Deputy Director General—Research

Resolution on collaboration among genebanks in the Asia-Pacific Region

Networking with partners adds value: Last October 31st the Center's Genebank Manager, Andreas Ebert attended among other invited foreign guests (Dr. Jane Toll, Global Crop Diversity Trust (FCDT), Rome; Dr. Leo Sebastian, Regional Director, Bioversity International, Asia Pacific Region; nine country genebank representatives from Cambodia, Fiji, Indonesia, Myanmar, Mongolia, Philippines, Thailand, Uzbekistan, and Vietnam) the **Global Seed Hub Declaration Ceremony** held by the Rural Development Administration (RDA) of the Republic of Korea (see newsletter of 7 November 2008).

A technical session was held where the representatives of the above-mentioned countries gave an account on their respective germplasm conservation and utilization programs. Dr. Jane Toll gave a brief introduction into the activities of the GCDT and Andreas Ebert presented a lecture on the "Conservation and Utilization of Vegetable Germplasm at the World Vegetable Center". At the end, all foreign participants signed a resolution on closer collaboration among genebanks in the Asia-Pacific Region, welcoming the offer of the Republic of Korea through RDA to: 1) conserve safety back-up duplicates of germplasm collections free of charge under a black-box arrangement, covered by appropriate agreements; 2) provide training for genebank personnel from other countries on genetic resources and genebank management and documentation to enhance the national capacities to manage their genetic resources; 3) provide assistance in the form of R&D, storage and other ex situ conservation services for crops, especially coconut, taro, yam, sweet potato and other vegetatively propagated crops; and 4) support the networking on plant genetic resources conservation and use in the Asia and Pacific region.

Signing of the Seed Deposit Agreement between AVRDC –The World Vegetable Center and the RDA Administrator, Dr. Soo-hwa Lee and the handing over of a Plaque of Recognition to AVRDC's Director General, Dr. Dyno Keatinge.

— Dr. Andreas Ebert,
Genebank Manager, GRSU

PEOPLE

Mr. Rabemananjara Dodelys Andriantsimialona
Plant Pathologist, Madagascar

Rabemananjara Dodelys Andriantsimialona joined the vBSS Program as a Plant Pathologist from 17 November 2008 for a year-long appointment. He received his BS in Biological Sciences at the University of Antananarivo and his MS in Plant Pathology from the University of the Philippines at Los Baños. He attended several training courses on Integrated Pest Management, seed health, fungal pathogen purification and storage, and molecular biology. He has experience in field work, including disease surveys and varietal screening via natural infection or controlled inoculations.

His email address: dodelys.andriantsimialona@worldveg.org

— Benjamin Rakotoarisoa, vBSS Project NBU Liaison Officer for Madagascar

SKETCH

Name: Mandy Lin

Home: Kaohsiung County, Taiwan

Position: Assistant Specialist, Global Technology Dissemination

Tell us more about yourself

I was born in Taiwan, in a small farming village in Kaohsiung County. My mom always brought me to the asparagus field while she was doing her farm work; I played around with the plants and soils. I still remember the scent from the soil and plants while watching the sun rise from the cloudy sky; in the late afternoon, my mother and I patiently waited for the colorful sunset to say goodbye. So I've always liked plants and the countryside environment. I started studying horticulture after graduating from junior high school, and obtained my MS degree from the Department of Horticulture, National Taiwan University. After studying and working in Taipei for six years, I really missed southern Taiwan and decided to come back. Luckily I got a chance to join AVRDC.

What do you do at AVRDC?

I joined AVRDC in September 1999 and worked in the Technology Promotion and Service Unit, where I handled the eggplant crossing/ pollination, leafy vegetables screening, and regional yield trials for vegetable soybean, mungbean, tomato, and lettuce. I then worked in the International Cooperation Office, conducting indigenous vegetable research and promotion activities, organizing training workshops for international variety testing, and handling seed requests from workshop participants. In July 2008, I joined the Global Technology Dissemination group. I'm ready to learn more, and I am excited to help disseminate AVRDC's research to the end-users and be a part of their lives.

What's next?

I hope to travel to resource-poor villages in developing countries. I like to travel and I believe learning the local culture is as important as conducting the research and development activities. I plan to continue studying Japanese and some day I will write a good letter to my Japanese teachers, Nahoko Sasaki and Akiko Takahashi, wives of Japanese scientists seconded to AVRDC. One of the advantages of working at AVRDC is the international, multicultural environment.

Memorable experiences

Have you tried camel and horse milk? I did during my travels to Kazakhstan. One sip was strong enough to make an impression on my taste buds! One of my most memorable experiences was a trip to Camiguin, one of the most wonderful islands in the Philippines. In just one island, you can experience volcanoes, hot springs, cold springs, waterfalls, white sand beaches, and more. It was the first time I swam in a waterfall — it was so cold!

Favorite vegetables

I love almost all the green leafy vegetables, no matter how they are served: as salad, stir-fried, or boiled, I just love them.