

fresh

News from AVRDC – The World Vegetable Center



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Vegetables: Send them by post in the South Pacific

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Where gardens grow with the flow

Can vegetables improve health and incomes in Bangladesh, a country where the land has long had an uneasy relationship with water?



(r) Productive water: Floating vegetable gardens grow on mats made of water hyacinth.



Straddling the fertile Ganges-Brahmaputra Delta, low-lying Bangladesh is subject to annual monsoon floods and cyclones. Despite global economic shocks and natural calamities, the world's 9th most populous country (142

million) has nevertheless reduced poverty levels and improved living standards significantly in recent years. Although about a third of the population lives in poverty, according to the 2010 Bangladesh Household Income and

Expenditure Survey, the percentage of the poor has decreased nearly 10% since 2005.

The survey shows another promising development: there has been a marked improvement in nutrition levels across the country,



With a greater diversity of vegetables available for consumption, nutrition in Bangladesh has improved. But farmers need new varieties and technologies to contend with flooding, saline soils, pests and diseases to grow and harvest healthy, marketable crops.

primarily because of greater diversity in the food basket Bangladeshis now consume.

To expand food choices and further improve nutrition in Bangladesh, **Greg Luther**, Head of Global Technology Dissemination for AVRDC – The World Vegetable Center, visited the country from 4-16 September 2011 to advise the **Cereal Systems Initiative for South Asia (CSISA)** on ways to integrate, diversify and increase vegetable production in its activities.

CSISA, a joint project of the International Wheat and Maize Improvement Center, International Rice Research Institute, WorldFish, International Food Policy Research Institute, and the International Livestock Research Institute, aims to make cereal production more sustainable across South Asia through the use of improved cereal varieties and technologies, and by emphasizing mixed cropping systems that include livestock and vegetables. The project is funded by USAID.

Many farmers already grow vegetables successfully around Jessore, in the country's southwest Khulna Division. The land elevation

is relatively high and salinity problems are minor. Tomato production in the off-season (summer) is very profitable for Jessore's farmers, yet many rely on heavy pesticide use to bring in a good crop. Greg recommended the introduction of integrated pest management strategies including netting to enclose nurseries, improved tomato lines with resistance to *Tomato yellow leaf curl virus*, late blight, bacterial wilt and *Fusarium* wilt, and pheromone traps to control fruit borer to help farmers safely produce tomatoes, eggplant, and other vegetables.

More assistance will be needed for vegetable production to thrive elsewhere in Khulna, where farmers must contend with salinity, waterlogged soils, and drought. Crops such as jute mallow, Malabar spinach, and kangkong tolerate flooding; these highly nutritious vegetables could provide new and more secure income streams for farmers as well as improve the health of consumers. The Center's proven grafting technology—grafting tomato and pepper scions onto disease- and flood-resistant rootstocks—has potential for widespread adoption in low-lying areas. Growing vegetables in

compost-filled pits can overcome difficulties with saline soils, and the use of small-scale drip irrigation kits would give Khulna's farmers better control of their crops during dry times.

Greg noted that **AVRDC's high beta-carotene tomato varieties** could help Bangladesh address its vitamin A deficiency problems, which affect about 33% of preschool children. Vitamin A deficiency weakens the immune system and is a major cause of preventable blindness in children across South Asia.

The increasing danger of hydrologic shocks brought on by ecological vulnerability to climate change will continue to challenge Bangladesh. Even so, the country has been identified as one of the "Next Eleven" (or N-11)—along with Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam—as having the potential to build one of the world's largest economies in the 21st century. With the right tools and technologies, Bangladesh can grow a productive vegetable sector on the way to prosperity.

A strategic visit to South Africa



At the invitation of the Agricultural Research Council (ARC) of South Africa, **Jackie Hughes**, AVRDC Deputy Director General – Research participated in and facilitated the Strategic Planning process of the **Vegetable and Ornamental Plant Institute** (VOPI) at Roodeplaat, Pretoria from 3-7 October 2011. VOPI works on global and indigenous vegetables (including potato and sweet potato), medicinal plants, ornamental plants and flowers.

The Strategic Planning was attended by more than 30 people. VOPI Research Institute Manager, **Sonja Venter**, who also leads the Plant Protection Research Institute (PPRI), opened the event, followed by presentations from ARC's Executive Director Research and Development, **Mohammed Jeenah**, the Director for Plant Production of the Department of Agriculture, Forestry and Fisheries, **Thabo Ramashala**, as well as representatives from ARC-Technology Transfer, the ARC Institute for Soil Climate and Water and the ARC Biotechnology Platform.

Dr. Hughes gave two presentations: "International Vegetable Research" and "Nutritional Security – Targeting the End User in Vegetable Research and Development." Further presentations by VOPI staff set out

the priorities of the South African government (The Integrated Food Security Strategy for South Africa and the Zero-Hunger campaign), the need to focus on smallholder producers to ensure food and nutritional security, opportunities for preserving the environment through conservation agriculture, and opportunities for international linkages and impact in Africa. The ARC institutes PPRI and Infruitec-Nietvoorbij joined the group to assure multi- and trans-disciplinary discussions.

After five days of intensive interaction and debate, participants prepared a list of vegetable crops consumed by different segments of South African society, and articulated the importance of each for nutrition, climate resilience, and income generation. The main challenges associated with each of the prioritized vegetables were discussed for their impact on various groups of farmers, and opportunities were identified for VOPI to contribute to alleviating malnutrition and improving livelihoods.

In addition to the current linkages between AVRDC - The World Vegetable Center and VOPI, other opportunities for collaboration were identified including home gardens, nutrition databases, soil

(top): Plenary discussions at the Vegetable and Ornamental Plant Institute (VOPI).

(inset): **Sonja Venter** (l), VOPI Research Institute Manager and **Jackie Hughes**, AVRDC Deputy Director General-Research.

conservation, genetic resources, grafting, postharvest value addition, hydroponics, molecular studies on heat and drought tolerance, crop modeling and communication with end-users. This list will be refined by Drs. Venter and Hughes to guide scientists at VOPI and AVRDC toward opportunities for project funding and scientific exchanges.

The invitation by the Agricultural Research Council of South Africa to AVRDC to facilitate this important 5-10 year priority-setting process was both an honor for AVRDC and a timely opportunity to develop linkages and synergies with a well-established and dynamic vegetable research institution that has many high impact success stories to its credit.

Conference corner



<http://www.ihc2014.org/>

29th International Horticultural Congress

“Horticulture: sustaining lives, livelihoods and landscapes”

17-24 August 2014

Brisbane, Australia

Hosts: International Society for Horticultural Science, Australian Society of Horticultural Science, New Zealand Institute of Agricultural and Horticultural Science, and the Secretariat of the Pacific Community

Horticulture is at the heart of modern society’s key issues—health, wealth, and the environment—in all countries. For those involved in research, extension, education, production, or services, the congress will showcase advanced technologies that are becoming globally significant in a world with a rapidly growing population, less cultivatable land, and an environment under threat.

Going viral

The **AVRDC virology team** tracks the distribution of agricultural plant viruses in Taiwan and around the world to alert farmers, researchers, and extension officers when viruses appear in new locations. **Wen-Shi Tsai** and colleagues **Lawrence Kenyon**, **Li-mei Li**, and **Jin-teh Wang**, along with partners **C.J. Hu** and **D.P. Shung** of the Hualien District Agricultural Research and Extension Station in Taiwan, recently published a “First Report of *Squash leaf curl Philippines virus* (SLCPHV) Infecting Chayote (*Sechium edule*) in Taiwan” in the September 2011 issue of the journal *Plant Disease*.

Young shoots and leaves of chayote are consumed as a vegetable in Taiwan, and in 2010 approximately

15% of the September–October crop was not marketable due to mottled, stunted leaves—symptoms of a virus attack.

Taiwan produces several cucurbit crops and the increasing prevalence of SLCPHV must be taken into

consideration in crop management strategies.

Tsai, W. S., Hu, C. J., Shung, D. P., Lee, L. M., Wang, J. T. & Kenyon, L. (2011). First Report of *Squash leaf curl Philippines virus* Infecting Chayote (*Sechium edule*) in Taiwan. *Plant Disease* **95**, 1197-1197.



Seminars



The world will need 70-100% more food to feed a projected population of 9 billion by 2050. To keep pace with demand, agricultural

researchers will need to use all tools available, including conventional plant breeding, molecular breeding techniques, and genetic engineering.

Roland Schafleitner, AVRDC's Head of Biotechnology and Molecular Breeding, outlined biotechnology's contribution to food security in a presentation to colleagues on 13 October 2011. As plant pests and pathogens evolve and spread with greater rapidity due to international trade and a changing climate, breeders strive to develop resistant vegetable lines to help farmers safely produce good

harvests. Molecular breeding methods, which involve screening large populations of a plant to find resistant members, and then using those plants for breeding resistant lines, require at least four years before a new line is stable enough for release. Although genetic engineering can accomplish the same goal in about half the time, public acceptance of genetically modified plants for human consumption varies considerably across countries.



On 25 October 2011, **Colin Chartres**, Director General of the International Water Management Institute (IWMI), spoke to AVRDC staff and visitors from the Asia-Pacific Association of Agricultural Research Institutions on the topic of "Water Scarcity and Food Security in a Rapidly Changing World." Population growth, deforestation, changes in diet, an increasingly variable climate, and competing demand from agriculture, industry, and urban centers, among other

factors, challenge farmers and governments to feed more people with less water.

To meet demand, governments must craft integrated solutions that involve greater investment in water storage; use technologies such as remote sensing to get

a more accurate picture of the variations in water supply; educate consumers, farmers, and industry in ways to improve water productivity; and use pricing to equitably manage demand. Dr. Chartres noted some of IWMI's water management successes across the Ferghana Valley of Central Asia, and in India, where pricing strategies for electricity reduced the amount of water drawn from individual wells, helping to protect scarce groundwater resources.



Byoung Cheorl Kang, Seoul National University (SNU), Korea, joined AVRDC's Theme Breeding annual meeting on 24 October 2011 to give breeding staff an overview of the activities of SNU's Vegetable Breeding Research Center.

The Center in the news



Seed Marketing Specialist **Takmore Chagomoka** actively promotes the Center's work in Cameroon. Takmore's effort to strengthen seed distribution networks was featured in the latest issue of *Science & Development*, the newsletter of the Cameroon Ministry of Scientific Research and Innovation.

Former AVRDC virologist **Sylvia Green** captured headlines in Taiwan during the recent visit of Li-Kung Hsieh, Director General of the National Immigration Agency, to Center headquarters. Sylvia hails from Germany, but was awarded Taiwan citizenship due to her many contributions to local agriculture during her 30-year tenure at AVRDC. "I love Taiwan!" she said.



Errata
A case of mistaken identity! The photo of **Chandary Keo** published in the 13 October issue of *Fresh* was actually **Linh Huyen Son**. Both women participated in the Center's 2010 International Vegetable Training Course in Thailand. The correct photos and names:



Chandary Keo



Linh Huyen Son

AVRDC's **Suggested Cultural Practices for Sweet Pepper** production guide is one of the most popular resources on the **Olericulture.org** website. The site's Bell Pepper Research Category contains scientific information and links to peer-reviewed papers, journal articles, theses, books, abstracts, and other scholarly literature on sweet peppers.



Visitors



(l to r): Jackie Hughes, Deputy Director General-Research, AVRDC –The World Vegetable Center; Yu-ten Ju, Associate Professor in Genetics, National Taiwan University; Didit Ledesma, AVRDC Biometrician, Dyno Keatinge, AVRDC Directory General; Rita Pacho Laude, Vice Chancellor for Instruction, University of The Philippines Los Baños; Yin-Fu Chang, AVRDC Deputy Director General-Administration & Services.

Rita Pacho Laude, Vice Chancellor for Instruction, University of the Philippines Los Baños, Laguna, accompanied by **Yu-ten Ju**, Associate Professor in Genetics at National Taiwan University, toured AVRDC headquarters on 14 October 2011.

Dr. Laude has received many honors for her work in biochemical, molecular, and population genetics of coconut. She also has led studies on silkworm and beef cattle breeding. AVRDC Biometrician **Didit Ledesma** joined the visitors on a tour of the Demonstration Garden.



Li-Kung Hsieh (l) listened as Deng-lin Wu, manager of the Demonstration Garden, explained the nutritional importance of indigenous vegetables.

International staff based at AVRDC headquarters had a unique opportunity to meet their hosts face-to-face when **Li-Kung Hsieh**, Director General of Taiwan's National Immigration Agency (NIA) and **Ling-Fong Lee**, Director of the NIA Entry and Exit Affairs Division toured campus on 19 October 2011. As part of celebrations for Taiwan's 100th anniversary this year, the NIA director and his team are visiting immigrants and foreigners around



(r to l): Li-Kung Hsieh, Director General, National Immigration Agency; Ling-Fong Lee, Director of the NIA Entry and Exit Affairs Division; Chun-Fang Huang, Director of the NIA Tainan City Second Service Center.

the island to learn more about their lives and expectations, and to find out how the agency can best fulfill their needs. Dr. Hsieh gave a warm welcome to the group on behalf of Taiwan. He noted NIA offers a 24-hour English information hotline for foreigners and a website in several languages with details on immigration policy and other

matters. "Taiwan What's up?" a biweekly English bulletin, provides the latest information on government services and guidance in Chinese language, culture, and customs. After discussing questions regarding visas and identification cards with AVRDC staff, the NIA visitors took a stroll through the Demonstration Garden.

Visitors



(l to r): **Raghunath Ghodake**, APAARI Editorial Committee; **Misa Konelio**, Chief Executive Officer, Ministry of Agriculture, Forests, Fishery and Meteorology, West Samoa; **Raj Paroda**, APAARI Executive Secretary; **Colin Chartres**, Director General, International Water Management Institute; **Warwick Easdown**, AVRDC Regional Director, South Asia; **Dzhamin Akimaliev**, Director General, Research Institute of Crop Husbandry, Kyrgyzstan; **Dyno Keatinge**, AVRDC Director General; **Ravza Mavlyanova**, AVRDC Coordinator for Central Asia and the Caucasus; **Abd Shukor Abd Rahman**, previous APAARI Chairman; **Mason Smith**, APAARI Vice Chairman; **Simon Hearn**, Principal Advisor, Australian Centre for International Agricultural Research; **Jackie Hughes**, AVRDC Deputy Director General-Research; **Pauliasi Tuilau**, Principal Economic Planning Officer, Fiji; and **Nagaraj Inukonda**, AVRDC Director of Human Resources.

Nine members of the **Asia-Pacific Association of Agricultural Research Institutions (APAARI)** stopped for a visit at AVRDC headquarters on 25 October 2011, en route to an Expert Consultation on “Agricultural Biotechnology, Biosafety and Biosecurity” on 27-28 October at the Taiwan Agricultural Research Institute (TARI), Taichung, Taiwan. The group included **Raj Paroda**, APAARI Executive Secretary; **Mason Smith**, APAARI Vice Chairman; **Abd Shukor Abd Rahman**, previous APAARI Chairman; **Raghunath Ghodake**, APAARI Editorial Committee; **Simon Hearn**, Principal Advisor, Australian Centre for International Agricultural Research; **Pauliasi Tuilau**, Principal Economic Planning Officer, Fiji; **Colin Chartres**, Director General,

International Water Management Institute; **Misa Konelio**, Chief Executive Officer, Ministry of Agriculture, Forests, Fishery and Meteorology, West Samoa; and **Dzhamin Akimaliev**, Director General, Research Institute of Crop Husbandry, Kyrgyzstan. The visitors met to discuss opportunities for collaboration with **Dyno Keatinge**, AVRDC Director General; **Jackie Hughes**, Deputy Director General – Research; **Yin-fu Chang**, Deputy Director General – Administration & Services; **Nagaraj Inukonda**, Director of Human Resources; **Warwick Easdown**, Regional Director for South Asia; **Jaw-Fen Wang**, Plant Pathologist; **Ravza Mavlyanova**, Coordinator for Central Asia and the Caucasus; and **Suzanne Neave**, Project Coordinator, Solomon Islands.



(top): Inside the AVRDC Genebank **Dyno Keatinge** explains seed packaging and storage procedures to APAARI visitors.

(bottom): **Ravza Mavlyanova** (r) shows **Dzhamin Akimaliev** the new sliding storage shelves for seed packets.

Stamps for the Solomons



Email may be the preferred mode of modern correspondence, but there are still a few things better sent by “snail mail”—such as vegetables. The **Solomon Islands** recently issued a set of postage stamps highlighting four of the vegetable species AVRDC - The World Vegetable Center has been promoting for home gardens and small-scale farms in the country.



(top): Illustration by Fred Oge, from the AVRDC brochure *How to Grow EGGPLANT* for the Solomon Islands.

40 years of service to tropical agriculture



2758 (XXVI). Restoration of the lawful rights of the People's Republic of China in the United Nations

The General Assembly,
Recalling the principles of the Charter of the United Nations,

Considering that the restoration of the lawful rights of the People's Republic of China is essential both for the protection of the Charter of the United Nations and for the cause that the United Nations must serve under the Charter,

Recognizing that the representatives of the Government of the People's Republic of China are the only lawful representatives of China to the United Nations and that the People's Republic of China is one of the five permanent members of the Security Council,

Decides to restore all its rights to the People's Republic of China and to recognize the representatives of its Government as the only legitimate representatives of China to the United Nations, and to expel forthwith the representatives of Chiang Kai-shek from the place which they unlawfully occupy at the United Nations and in all the organizations related to it.

1976th plenary meeting,
25 October 1971.

Four decades ago, a research and development institute dedicated to alleviating poverty and malnutrition in Asia by increasing the supply and quality of vegetables was established in Taiwan. Today, AVRDC – The World Vegetable Center operates on a global scale across Asia, Africa, and Oceania. Enjoy photos and excerpts from our long and fruitful history!



In 1971 the United Nations General Assembly voted to give the seat held by the Republic of China on Taiwan to the People's Republic of China on the mainland. For diplomatic reasons, this action made it difficult for some countries, international organizations, and international agricultural research institutes to interact with the new Asian Vegetable Research and Development Center. Despite this limitation, AVRDC forged ahead, establishing positive partnerships in many countries around the world, and amassing a distinguished record of achievement over the years.

Theme meetings continue



AVRDC's **Theme Germplasm** gathered for two days of discussion and presentations from 20-21 October 2011 at headquarters. The group reviewed the Center's intellectual property strategy for germplasm, collection of legume and other germplasm, and specialized molecular tools for more rapid variety development, along with a host of other topics. The meeting concluded with a hands-on session in effective and successful proposal development conducted by Grants and Partnership Manager **Annelie Öberg**.

Theme Breeding conferred from 24-25 October, also at HQ. Presentation sessions included breeding updates on tomato, pepper, legumes, cucurbits, and alliums. **Byoung Cheorl Kang** of the Vegetable Breeding Research Center, Seoul National University, Korea, joined the meeting into introduce his institute's work to the group. The team engaged in a lively debate on a motion for "taking strong measures to ensure proper feedback from seed recipients" with Theme Leader **Peter Hanson** and Legume Breeder **Ram Nair** speaking in favor of the motion,

and Vegetable Breeder **Sanjeet Kumar** and Pepper Breeder **Paul Gniffke** against. Nutritionist **Ray-yu Yang** kept sharp watch on the clock to keep the debaters to their allotted time. The Center will embark on its annual **Global Strategic Planning** exercise from 31 October to 3 November 2011.

