

This bulletin provides information about application of AVRDC's technologies in the field and other topics of interest regarding vegetable production and consumption constraints around the world. It is issued quarterly. We welcome everyone to share any interesting news about vegetables – please send a short article with photos to tech_dissemination@worldveg.org. Thank you!

Vegetable soybean, a new crop with high potential for Central Asia and the Caucasus



Farmer Mrs. Karima Asbadinova grows mid-maturing vegetable soybean variety 'Sulton' in Uzbekistan

In Central Asia and the Caucasus (CAC) region, vegetable cultivation area increased to 785,122 ha in 2010 (a 15% increase compared to 2006) and total vegetable production reached 17 million tons. However, the average vegetable yield (19-20 t/ha) in the region is still below potential. Soil fertility degradation is one of the main causes. It can be improved by growing legume crops and increasing the population of beneficial microorganisms in the soil. Vegetable soybean is one of several legumes that have been introduced to this region in recent years.

Since 2005, AVRDC-The World Vegetable Center has distributed vegetable soybean germplasm to the region

and several lines were developed by the Kazakh Research Institute for Potato and Vegetable Cultivation, the Uzbek Research Institute of Plant Industry, the Research Institute for Horticulture and Vegetable Cultivation in Tajikistan and the Research Institute for Crop Husbandry in Georgia. Six varieties were released, including four early-maturing and two mid-maturing varieties. Green pods can be harvested 60 days (early-maturing) and 90 days (mid-maturing) after seed emergence. Under regional conditions, the mid-maturing varieties produce higher green pod and seed yields (20 t/ha and 7.5-8 t/ha, respectively) than the early-maturing varieties (9-11 t/ha and 3.5-4 t/ha, respectively). Early-maturing varieties 'Ilkhom' and 'Universal' are successfully grown



Vegetable soybean variety 'Inju' planted in Kazakhstan (left); First Uzbek TV channel interviewed a vegetable soybean farmer during Farmers' Day in Uzbekistan (right)

Vegetable soybean varieties released in Central Asia and the Caucasus

Type of vegetable soybean	Variety name	AVRDC Germplasm code	Country released	Year of release
Early-maturing	Ilkhom	VI053823	Uzbekistan	2007
	Universal	VI044994	Uzbekistan	2008
	Mtsvane Parkiani	VI060637	Georgia	2011
	Sabostne 1	VI045038	Georgia	2011
Mid-maturing	Sulton	AVSB0304	Uzbekistan	2011
	Inju	AVSB0403	Kazakhstan	2012
	Istemoli	VI024710	Tajikistan	-*

*Currently under state variety testing

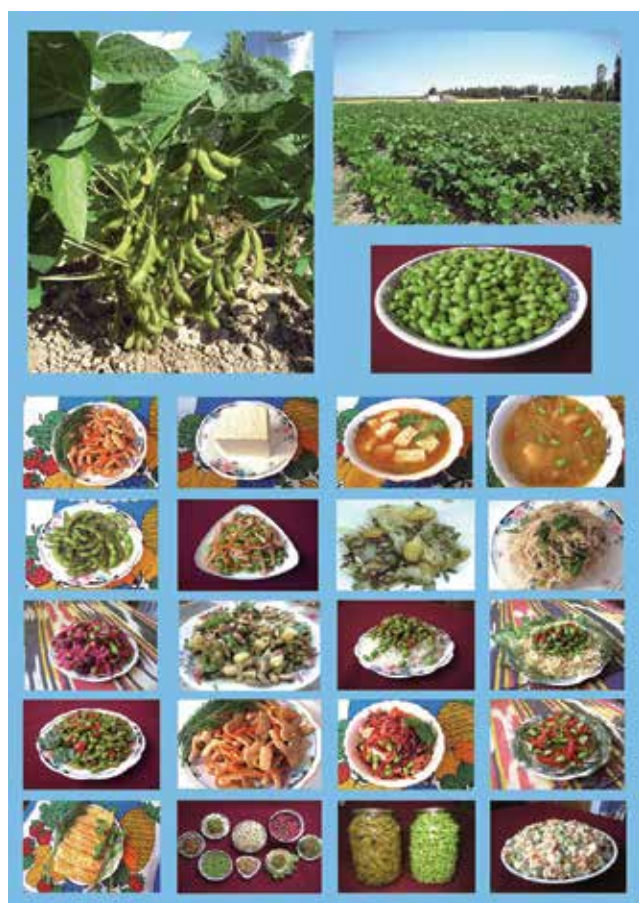
with good yields even at an altitude of 880 m in the piedmont area of Bostanlyk, Uzbekistan.

Vegetable soybean is a non-traditional crop in the region. When first introduced, farmers hesitated to grow it. To promote vegetable soybean production, AVRDC developed cultivation technology, including pre-sowing seed treatment, suitable sowing time for different regions, land preparation tips for various soil types, fertilization and irrigation. A field management guide was published and distributed to farmers and businessmen through field days, demonstrations, exhibitions, seminars and tasting opportunities from 2008-2013.

Since 2010, Mr. Kurvanali Ziyaviddinov (40 years old) has grown vegetable soybean on 2 ha annually on his farm in Kibray district, Tashkent region, Uzbekistan. He prefers to grow vegetable soybean variety 'Sulton' for its good yield and pod quality. He also produces the seeds of this variety. "After growing vegetable soybean, the soil structure in my farm was improved," said Mr. Ziyaviddinov. "I had good yields of potato and other crops following the soybean and generated a good income." During Farmers' Days, he was glad to share his experiences with growing vegetable soybean with other farmer participants.



Uzbek farmer Mr. Kurvanali Ziyaviddinov harvested vegetable soybean, for sale domestically



Vegetable soybean can be sown twice a year (10-20 April and 20 June-5 July) in Tajikistan and Uzbekistan, and harvested in summer and autumn. However, for countries with cooler climates such as Georgia and Kazakhstan, vegetable soybean can only be sown in May and harvested in September. The temperature in the region reaches 42-45°C in summer and the humidity is only 30-35%. Therefore, soybean cultivation requires regular furrow irrigation. Harvesting machines are not available in the region and the harvest is carried out manually.

With increasing areas planted, the marketing and consumption demands are increasing, too. Therefore, 20 recipes were developed and distributed to farmers and households to increase awareness and knowledge on utilization. In the near future, canning and processing will be another potential business for vegetable soybean in Central Asia and the Caucasus.

Left: A poster highlighting various vegetable soybean dishes at a Field Day

Source and photos:

Ravza F. Mavlyanova, AVRDC-The World Vegetable Center, Sub-Regional Office for Central Asia and the Caucasus

Homestead vegetable gardening benefits rural households in Bangladesh

Socioeconomic development in Bangladesh very much depends on agriculture; however, a huge number of farmers are marginal or landless with less than 15 decimals (40 m²/decimal) of land beside their homestead areas. This sector of the population suffers from poverty, malnutrition, anemia, night blindness, poor growth and development of children, and micronutrient deficiency. Homestead vegetable cultivation can provide adequate nutrition to the women farmers and their family members, and generate income opportunities. Consuming diverse types of nutrient-dense vegetables regularly can help alleviate these problems.

In 2012, AVRDC worked with nongovernmental organization BRAC to establish 300 homestead gardens in two upazillas (subdistricts) of Barisal and Jessore districts to raise awareness about homestead vegetable gardening, ensure homestead food production and nutritional security, and generate extra income.

Women farmers were trained on vegetable production and provided with good quality vegetable seeds for summer and winter planting. Stem and red amaranth, Malabar spinach, kangkong, okra, cucumber, bitter melon, ridge gourd, sponge gourd, yard-long bean, jute mallow and heat-tolerant lablab bean were selected for summer production; spinach, radish, eggplant and pechay were selected for growing in winter.



Red okra, a popular homestead gardening vegetable

Kangkong, Malabar spinach, spinach and stem amaranth can be repeatedly harvested. Red okra and red spinach containing higher levels of anthocyanin along with carotene were also distributed to some households and a very good response was obtained. The red pods and leaves of this okra/spinach also provide an ornamental value to the garden. Each homestead garden was set up in a 6 x 6 m (36 m²) plot to grow 17-18 vegetable crops year-round and the average annual yield was 180-210 kg. All the leafy vegetables were



Various types of vegetables grown in homestead gardens in Bangladesh

found to be very popular as well as nutritious, and they are the major produce (72-75% of yield) from the homestead gardens with high remunerative value (59-67% of income generated).

4 Mrs. Parul Begum is one of the most successful women farmers from Shikarpur village of Barisal. Besides feeding her family part of the homestead garden harvest, she also distributes some to her relatives and neighbors. She was satisfied that she could sell a significant quantity of her homestead garden vegetables.

In addition to regularly consuming the vegetables produced

in homestead gardens, around 20-25% of women farmers sold the surplus vegetables to the market. By generating extra income, they were able to purchase other high value foods such as milk and eggs for their family, and some of them were able to buy books, pencils and pens for their children. In most of the cases, the women farmers share 35-50% of their total harvest with their neighbors, which builds up their confidence in the society and establishes good neighborhood relationships.

Source and photos:

Sitesh Chandra Biswas, Vegetable Research, BRAC Agricultural Research & Development Centre, Bangladesh



Farmer Mrs. Najma Khatun received seeds from BRAC and planted them in her homestead garden, including red okra and stem amaranth (left), red spinach (right) and other crops

Partnership benefits vegetable farmers in Cameroon



Mrs. Agwbawan Chalote works hard in her amaranth field

Due to lack of good quality seeds, improved varieties, and disease and pest pressure, the South Region of Cameroon suffers from low vegetable productivity. Vegetable farmers lack appropriate information on how to produce vegetables in their localities, and little or no knowledge on site selection for planting vegetables. Vegetable supply is insufficient for the South Region and most vegetables such as tomato, nightshade and cabbage are from the Northwest and West Regions of Cameroon.

To improve the national capacity for technology delivery, dissemination and training for the development of vegetable production in the South and Central Regions of Cameroon, AVRDC-The World Vegetable Center has established a collaborative partnership with the Center for Assistance to Sustainable Development (CASD). This nonprofit organization has been committed to promoting sustainable agriculture for increasing incomes and economic productivity of rural farmers in Cameroon since 2008.

In 2008 to 2012, AVRDC provided improved germplasm, including exotic (tomato and pepper) and indigenous (okra, eggplant, nightshade, jute mallow and amaranth) vegetables for CASD to conduct 11 participatory field trials in Ebolowa, the capital of Cameroon's South Region. Farmers were trained in vegetable production and they were involved in trial observation, data collection and promising variety

selection. The selection criteria are disease tolerance, high yield, taste and market value.

After selecting the promising varieties, CASD multiplied the selected varieties and worked with farmers to set up five demonstration plots in Ebolowa and Widikum. They distributed 27 kg of seeds in the South Region of Cameroon, including four tomato lines (AVTO9604, AVTO9601, AVTO9605, AVTO0201), four eggplant lines (AB2, Tengeru white, Heart shape, UGAE7), five nightshade lines (BG14, MV25, BFSAM, SS52, BG25), three pepper lines (Hot habañoero, PBC297, Red BFS) and one okra line (PI496946).

In early 2013, CASD and AVRDC visited the farmers and evaluated the impact of the activities on vegetable production. Farmers shared the benefits generated from growing vegetables. Mr. Nkitisang Fred was very happy that CASD introduced the high-yielding and disease-resistant tomatoes to him. His tomatoes are of good quality for the market now. "My customers like my tomatoes very much and my income has increased," said Mr. Fred. From the sale of tomatoes, Mr. Fred was able to acquire a piece of land on which he plans to build his own house in the next two years.

After attending the vegetable production training, Mrs. Agwbawan Chalote can now grow vegetables with ease. She appreciated receiving good seeds of nightshade, amaranth



Mrs. Mamadou Awa and her husband have enlarged their farm size and applied good management practices to their pepper plants (left); Mr. Nkitisang Fred harvested pepper on his farm (right)

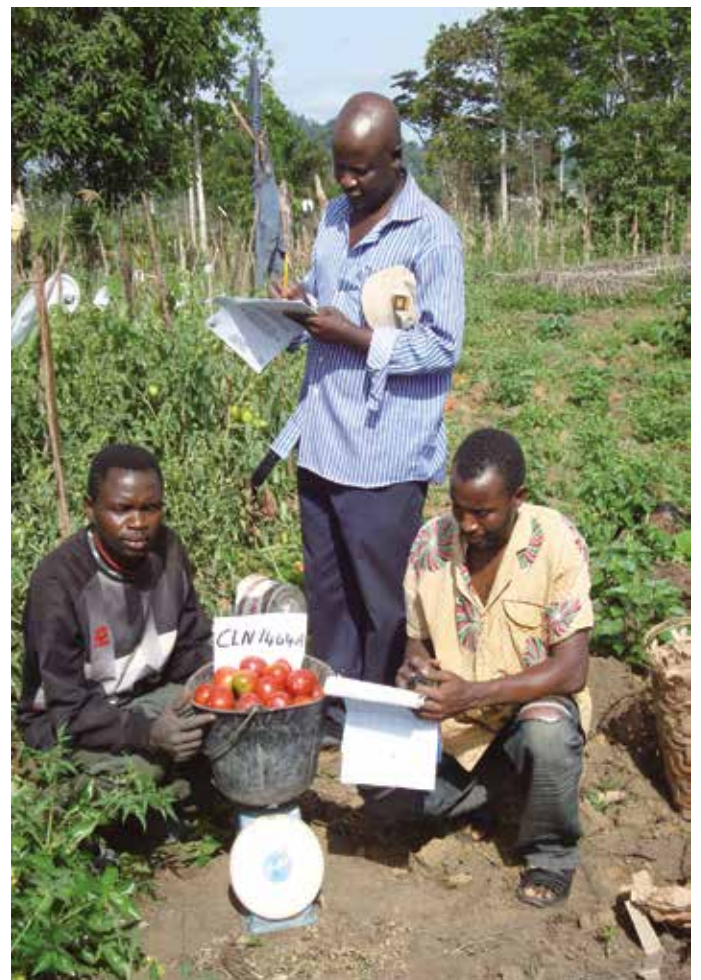
and eggplant. “My income increased after planting these three vegetables,” said Mrs. Chalote. “I can now pay the school fees for my children and the hospital bills, and help my husband to solve some minor problems in the family.”

Mrs. Mamadou Awa’s husband has two wives and they raised six children together. Their vegetable yield was very poor before they attended the training on vegetable production. Now they have enlarged their farm size and gained knowledge on applying good management practices to their vegetable crops. The vegetable yield is good and the vegetable production is their main income source. “We are able to build a good house, send our children to school and improve our livelihood,” said Mrs. Awa. “We want to thank AVRDC and CASD for making our life better.”

The collaborative partnership between AVRDC and CASD indeed improves vegetable farmers’ livelihoods in the South Region of Cameroon. Poor soil fertility and irrigation facilities, and pest and disease problems are regular challenges for farmers. Continuous partnerships can help them find solutions through participatory approaches as they continue to interact with experts from different fields and institutions like AVRDC and CASD.

Source and photos:

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Farmers participated by collecting data for tomato trials

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