



# FEEDBACK

## from the field

This bulletin provides feedback to AVRDC - The World Vegetable Center's research groups about local vegetable production and consumption constraints to enable our research to be more pertinent to end users. It is issued quarterly. Please send your trip reports or news of anything urgent from the field to [tech\\_dissemination@worldveg.org](mailto:tech_dissemination@worldveg.org). Thank you!

## Farmers and traders select AVRDC tomato lines for Northern Mindanao, Philippines



Farmers planting tomato in northern Mindanao in the Philippines are always worried about the occurrence of Tomato leaf curl virus, bacterial wilt and fusarium wilt. They often purchase tomato hybrids with disease resistance developed by private seed companies and spend around US\$125 per hectare for seeds. With the participation of men and women farmers and traders, the Agroforestry and Sustainable Vegetable Production in Southeast Asian Watershed Project has been able to select three open-pollinated AVRDC-developed tomato lines (CLN2768A, CLN2777F and CLN2498D) adapted to Northern Mindanao. The project is now planning to multiply these open-pollinated lines with the support of local government units and interested farmers. These lines are expected to gain popularity because they resist major diseases in the region and farmers can save their own seeds.



This activity was conducted under the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) funded by the United States Agency for international Development (USAID).

**Source:** Agustin R. Mercado, World Agroforestry Centre (ICRAF-Philippines); Edwin Javier, Global Technology Dissemination, AVRDC-The World Vegetable Center



**Photos:** Agustin R. Mercado (top and left), Shu-fen Lu, Tomato Breeding, AVRDC-The World Vegetable Center

**Top:** AVRDC tomato and eggplant lines under a tree-based system were shown to vegetable farmers during a farmers' field day at Lantapan, Bukidnon, Philippines

**Left:** Vegetable farmers evaluated the performance of various tomato lines against Tomato leaf curl virus under a tree-based system during the farmers' field day at Claveria, Misamis Oriental, Philippines

# Farmer field schools bring benefits to the farming communities in tsunami-affected areas of Aceh, Indonesia

AVRDC and the Assessment Institute for Agricultural Technology (AIAT or BPTP) are training farmers through Farmer Field Schools (FFS) on improved production practices of vegetable farming in the tsunami-affected areas of Aceh, Indonesia under a project funded by the Australian Centre for International Agricultural Research (ACIAR). The FFS program aims to include 1600 farmers by November 2009 and up to this point more than 1450 farmers have been trained on chili pepper Integrated Crop Management (ICM) practices. Eighty FFS are being organized in five districts of Aceh. The market price of chili was high over the past year, making it a very popular crop with farmers. Chili was chosen as the priority crop based on results from a participatory assessment.

Through restoration of soil fertility on vegetable farmland and dissemination of vegetable production technologies,

the project plans to improve community livelihoods in these tsunami-affected areas. At present, an evaluation of the FFS is being conducted using a framework of Participatory Impact Assessment (PIA).

In the FFS, 15 different components of crop production technologies are emphasized. Among them, farmers have given a high preference for adoption of the following technologies:

- Composting/Bokashi preparation
- Pest and disease identification
- Application of botanical pesticides
- Proper method of pesticide use
- Netting to protect seedlings from pests and diseases

The initial impact of FFS training on improving farmers' knowledge and skill on chili cultivation with low-input systems and IPM technologies was astonishing. During a recent survey, the FFS participants reported that,

with the knowledge that they gained from the training and by adopting the selected ICM techniques from the FFS, their average chili productivity would increase by over 30-40% and the profit would rise by 50% within 1-2 years. The average yield of chili in the FFS ICM plots was 50% higher than in the local farmers' treatment plots. The higher profit from the improved method of chili farming is also largely due to cost savings on pesticides and other chemical inputs due to adoption of low-cost ICM technologies.

**Source:**

*Madhusudan Bhattarai, Socioeconomics, AVRDC-The World Vegetable Center*

**Photos:** *Greg Luther, Global Technology Dissemination, AVRDC - The World Vegetable Center*



*Ms. Retning, the FFS facilitator in Jantang, Aceh Besar, discusses anthracnose and fruit fly damage on chili peppers with participating farmers*



*Farmer participants observe the chili pepper plants in the FFS plots in Drien Bungong, Pidie Jaya*



*A farmer participant of FFS is making bio-pesticide (neem solution) to spray on his chili field (Photo by Madhusudan Bhattarai)*



*Farmer Field School (FFS) plots in Lamsujen, Aceh Besar. The Integrated Crop Management plot (left) has more robust, higher yielding pepper plants than those grown with the local farmers' treatment (right)*

## Chili production under slash-and-burn farming systems

Monasa mon village, located about 35 km northeast of Banda Aceh, Indonesia, is one of the villages where farmers grow chili under slash-and-burn farming systems. Farmers transplant the seedlings and then rarely return to the fields before harvesting, only providing minimal additional inputs and supervision of the crop.



*Chili harvesting in a farmer field school ICM plot, Aceh*

Interestingly, these farmers also grow a hybrid variety of chili ('Ladoo'), but they select robust pepper fruits out of the hybrid crops and grow chili for 4-5 years, continually selecting. Later they again purchase new hybrid seeds. Farmers reported that the 2nd and 3rd generations of seed selected from the hybrid produce even more robust and productive crops in the harsh slash-and-burn environment than the market-purchased hybrid seeds. Therefore, farmers' participatory breeding and selection of new crop lines are being implemented on-farm in Acehnese slash-and-burn systems.



*Land clearing for production of annual crops under slash-and-burn system*

A typical slash-and-burn farmer grows chili for 1-2 seasons, and then keeps the land fallow for 4-5 years to restore the soil fertility to its natural level. Farmers do not apply any pesticides and chemical fertilizers, so they traditionally follow true organic farming practices.



*Mr. Aswall has grown chili in a slash-and-burn farming system for the last 10-12 years in Aceh Besar*

The two most critical problems for slash-and-burn chili farming, according to farmers, are adverse climatic factors (flooding, long dry spells), and high fluctuation of chili market prices (95% of the chili harvested are sold). The farmers reported that farm profit from chili is about 4-5 times higher than from rice and tomato production. However, farmers also consider chili to be a very risky crop due to high market price volatility. Nevertheless, expected high returns from chili motivate many farmers practicing slash-and-burn to grow this crop and try their luck.



*Landscape of slash-and-burn farming system, Aceh*

Now, the challenge for scientists is to develop a suitable robust variety of chili that can be offered to slash-and-burn farmers, so that they do not have to always depend upon 2nd & 3rd generations of self-selected hybrid seed. Likewise, what ICM methods are best suited to the harsh production environment of slash-and-burn farming systems?

AVRDC and its partners in Indonesia are providing training to emerging vegetable growers in Aceh, including farmers practicing slash-and-burn, who could potentially become highly experienced vegetable farmers in the future. This project is funded by ACIAR.

**Source and photos:** Madhusudan Bhattarai, Socioeconomics, AVRDC-The World Vegetable Center



Hybrid of AVRDC chili pepper inbred lines 9950-5197 and 9955-15

## AVRDC chili pepper inbred lines dedicated to local chili breeding in Vietnam

Two AVRDC chili inbred lines, 9950-5197 and 9955-15, were registered for commerce in Vietnam, but have met with limited success in the market. They were used as parents of a hybrid variety by the Southern Fruit Research Institute.

The growth and yield of this hybrid was similar to 9955-15 but the fruit is smaller and straighter with a thinner pedicle. The farmers in Tien Giang province have expressed interest in planting this hybrid.

**Source:**

*Thi Huong Van Le*, Group of Vegetables, Southern Fruit Research Institute (SOFRI); *Paul Gniffke*, Pepper Breeding, AVRDC-The World Vegetable Center

**Photo:** *Thi Huong Van Le*

## Drip irrigation system benefits local farmers in the Solomon Islands

Ms. Irene Suri is a progressive farmer in the Solomon Islands. She attended the drip irrigation workshop funded by the ACIAR project 'Integrated Crop Management Package for Sustainable Smallholder Gardens in Solomon Islands' on 23-25 June 2009. She received two drip kits (bucket and drum) from the workshop and installed the drip system in her integrated farm right after the workshop.

Irene grows a variety of vegetables including yard-long bean, tomato, pepper, lettuce, pakchoi, carrots and cucumber. She supplies vegetables to Honiara market, local restaurants and hotels.

Before attending the drip irrigation training workshop, Irene hand-watered the vegetable plots using sprinkler cans and hoses. She said this practice is not efficient because much of the water is wasted and is not used by the plants. Hand-watering also consumes much labor and time every day. During the dry season, water is limited and not sufficient to irrigate the whole area.

Irene learned the benefits of drip irrigation from the workshop and by actually putting the lessons into practice. She said by adopting the drip irrigation system, she has saved water and labor cost, reduced disease and weed infestations, and raised the



Left: Chinese cabbage cultivar 'Saladeer' grown in garden boxes under drip irrigation on Ms. Irene's farm

Bottom: Ms. Irene Suri (left front) showing the drip irrigation system installed on her Chinese cabbage farm and sharing her experiences with other farmers



quality of her vegetables compared to the traditional practice of hand-watering. She plans to expand her vegetable-cultivated area and use drip irrigation. Her water source is a deep well. Other farmers around Honiara visit her vegetable farm to learn how a simple drip irrigation system is set up so they can reap a wide variety of benefits.

**Source and photos:**

*Manuel C. Palada*, Crop and Ecosystem Management, AVRDC-The World Vegetable Center

# Sweet pepper grafting technology successfully adopted by farmers in Central Taiwan



Mr. Yi-Fey Huang, a farmer from Nantou County, Central Taiwan, attended the grafting field day which was held on 12 June 2009 in Nantou. He shared his experiences with applying AVRDC grafting technology to sweet pepper production with field day participants. In 1999, Mr. Huang started intensively cropping non-grafted sweet pepper in his farm (above 750 m elevation) and got excellent yields and fruit quality in the first three years. However, after continuous cropping for six years, only 20-25% of the seedlings survived (30 days after transplanting) because of bacterial wilt infestation.

Two years ago, Mr. Huang started applying AVRDC's grafting technology for sweet pepper production on his 6 ha farm. He said the grafted plants increased the tolerance to bacterial wilt and therefore enhanced the yield (more than 40-60 t/ha) and fruit quality. His sweet pepper sold at a higher price in the market and his harvesting period was extended.

**Source:**  
Deng-lin Wu, Crop and Ecosystem Management, AVRDC-The World Vegetable Center

**Photos:** Ming-che Chen, Public Awareness & Information



*Top: More than 85 sweet pepper growers and 15 nursery owners visited Mr. Huang's farm and learned the advantages of using grafted seedlings to control diseases on sweet pepper*

*Bottom: Mr. Yi-Fey Huang was happy to share his successful experiences with applying AVRDC grafting technology*

## AVRDC Genebank accessions finding their niche in vegetable-agroforestry systems

When vegetables are integrated into tree-based systems they become vegetable-agroforestry (VAF) systems. The Agroforestry and Sustainable Vegetable Production in Southeast Asian Watershed Project has found a VAF system that improves farm productivity and increases farmer income, among other benefits, in hilly areas in Northern Mindanao. The system has hedges of trees spaced 25-30 m apart, with 3 m spacing within tree lines. Vegetables are grown between tree lines. Trees that are less competitive with vegetables are suited to this type of system. Some physiological characteristics of such trees are straight canopy, deep root system, and symbiotic nitrogen fixation. Some of the trees suited to the system in Northern Mindanao are swamp mahogany (*Eucalyptus robusta*), musizi (*Maesopsis eminii*), durian (*Durio zibethinus*) and rubber (*Ficus elastica*).

Some GRSU germplasm has been evaluated under the VAF system. The accessions TOT4141 (amaranth from Vietnam), TOT5274 (basil from Thailand) and TV2141 (yard-long bean from Pangasinan, Philippines) gave better yields when grown 5-6 m from the tree line than when grown closer to the tree line. TOT 2272 (amaranth from Taiwan) and TOT 6667 (jute mallow from Aklan, Philippines) are suitable for planting 6-14 m from the tree line. Farmers engaged in vegetable-agroforestry systems are increasing their income by 20-100% compared to non-VAF systems. This activity was conducted under the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) funded by the United States Agency for International Development (USAID).



AVRDC germplasm was evaluated under the vegetable-agroforestry system in Northern Mindanao, Philippines

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