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News from AVRDC – The World Vegetable Center



15 April 2014

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Sweet pepper for Taiwan  
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## Convening to share knowledge

Two recent conferences hosted by AVRDC and partners offer opportunities for networking, lively discussion, and setting policy agendas

### SEAVEG 2014



The General Assembly of the United Nations declared the year 2014 as the “International Year of Family Farming”, noting the important contribution that family farming and smallholder farming can play in providing food and nutrition security and eradicating poverty. In recognition of the role of family farms, AVRDC – The World Vegetable Center, together with Thailand’s Department of Agriculture (DOA), the Food and

Agriculture Organization of the United Nations (FAO), Kasetsart University (KU), the Horticultural Science Society of Thailand (HSST), the Vegetable Science International Network (VEGINET) and ASEAN-AVRDC Regional Network on Vegetable Research and Development (AARNET) convened the Regional Symposium **SEAVEG 2014: Families, Farms, Food - Sustaining Small-Scale Vegetable Production**

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SEAVEG2014 panel discussion session.

**and Marketing Systems for Food and Nutrition Security** from 25-27 February 2014 in Bangkok, Thailand.

Despite the political tension in the Thai capital, 203 participants from 23 countries attended the symposium to present 63 papers in two plenary and five parallel technical sessions. They were welcomed by representatives of the organizing institutions: **P.G. Chengappa**, National Professor of Indian Council of Agricultural Research (ICAR), who represented **Prem Nath**, Chairperson of VEGINET; **Virach Chantrasm**, HSST Officer; **Poonpipope Kasemsap**, Kasetsart University Vice President, International

Relations; **Jackie Hughes**, AVRDC Deputy Director General – Research; and **Suwit Chaikiattiyos**, Director, Horticulture Research Institute, DOA.

**Dumrong Jirasutas**, Director General of DOA and **Hiroyuki Konuma**, Assistant Director-General and Regional Representative of the FAO Regional Office for Asia and the Pacific officially opened the symposium. In his inaugural speech, **Hiroyuki Konuma** emphasized that vegetables are the key source of micronutrients, and hence play an important role in daily diets, particularly for children in many countries of East and Southeast

Asia where malnutrition among children is unacceptably high. He encouraged all sectors in the vegetable industry to advocate enhanced productivity and higher consumption of vegetables, and committed FAO's support to be associated with these endeavors.

**Jackie Hughes** opened the plenary session with a keynote speech on “Southeast Asian vegetable production: A vision for the next 40 years to bring prosperity to the poor and health for all.” Other keynote and invited speakers were **Joost Pekelharing**, President of East West Seed Group (“The role of private seed companies in the development of small-scale farming

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**P.G. Chengappa**, National Professor of Indian Council of Agricultural Research



**Joost Pekelharing**, President of East West Seed Group



**Detlef Virchow**, Executive Secretary, Global Horticulture Initiative



**N.K. Krishna Kumar**, Deputy Director General (Horticulture), Indian Council of Agricultural Research



**Gary Jahn**, Agricultural Development Officer, USAID

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(above) Opening the event.

(inset) Participants at the registration table.

systems”); **Subash Dasgupta**, Senior Plant Protection Officer, FAO Regional Office for Asia and the Pacific (“Vegetable production in Asia: Innovation, involvement, income and impact”); **Detlef Virchow**, Executive Secretary, Global Horticulture Initiative (“The Global Horticulture Initiative – Challenges and prospects for Southeast Asia”); **N.K. Krishna Kumar**, Deputy Director General (Horticulture), Indian Council of Agricultural Research (“The Indian vegetable research programme and its application in Asia”); **Gary Jahn**, Agricultural Development Officer, United States Agency for International Development (“Scaling up technologies for small-scale vegetable farming systems in Southeast Asia”); **Prem Nath** (“Identifying objectives for breeding improved vegetable varieties: hard but vital choice”) and **Nancy J. Haselow**, Vice President Asia-Pacific, Helen Keller International (“Lessons learned from implementing nutrition-

sensitive agriculture as a platform to improve nutrition and household food security”). These speakers, along with **P.G. Chengappa** and **Grisana Linwattana**, Horticulture Research Institute, DOA, joined a lively roundtable discussion on specific recommendations for policy makers, civil society, the private sector, farmers, and research and development. The discussion was facilitated by **Robert Holmer**, AVRDC East and Southeast Asia Regional Director.

Other AVRDC staff who presented papers in the technical sessions were **Victor Afari-Sefa**, Global Theme Leader – Consumption (“The CGIAR research program on integrated systems for the humid tropics in Southeast Asia”); **Narinder Dhillon**, Vegetable Breeder (“Preliminary evaluation of resistance to powdery mildew (*Podospheara xanthii*) in AVRDC collections of bitter melon (*Momordica charantia* L.)”); **Srinivasan Ramasamy**

(“Integrating biopesticides with chemical pesticides to manage legume pod borer (*Maruca vitrata*) on yard-long bean in Lao PDR and Vietnam”); **Andreas Ebert**, Global Theme Leader – Germplasm (“Sprouts and microgreens - a homestead vegetable production option to enhance food and nutrition security in the rural-urban continuum”); **Usha Palaniswamy**, Project Manager – Vegetables Go to School (“Vegetables to Go school in Southeast Asia and Africa: Training of Trainers Workshop design and implementation”); and **Pepijn Schreinemachers**, Socioeconomist (“Women's home gardens and food security: Evidence from Bangladesh”).

**Peter Hanson**, Global Theme Leader – Breeding, co-organized a side event on *Public and Private Sector Collaborations and Benefits for the Farmers* and spoke about “AVRDC Tomato Yellow Leaf Curl Virus and Bacterial Wilt collaborations with the seed

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**Ida Bagus Surawan**,  
Assessment Institute for  
Agricultural Technology of Bali,  
Indonesia



**Gloria Y. Ponciano**, Tarlac  
College of Agriculture,  
Philippines



**K.C. Siva Balan**,  
Tamil Nadu Agricultural  
University, India



**Nancy J. Haselow**,  
Helen Keller International,  
Cambodia

industry and seed distribution" in collaboration with the Asia & Pacific Seed Association (APSA).

Congratulations go to **Ida Bagus Surawan**, Assessment Institute for Agricultural Technology of Bali, Indonesia, for winning the Best Paper Award for "Optimizing home yard spaces for integrated vegetable production: A case study of Bali, Indonesia". Best Session Paper Awards went to **Akhilesh Sharma**, Agricultural University, Palampur, India for "Induction of powdery mildew resistance in garden pea (*Pisum sativum*) using mutagenesis"; to **Gloria Y. Ponciano**, Tarlac College of Agriculture, Philippines for

"Production and utilization of organic inputs using beneficial microorganisms"; **K.C. Siva Balan**, Tamil Nadu Agricultural University, India, for "Farm profitability and value chain management: Case study from India"; **Nancy J. Haselow**, Helen Keller International, Cambodia for "Lessons learned from implementing nutrition-sensitive agriculture as a platform to improve nutrition and household food security" and **Runggaran Wongprawmas**, University of Bologna, Italy for "Thai consumer valuation of food safety labels on fresh products".

Other awards given during the symposium: the VEGINET International Award 2013 to **O.P. Dutta**, Director Namdhari Seeds, Bangalore, India for his contributions to vegetable R&D; the Prem Nath Agricultural Science Foundation Award to **Hiroyuki Konuma**, FAO, for leadership in promoting food and nutrition security in Asia; and the Prem Nath Agricultural Science Foundation International Award to AVRDC DG **Dyno Keatinge** for leadership in promoting vegetables in Asia.

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1. **Yin-fu Chang**, AVRDC Deputy Director General - Administration and Services accepts the Prem Nath Agricultural Science Foundation International Award for AVRDC Director General Dyno Keatinge.
2. **Srinivasan Ramasamy**, AVRDC Entomologist, on a field trip.
3. Participants conduct a field trip to East-West Seeds.
4. Field trip to a seed packing operation.
5. Sweet corn tasting event.



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## BiG 2014: Bitter Gourd



Diabetes kills as many people worldwide as HIV-AIDS, and it increasingly affects the poor who cannot afford medication. Consuming bitter gourd can provide a cost-effective food-based treatment for type 2 diabetes.

A two-day international conference in Hyderabad on 20-21 March 2014 hosted by AVRDC South Asia presented scientific evidence to support the health claims for the crop. More than 90 experts from the public and private sectors in the fields of agriculture, nutrition and health from across South and East Asia, Africa, Europe and North America attended BiG 2014, the first conference of its kind to draw attention to the value of the crop. The conference followed the final workshop of the three-year BMZ-funded project “Exploiting bitter gourd to increase incomes, manage type 2 diabetes, and promote health in developing countries” led by AVRDC and involving researchers from Taiwan, Thailand, India, Tanzania and Germany.

In his welcoming remarks, South Asia Regional Director **Warwick**



**Dr. Polasa**, National Institute of Nutrition, spoke during the opening session.

**Easdown** noted that Hyderabad has one of the highest rates of diabetes in India, a country that has the second-highest number of diabetics in the world.

Deputy Director General **Jackie Hughes** opened the conference with the challenge to make bitter gourd treatment for diabetes both practical and acceptable. The crop is relatively unknown outside Asia, and its taste can be a barrier to wider consumption.

**Professor Michael Krawinkel** from Justus-Liebig-University Giessen University, Germany presented the importance and potential of bitter gourd in agriculture, nutrition and health, and congratulated the Bitter Gourd

Project for its successful use of nutrition- and health-sensitive horticultural approaches.

AVRDC nutritionist and Project Manager **Ray-yu Yang** said that “All germplasm and commercial varieties tested have the same beneficial compounds in them, but there is considerable potential for breeding due to large variations in their levels.”

**Professor Ching-Jang Huang** from National Taiwan University outlined the complex metabolic pathways through which bitter gourd compounds acted in the body by reducing glucose uptake from the gut, improving the production of insulin from the pancreas and improving uptake of glucose by body cells.

Data were presented from on-going human studies in India and Tanzania to quantify the effect of consuming bitter gourd on improving the health of pre-diabetic patients. Work is ongoing to determine optimal consumption levels.

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(left) Jackie Hughes, AVRDC Deputy Director General-Research, lights the opening lamp.



(center) Professor Michael Krawinkel from Justus-Liebig-University, Giessen, Germany.



(right) Participants get a closer look at bitter gourd on the vine.

Despite bitter gourd’s popularity in Asia, AVRDC Genebank Manager **Andreas Ebert** reminded participants that the crop was African in origin. He raised concern that the AVRDC genebank contains very few wild relatives of the crop, and noted that no genebank in Africa is maintaining bitter gourd diversity.

There have been major improvements in the crop in recent decades with the rapid uptake of hybrids. Data was presented from India showing that bitter gourd can be very profitable for farmers and

that consumers would be willing to pay considerably more for varieties with proven health benefits.

“We have to be optimistic in developing a holistic approach to health,” said **Bhimu Patil** from Texas A&M University. Despite the complexity of validating the use of bitter gourd as a food-based solution for diabetes, Dr. Patil called for a public-private consortium to take the work forward and to build on the achievements of AVRDC and partners.



(left) Conference participants view bitter gourd field trials at AVRDC South Asia.



(right) AVRDC Genebank Manager **Andreas Ebert** (left) and Socioeconomist **Victor Afari-Sefa**.

## Seminars



**Makoto Saito**, Project Leader, Functional Chemicals Division, Showa Denko K.K. Japan presented the company's Bionelle-STARCLA biodegradable mulch film in a seminar on 27 March 2014 at AVRDC headquarters. The film, produced from a polyester resin and starch, is stable under ordinary conditions, but decomposes into water and carbon dioxide after about 3 months in the presence of microorganisms and wet soil. The company is interested in conducting research with AVRDC scientists.

## Visitors

Fourteen reporters from **San Tome and Principe, Guatemala, St. Lucia, Honduras, Sr. Kitts, Haiti, Panama, Paraguay, El Salvador, the Dominican Republic, Swaziland, Nauru, Kiribati and the Solomon Islands** toured AVRDC headquarters on 27 March to learn about the Center's activities. They received a briefing from Head of Communications Maureen Mecozzi, and Garden Manager Willie Chen showed the journalists the current crop of traditional and global vegetables thriving in the Demonstration Garden.



A delegation of seven officials and farmers led by **Patterson Homer**, Senior Official for Cooperative Development, Ministry of National Mobilization, St. Vincent and the Grenadines, came to headquarters to meet with AVRDC staff on 28 March. The group was in Taiwan to participate in a workshop on agricultural marketing for farmers' groups organized by the International Cooperation and Development Fund (ICDF). The delegates visited the Genebank and Demo Garden, and spoke with Tomato Breeder Peter Hanson and Pepper Breeder Sanjeet Kumar. Mr. Homer gave a short seminar about agriculture in his country: it accounts for 75% of GDP, but most farms are under 2 hectares in size. Banana was once the main export crop, but after the European Union phased out preferred access to its markets in 2011, economic diversification has become a priority. The country seeks to establish farmer cooperatives to organize marketing and training, and has set up a revolving loan scheme for farmers. It is currently self-sufficient in vegetable production, but there is interest in establishing shade houses for protected agriculture.



## Welcome back

**Antonio "Jun" Acedo Jr.** joined AVRDC South Asia as a Postharvest Specialist on 1 April 2014. Based in Hyderabad, India, Jun will work on the USAID-funded Postharvest Project, conducting research on the vegetable value chain and technologies to maintain vegetable quality and shelf-life. The project aims to increase the availability of vegetables for consumption, retain their nutrition, and promote best practices in vegetable harvesting, storage and processing. Jun previously served at AVRDC from 2006-2010 as a Regional Project Coordinator for the RETA 6208 and 6376 postharvest projects funded by the Asian Development Bank in Lao PDR, Cambodia and Vietnam.



**SWEET PEPPER IN THE SPOTLIGHT:**

AVRDC organized a sweet pepper hybrid demonstration day in Taiwan's Hsing-kang (Chai-yi) production area on 21 March 2014. The **Shingun Farmers' Association** (#52) has been growing several sweet pepper hybrids in nethouses for evaluation, including two AVRDC hybrids developed with support from the Taiwan Council of Agriculture. The association exports colored sweet pepper from Taiwan under the brand name "Kin Fujiu." About 150 farmers and researchers from AVRDC, local agricultural universities, and district research and extension stations attended the event to score pepper varieties according to their preferences. The best performing hybrid will be released by National Chung-Hsing University and AVRDC. The association was delighted to include locally developed hybrids in its evaluation.



## AVRDC and CATIE to plan joint activities in Central America



On 14-15 March 2014 AVRDC Director General **Dyno Keatinge** visited the Trifinio, the region where the borders of El Salvador, Guatemala and Honduras meet, for talks with vegetable producers, local researchers, organizations that collect and sell vegetables, and representatives of agricultural associations. **John Beer**, Manager of the Division of Research and Development of the **Tropical Agriculture Research and Higher Education (CATIE)** invited Dyno to the Trifinio, which receives little technical assistance in horticulture in part due to its remote location. “The area has a strong need for research, technology transfer, evaluation and release of improved vegetable varieties, and the identification of vegetable pests and diseases,” Dyno said. “It is a region that would benefit greatly from a collaboration between CATIE and AVRDC.”

The Trifinio comprises an area of approximately 7,541 km<sup>2</sup> along the borders of Guatemala (44.7%), El Salvador (15.3%) and Honduras (40%). The region constitutes an

indivisible ecological unit including 45 municipalities (8 in El Salvador, 15 in Guatemala and 22 in Honduras). About 800,000 people live in the Trifinio, half in poverty.

CATIE maintains a base in the Trifinio, and has the support and backing of many local and regional partners, including farmers’ organizations and ministries of agriculture and research. The institution promotes education, research and innovation for development, the sustainable management of agriculture, and the conservation of natural resources in Latin America and the Caribbean.

### Guatemala

In the Valle de Esquipulas, Dyno visited producers growing red tomatoes, bell peppers and cucumbers in large nethouse operations. Production could be diversified with the introduction of yellow tomatoes and colored bell peppers, Dyno observed.

“Consumers are looking for novel foods to add more vitamins and minerals to their diets,” he said. Vegetable producers in Guatemala

are interested in evaluating and producing new tomato and pepper varieties to maximize their investment in protected structures.

### Honduras

The Business Enterprise Center Ocotepeque (CENOC) produces red, yellow and white onion on 200 hectares. CENOC producers regularly experience problems with onion harvesting and storage; they expressed an interest in learning to produce their own seed of different onion varieties with good pest and disease resistance and long shelf life to allow for year-round production. Rural families in Ocotepeque produce zucchini, carrots, beets, chard, onions, radishes, cucumbers, French beans, lettuce and native species such as mulberry in small community gardens; produce sales help make the families more secure financially, and the vegetables provide essential nutrition. AVRDC has seed kits available to further diversify vegetable production for home consumption and generate more income for families.

### El Salvador

The upper area of San Ignacio, Chalatenango produces about 80% of El Salvador’s vegetables. Despite the enormous potential of local soils and climate for vegetable production, farmers in the area indicated that their profits were low. Diversifying production with purple carrots, different types of tomatoes, bell peppers, broccoli, cauliflower and other vegetables rich in vitamins and minerals could generate more income for local producers. Like the other two

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Trifinio areas, local producers here were not well informed about the vast number of vegetable varieties available, and need training in the safe management of pests and diseases of tomatoes, potatoes and cabbage.

Dyno noted that CATIE and AVRDC could work together to distribute and promote new vegetable varieties to diversify production systems and enhance food and nutrition security in the Trifinio. However, the promotion of new germplasm must be accompanied by rigorous participatory research involving government and academic institutions. “New horticultural knowledge and innovations should be spread to a larger number of families through CATIE’s many contacts in the territory,” Dyno said. “The process of innovation and learning needs institutional and political support at local and national levels.” A concept note for joint work between AVRDC and CATIE will be developed to address needs and opportunities in the Trifinio.



## Good food is not the only answer to malnutrition



Children in Nepal need clean water and sanitation facilities as well as wholesome food.

A lack of good food is not necessarily the biggest cause of malnutrition; often the natural contaminants consumed with the food can interfere with the body's uptake of nutrients. This was one of the surprising findings shared during a workshop on "Scaling up agricultural research and technologies and designing research on improved nutritional outcomes" organized by the United States Agency for International Development (USAID) Feed the Future initiative from 10-12 March 2014 in Kathmandu, Nepal.

About 70 attendees from USAID missions in Nepal, Bangladesh, India, Myanmar, and Cambodia as well as US universities and key project partners with a focus on nutrition projects discussed new findings in what is needed to overcome malnutrition, and how to expand successful partnerships. South Asia Regional Director **Warwick Easdown** and **Usha Palaniswamy**, Manager of the Vegetables Go to School project, participated on behalf of AVRDC; Warwick presented some of the AVRDC's findings on scaling up home gardens in South Asia.

With increased incomes, people can purchase more food—but income and access to food do not guarantee a healthier diet. Even a doubling of rural incomes has been found to reduce stunting rates only by 21%. Up to 43% of observed growth faltering can be due to the consumption of food contaminated with harmful microbes, which

disrupt the proper functioning of the human gut and affect nutrient uptake. Unsanitary living conditions and food and water supplies contaminated with feces can have a severe impact on the growth of children after weaning.

Good postharvest management is part of the solution. Up to 37% of stunting issues can be attributed to aflatoxin contamination of poorly stored food crops. AVRDC's Postharvest Project funded by USAID can thus have a direct impact not only on reducing food waste, but also on improving food quality and nutrition.

Scaling up and evaluating impact is increasingly important to justify the multiplier effect that investments in research can have. USAID is AVRDC's largest research and development partner in South Asia, and the workshop outlined plans to expand this successful partnership to other countries.



(left): South Asia Regional Director **Warwick Easdown** (front) and **Usha Palaniswamy**, Manager of the Vegetables Go to School project, participated in the workshop on behalf of AVRDC. (right) The team from USAID.

# CORNUCOPIA



**A LOOK AT PROTECTED PRODUCTION:** The **Agriculture Innovation Program (AIP)** participated in the Dawn Sarsabz Agri Expo and Conference 2014 held on 13-14 March in Lahore, Pakistan. At a booth set up in the United States Agency for International Development (USAID) pavilion, AIP program staff demonstrated various aspects of protected agriculture to farmers and agribusiness professionals. Visitors showed keen interest in protected production methods and many would like to participate in the AIP, which aims to expand the use of modern technologies in Pakistan’s agriculture sector. Visitors received briefing materials about project activities and partners—including AVRDC—along with pens, shopping bags and mugs with the AIP logo.

**STRONGER SEEDLINGS:** Under the AIP, AVRDC Pakistan organized three training sessions on producing healthy vegetable seedlings for 20-25 farmers each; several female trainees joined each session. The first session was held at the National Agriculture Research Center in Islamabad from 10-13 February 2014; the second and third trainings were held at the Barani Agricultural Research Institute, Chakwal (Punjab) and Agricultural Research Institute (South), D.I. Khan (Khyber Pakhtunkhwa) on 26 March. The hands-on training covered compost preparation, seed sowing, soaking, germination, care of seedlings, and protective measures to control pests and diseases.

**Agriculture Innovation Program (AIP)**

At least 50 percent of Pakistan's population derives most of its income from farming, processing and/or marketing of agricultural products. Yet agriculture contributes just 20% of GDP and is growing at the rate of 1.5%, compared to 5.8% growth in the overall economy.

The Agriculture Innovation Program is led by the International Maize and Wheat Improvement Center (CIMMYT), funded by the U.S. Agency for International Development, and features active collaborations with the International Livestock Research Institute (ILRI), the World Vegetable Center (AVRDC), the International Rice Research Institute (IRRI), the University of California-Davis and the Pakistan Agricultural Research Council (PARC).

Agricultural research for development (ARAD) principles are being used to foster a demand-driven, results-oriented science research community to ultimately increase the contribution of agriculture to Pakistan's GDP, thereby aiding overall economic growth and poverty alleviation within the country.

- Boosting agricultural productivity:** Increase farmer incomes via improved livestock value chains; innovations in annual and perennial horticulture; and enhanced cereals and cereal systems. The AIP commissioned projects portfolio is supporting outcome-focused projects, implemented by novel alliances of public and private actors, where results are measured in the number of farmers who adopt productivity- or value-enhancing technologies.
- Facilitate innovation:** Create a dynamic, responsive innovation structure via a PARC-led competitive grants system with agricultural research boards in provinces. Based on ARAD principles, this will encourage new lines of scientific inquiry and novel partnerships.
- Enhance AIP impact and sustainability:** through extensive human resources development to train the next generation of Pakistani scientists; vesting them with the skills and expertise needed to be leaders within a more dynamic, competitive and responsive agricultural innovation system.

For further information, please contact: Director AIP Project Director Dr. M.A. Saeed (a.saeed@cip.gov.pk) Ph: (+92) 81-405932-33-34



**WHO'S EATING VEGETABLES?** Spring has arrived in Trunkelsberg, Upper Bavaria, Germany and **Ludwig Friedrich**, agricultural advisor at the Bavarian Ministry for Agriculture and a passionate beekeeper, together with his son **Felix**, don the appropriate attire—AVRDC’s “Eat your vegetables” T-shirts—to plant the first batch of vegetables in 2014.



**A PARTNER RECOGNIZED:** AVRDC extends congratulations to **Dr. Segenet Kelemu**, Director General of the International Center for Insect Physiology and Ecology (*icipe*), who was one of five outstanding researchers to receive the 16th Annual L'Oréal-UNESCO Award for Women in Science, presented on 19 March 2014 at the Sorbonne in Paris. Dr. Kelemu’s research on how microorganisms living in symbiosis with forage grasses can improve their capacity to resist disease and adapt to environmental and climate change is providing new solutions for ecologically responsible food crop production, especially by small-scale farmers. *icipe* and AVRDC are founding members of the Association of International Research and Development Centers for Agriculture (AIRCA).



**GROWING IN BHUTAN:** The Council for RNR Research of Bhutan (CoRRB) in collaboration with Department of Health (Ministry of Health), Department of Education (Ministry of Education) and Department of Agriculture (Ministry of Agriculture and Forests) conducted a three-day orientation program for 15 teachers participating in the **Vegetables Go to School** project from 21-23 March 2014 at the RNR Research Development Centre in Bhur, Gelephu. Project coordinator **BB Rai** from CoRRB noted Bhutan aims to engage schoolchildren ages 10-12 to grow and eat vegetables to improve their health and learning ability. “With Vegetables Go to School, we aim to do away with hidden hunger by adopting the cultivation and consumption of veggies with high content of minerals and vitamins,” said **Namgay Thinley**, a Horticulturist from the DOA. The orientation program was monitored by trainers from AVRDC – The World Vegetable Center in Taiwan via Skype.



**BITTER GOURD IN THE PHILIPPINES:** Cucurbit Breeder **Narinder Dhillon** and **Venus Salutan** (pink jacket), **East-West Seeds** bitter gourd breeder, examine an AVRDC bitter gourd line resistant to powdery mildew (*Podosphaera xanthii*) in a field trial at the company’s Bukidnon Satellite Station in the Philippines; bitter gourd susceptible to the disease is on the left. AVRDC bitter gourd breeding lines THMC 113, THMC 143, THMC 145, THMC 167 showed a high level of resistance and were free from the disease; these lines demonstrated resistance in another of the company’s trials in Chiang Mai, Thailand. Narinder also visited the company’s other research stations—Linda Vista Farm, Bulacon and Hortanova, Batangas—where there are good facilities for artificial screening of bitter gourd lines for resistance to Luteovirus, and pumpkin lines for resistance to *Zucchini yellow mosaic virus* (ZYMV) and *Papaya ringspot virus* (PRSV). East-West Seeds plans to collaborate with AVRDC to find resistance sources to these diseases. At the Bureau of Plant Industry (BPI) in Los Baños, Dr. H. Gabertan acquainted Narinder with BPI activities focused on germplasm evaluation and release. In the Philippines, most farmers plant F1 hybrids of bitter gourd and pumpkin released by seed companies; few grow open pollinated varieties.



**SOYBEAN IN THE SPOTLIGHT:** Legume Breeder **Ram Nair** attended the recent International Soybean Research Conference in Indore, India organized by the Society for Soybean Research and **Development** - Indore, the Directorate of Soybean Research - Indore, and the Indian Council of Agricultural Research (ICAR), New Delhi, India. The theme of the conference was “Mitigating productivity constraints in soybean for sustainable agriculture.” Sessions focused on genetic improvement, crop husbandry approaches, insect pest and disease management, processing, marketing and policy issues, and food uses of soybean. The need for greater use of soybean genetic resources in cultivar development was noted due to the narrow genetic base currently relied upon. Lack of quality seed available to farmers and poor viability of seed were highlighted as key production constraints. Ram met farmers and seed companies that use soybean developed at AVRDC. He also spoke with researchers from the Directorate of Soybean Research who are working with some of the Center’s vegetable soybean lines; line NRC 105 was recently registered for release.

# NEWS FROM THE REGIONS

**HOME GARDENS IN INDONESIA:** As part of the **SATNET Asia** project, AVRDC in partnership with the **Indonesian Vegetable Research Institute (IVegRI)** facilitated the training course “Improving Food and Nutrition Security through Development of Home Gardens” in Lembang, Indonesia from 1-3 April 2014 in support of Indonesia’s Kawasan Rumah Pangan Lestari (KRPL) or “Food Reserve Garden for Sustainable Agriculture” program. A total of 23 participants from 14 main provinces of Indonesia attended the training. The home garden course will be complemented by a module on postharvest technologies and marketing systems for small-scale farmers on 4 April.



1. Training course participants.
2. The prospect of setting up home gardens brought out the smiles among participants.
3. **Ahsol Hasyim** with the participants at the chili field using IPM.
4. Exercise on making insect traps.
5. Mixing soil media for container gardening.
6. Discussing action agenda to promote home gardens.
7. Visit to IVEGRI's seed production facility.
8. Group discussion. Project Manager **Joko Maryiono** (right) guides participants.



## New tomato for the Solomons



AVRDC Plant Pathologist **Jaw-Fen Wang** (!) and **Jimi Saelea**, Acting Permanent Secretary of Ministry of Agriculture and Livestock, Solomon Islands.

Farmers and growers in the Solomon Islands will soon be producing more and better tomatoes, thanks to an ongoing collaboration between AVRDC and the country's Ministry of Agriculture and Livestock (MAL). On 25 February 2014 MAL officially recommended and launched one of AVRDC's open pollinated tomato lines known as CLN2585D, now locally code-named MAL-SI/LE/01/14. A total of 122 people attended the launch of the new variety at MAL headquarters in Honiara, including representatives from the private sector, nongovernmental organizations, seed suppliers and farmers/growers.

Acting Director of Agriculture Research, **Helen Tsatsia** officially opened the event. AVRDC plant pathologist **Jaw-Fen Wang** then addressed the audience, noting that this was the first variety release AVRDC has made in the Solomon Islands; hence it was a milestone

for the Center as well as the Solomons. In his speech, Acting Permanent Secretary of MAL **Jimi Saelea** recommended MAL-SI/LE/01/14 as a new adapted tomato line and encouraged farmers and interested growers throughout the country to plant it. He emphasized that the line had been evaluated under Solomon Islands conditions over a number of cropping seasons and out-performed locally available



**Rose Sese** (!) a farmer in the Guadalcanal plains east of Honiara, speaks about her experience with the new tomato.

tomato varieties in yield and taste. **Rose Sese**, a farmer in the Guadalcanal plains east of Honiara, supported his claim; she participated in the initial stages of the field evaluation and witnessed the line's performance in the field.

A total of 237 seed packets of the new line were distributed during the event to interested farmers.

Under local conditions, plants produce ripe fruits approximately 56 days after transplanting and the

average fruit weight is 190 grams. From a field trial in a farmer's field on Guadalcanal in the regular growing season of 2013, the average marketable yield was 16 tonnes per hectare.

Quick to capture the excitement surrounding a new product, reporters from local daily newspapers *Solomon Star* and *Island Sun* and the Solomon Islands Broadcasting Corporation (radio and TV) covered the launch and conducted interviews during the event. Interested farmers who heard the news on the radio or read about it in the newspapers later visited MAL and AVRDC offices in Honiara to collect seed packets of the new tomato line.

Fruit of MAL-SI/LE/01/14 is currently sold to local hotels in Honiara by Guadalcanal farmer groups outside Honiara participating in the Participatory Guarantee Scheme (PGS) Project funded by the Australian Centre for International Agricultural Research (ACIAR) and implemented by MAL and AVRDC. The hotel managers appreciate the high quality of the fruit, and demand has been strong.

### Read more

[Support for Sustainable Crops](#), Solomon Islands Star, 3 March 2014



## A field day for onion in Cameroon's Far North



**(left)** Mrs. Amina (*bending down*), an onion farmer who helped to establish the demonstration plot in Kaélé, explains to other women how to set up an onion plot.

**(right)** A woman farmer (*yellow dress*) in Koza shows other farmers how to lay out an onion plot for a good crop. By training extension staff and lead farmers who will share their knowledge, AVRDC's improved technologies reach many more farmers.

Following a training of trainers session in February 2014, AVRDC's Liaison Office in Cameroon in collaboration with the International Fund for Agricultural Development (IFAD)-funded Commodity Value Chain Development Support Project (PADFA: *Projet d'Appui au Développement des Filières Agricoles*) organized three onion field days in the Far North region of Cameroon: at Gancé in the Mayo Sava division, Kaélé in the Mayo Kani division, and Koza in Mayo Tsanaga division on the 20th, 22nd and 25th of March 2014, respectively. The field days allowed farmers to compare improved onion production technologies with their traditional practices and to assess the performance of improved AVRDC onion varieties, commercial onion varieties, and farmer-saved seeds. Eight onion varieties were part of the demonstration; four were introduced from AVRDC Mali (Air Violet, Jan Air, Yaouri Kurgri, FBO1BF), three were sourced from

Semagri, a local private seed company in Cameroon (Belami, Violet de Galmi, and Actarus) and one local line, Goudami, served as the check.

Local farmers were invited to participate in the establishment and maintenance of the onion demonstration plots; this ensures broader ownership of the results and increases local credibility. The participatory approach creates awareness and demand for onion lines with desirable traits. During the field days farmers compared different onion varieties and management practices. Farmers who participated in the preparation and maintenance of the demonstration plot shared their experiences in using improved management practices such as nursery preparation, field preparation and irrigation techniques with their fellow farmers.

Farmers were impressed by the new techniques promoted by AVRDC,

which allowed the crop to catch up after an initial delay in planting. In fact, the AVRDC plots were set up in January and farmers predicted that the crop would fail because they usually stop planting onion in December. They found the AVRDC plots were ahead of the onions they had planted, because some varieties such as Violet de Galmi reach maturity 80 days after sowing. The farmers now appreciate that planting improved lines can help them predict the time of harvest and the yield. Furthermore, the later planting method allowed for easier weeding, fertilization and irrigation.

A total of 231 farmers (124 female and 107 male), representing 32 Common Initiative Groups participated in the field days. Seven agricultural technicians from PADFA and 6 representatives of the Divisional Delegation of Agriculture and Rural Development also joined the field day in Koza.

Field Day in Sokourani



(left) The governor of Sikasso is welcomed with a bowl of tomatoes — a gift from the people of Sokourani.



(right) AVRDC Vegetable Breeder **Albert Rouamba** explains to the visitors how best agricultural practices for vegetables are transferred to farmers.

Although the Sikasso region is one of Mali's most productive agricultural areas, its people are among the country's most malnourished. Over the past two years, with the financial support of USAID Mali, AVRDC has sought to reduce malnutrition and poverty by promoting vegetable production and consumption in the region. A field day on 17 March 2014 in the village of Sokourani, one of AVRDC's four Best Practices Hubs

(BPH) located between the districts of Sikasso and Koutiala, introduced the Center's intervention strategies to local administrative and municipal authorities, representatives of national and regional agricultural research and development services, NGOs, farmers' organization representatives and the national media.

Vegetable Breeder **Albert Rouamba** welcomed the

dignitaries and all participants, and spoke about the ways in which AVRDC's activities address the problems of rural populations confronted by poverty and malnutrition. The governor of Sikasso noted AVRDC's efforts increase farmers' incomes, diversify diets and improve health with vegetables.

In the field, participants saw four different types of irrigation used on three varieties of five vegetable

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Women in Sokourani (l) have mastered the preparation of tomato juice and learned how to store vegetables in a double container to keep fresh produce cool.



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**(left):** Participants visit the pepper plot.



**(right):** Villagers enjoy a party at the end of the field day.

species. This experimental design allows growers and researchers to see and identify best practices for irrigation systems and mulching. The irrigation systems under evaluation are: i) traditional using water cans or gourds, as the control; ii) drip irrigation system; iii) sprinkler irrigation using a Nafasoro pump; and iv) gravity system.

Local vegetable varieties and AVRDC improved lines were evaluated by comparing them with farmers' landraces in each irrigation system. The Center's improved onion, okra, African eggplant, tomato, hot pepper performed well in comparison to local varieties; farmers could see the difference and welcomed the opportunity to participate in the evaluation and offer their opinions and observations. The field demonstration design at the Sokourani BPH is similar to those at the other hubs in Molobala (Koninguié commune), Bledougou (Domba commune) and Finkolo Ganadougou (Finkolo commune).

Women from Sokourani learned how to extract tomato juice and conserve fresh vegetables as part of the project's postharvest activities. Tomato juice can be stored in sterilized bottles for about 6 months. Placing fresh vegetables in a clay pot within a larger clay pot with wet sand in between the pots, and a wet cloth on top—the "double container" system—keeps the produce cool and fresh for up to two to three weeks after harvesting. Training centers were built near each BPH to teach these and other postharvest practices.

The field day ended with a celebration, as the villagers expressed delight in their ability to produce more vegetables to generate more income, and to have a greater variety of vegetables to consume in different ways. The administrative authorities appreciated the Center's work in Sikasso and Sokourani. With support from USAID, AVRDC is expanding interventions into other areas of Sikasso and other regions of Mali.



**(top)** AVRDC improved lines of okra, tomato, hot pepper, African eggplant, and onion were displayed during the event.

**(bottom)** Tomato juice extracted by women from Sokourani.

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## Testimonials



**Madame Traoré Mariam** evaluated vegetables in the Sokourani experiment perimeter. She learned vegetable production techniques during training sessions at the BPH: *“The way we did the nurseries before, and the transplantation methods we used, were not good to produce enough vegetable products. With the training, many people learned how to do these things better. The seedlings from the AVRDC improved nurseries are vigorous; they grow and produce fruit faster than the traditional ones. This is why the project is now our reference for gardening knowledge.”*



**Mr. Alou Sogoba** is a vegetable producer in Kouoro Barrage, a satellite village of Sokourani. He didn't work directly in the experiment perimeter, but he has attended every training session organized by the project since 2012. *“I was a butcher, but when I started to be trained in vegetable production techniques and received AVRDC improved vegetable seeds for tests and demonstrations in my own garden, I became fully engaged in vegetable production. With the techniques I learned, I am now able to realize good yield on my plots, not only during the cold dry season, but also in the rainy season. Now, I have given up the job of butcher and have become a vegetable producer.”*



**Mr. Diabaté Salia**, a farmer from Diokéla, a satellite village of Blédougou in Domba commune, received training and seed from AVRDC for tests and demonstrations. *“Like many young people of my village I often go for gold panning during the dry season, hopping to make money for my family. This business has proven unproductive. But two years ago, when this project started, I received training and improved vegetable seeds from AVRDC. From that time, my yield has increased and I have more and more excitement for vegetable production. I used to earn 200,000 CFA (about USD 420) per year in vegetable sales, but now I can reach more than 400,000 CFA (USD 840). I forgot about gold mining and I advise the youth to do the same. I am very hopeful for this project.”*

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