Promotion of Vegetable Research for Sustainable Development of Vegetable Production in CAC Region

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AVRDC – The World Vegetable Center
Activities in Central Asia and the Caucasus

(CACVEG)

Regional Network for Vegetable Systems Research & Development

established in 9 August 2006 brought together eight countries

(Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan)

Priority directions in vegetable research in CAC

- Collection and conservation of PGR
- New varieties development
- Resource saving technologies introduction into vegetable production
- Save vegetable production
- Diversification
- Seed system development
- Marketing research
- Capacity building
- International cooperation

AVRDC- CAC activity on Global Themes:
Germplasm, Breeding, Production and Consumption

Global Theme Germplasm

Evaluated AVRDC' germplasm in 2006-2013

Country	Research institutions	%
Armenia	The Scientific Center of Vegetable, Melon and Industrial Crops	20
Azerbaijan	The Azerbaijan Research Institute of Vegetable Growing	7
Georgia	The Research Institute of Farming of AU	7
Kazakhstan	The Kazakh Research Institute of Potato and Vegetable Growing	12
Kyrgyzstan	The Kyrgyz Research Institute of Farming, National Agrarian University	5
Tajikistan	The Research Institute of Horticulture and Vegetable Growing	10
Turkmenistan	The Research Institute of Farming	7
Uzbekistan	The Uzbek Research Institute of Plant Industry, TheUzbek Research Institute of Vegetable, Melon Crops and Potato, The Tashkent State Agrarian University	27

Regional Varietal Trial in CAC (2006-2013)

Regional Varietal Trial	**Total AVRDC' 1550 acc/lines 29 species were evaluated in eight CAC countries.**
State variety trials	**Total 38 new varieties of 12 species are under state variety trials and under submission to SVTC in eight countries.**
Released new varieties	**41 new varieties of 8 vegetable crops including tomato, sweet and hot pepper, eggplant, vegetable soybean, mungbean, yard-long bean and cabbage have been released and registered in the State Registries in CAC.**
Released new varieties in 2013	**In 2013-2014 new varieties of sweet pepper Sabo (PP0437–7031) and eggplant variety Feruz (AVRDC' genebank acc.) have been released in Uzbekistan, tomato variety "Also" in Azerbaijan and , Zolotaya jemjujina" and Solnechnaya businka" in Kazakhstan.**

Released varieties in CAC region

Released varieties of non-traditional species in CAC region

Vegetable soybean

Yard-long bean

Chinese leafy cabbage

Mungbean

On-going trials in 2014 (UzRIPI and UzRIVMC&P)

Global Theme Production

Activity 3.2

Adapt integrated production technologies for targeted systems or regions

- **Grafting method evaluation for *Fusarium* control and tomato cultivation in greenhouse and an open field was conducted in Uzbekistan**
- **Total AVRDC' 60 tomato lines evaluated as rootstock for grafting of local varieties.**

Activity 3.2

Adapt integrated production technologies for targeted systems or regions

- **For the first time tomato grafting technology was also applied in farmer's farm in Armenia.**

Tomato grafting in Armenia

Activity 3.3.

Strengthen capacity of local partners and farmers to promote technology adoption

- **Seminar on new vegetable species for pupils was conducted in Ramitan.**
- **School garden (8 vegetable crops) were established in Ramitan district, Bukhara province (step area) and the Bostanlyk district, Tashkent province (piedmont).**




Seminar in Ramitan, Bukhara province

Activity 3.3.

Strengthen capacity of local partners and farmers to promote technology adoption

- **Research on soil fertility improvement through legume crops (vegetable soybean, mungbean and yard-long bean) cultivation was started at the National State University of Uzbekistan.**
- **Farmers Days were conducted in CAC countries.**
- **Training on tomato grafting was conducted in November 21, 2013 (for 40 farmers-woman).**

Activity 3.3. Events.

- **AVRDC-CAC office participated on the Republic ExpoCenter Exhibition on Innovations in Uzbekistan in 2013 - 2014 and presented new legume varieties of vegetable soybean, mungbean and yard-long bean as a source for soil improvement and production. Leaflets (3500) were distributed for farmers.**

Seeds and leaflets distribution on ExpoCenter

- **AVRDC-CAC office jointly with Chiefs' Association of Uzbekistan conducted seminar titled "Integration for a food industry development in Uzbekistan" in the framework of the International Exhibition "AgroEXPO and FoodEXPO" in Tashkent in 15 May 2013.**
- **International Conference on "«The expansion of the market-oriented products gardening, olericulture, beekeeping and floriculture»held in 21 November 2013.**

Global Theme Consumption

Balanced diet through increase access to and utilization of nutritious vegetables

Current strategy on nutrition in CAC

- **All countries have the strategy related to people health protection and improved diet;**
- **Better nutrition for children and mothers is important issue;**
- **Food testing/control laboratories are organized in most countries;**
- **Safe vegetable production is promoted;**
- **The Decree on a healthy diet in all educational organizations has been issued in Uzbekistan in 20 August 2010 and under a process in most CAC countries.**

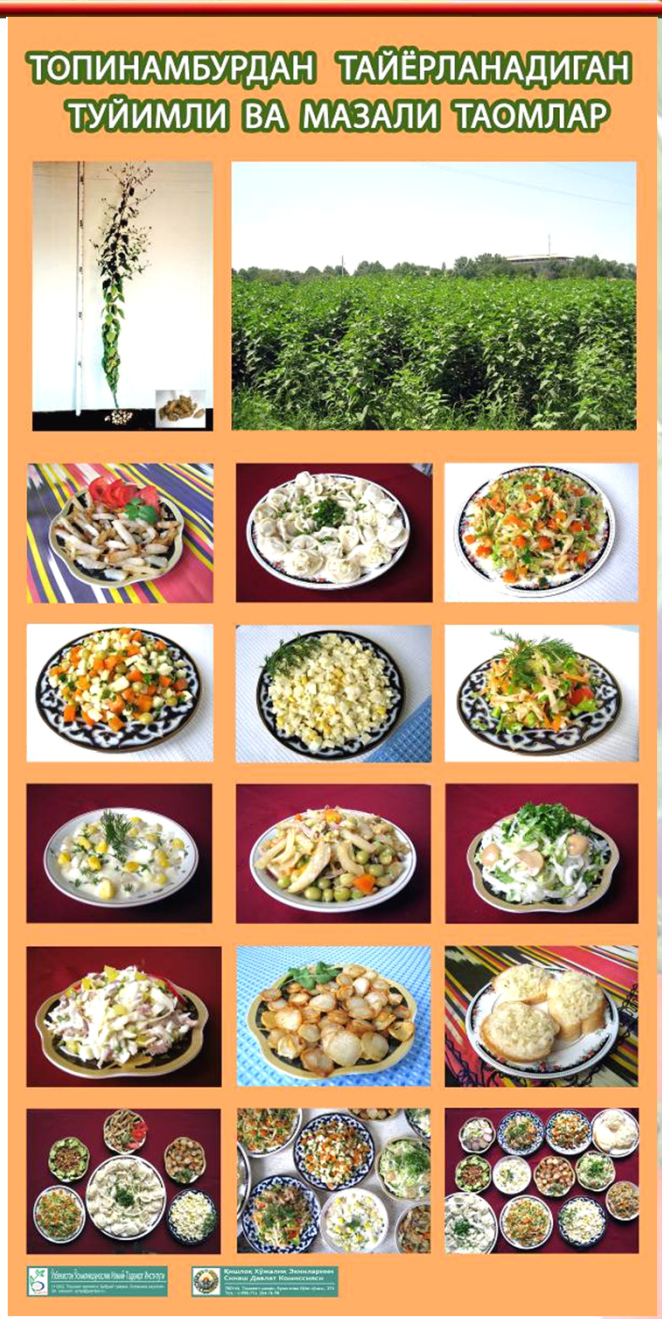
Output 1 : Knowledge of consumer behavior and nutritional properties of vegetables enhanced

- **Activity 1.2** Study nutritional and functional values and benefits of vegetables from sub-Saharan Africa and Asia.
- **Output Target:** Anti-diabetic and nutritional value of girasol *(Helianthus tuberosus L.)* in Uzbekistan evaluated.

- **Results:** Chemical composition of new varieties was evaluated in March 2013. 'Fayz baraka' and 'Mujiza' varieties are characterized by nutrient content and high insuline content (14.3-18.6%). Both varieties are recommended for a wide use for a healthy diet.

Variety	Dry matter,%	Fiber,%	Insulin. %	Protein, %
Fayz baraka	20.0	4.64	18.0	0.97
Fayz baraka (selection)	20.0	4.98	18.6	0.98
Mujiza	18.0	6.52	14.3	0.68

Cookings with topinambour



Output 2. Dietary strategies and food based interventions developed, validated and implemented

- **Activity 2.1**
- **Design, validate and implement home, school and community garden interventions for enhanced access to and consumption of vegetables by poor household, especially women and children in Asia and sub-Saharan Africa**
- **Output Target: Nutritional seed kits distributed to home and school gardens and participatory demonstration vegetable gardens conducted in selected locations of Central Asia distributed**

- **Results: Demonstrational vegetable garden has been initiated in the National University of Uzbekistan (6 crops, 10 varieties).**
- **The activities will promote home, school and community gardening, cultivating vegetables in disaster affected, drought and salted areas and advocate more nutritionally effective use of vegetables.**

Output 2. Dietary strategies and food based interventions developed, validated and implemented

- **Activity 2.3.** Develop dietary strategies, nutrition-improved recipes and food preparation methods based on traditional diet and food practices for increased consumption of vegetables and nutritious/healthy diets by poor households in Asia and sub-Saharan Africa
- **Output Target:** Recipes for promotion in school garden program in Mali, Cameroon and selected regions in Central Asia designed.

- **Results:** New 6 recipes from soybean and mungbean and 5 recipes from topinambour elaborated and tested.

Output 2. Dietary strategies and food based interventions developed, validated and implemented

- **Activity 2.4**
- **Develop, validate and implement promotion strategies for increased consumption of vegetables and nutritious/diverse diets by poor households emphasizing on women and children in Asia and sub-Saharan Africa**
- **Output Target: Nutrition leaflets, posters, booklets and recipes books for Central Asia developed, printed and distributed.**

- **Results: At present time information on recipes and processing is collected for a publishing of leaflets and recipes brochure.**

Vegetable soybean harvested in September 2012 and defrosted in May 2013 for cooking.

Output 2. Dietary strategies and food based interventions developed, validated and implemented

- **Activity 2.4**
- **Develop, validate and implement promotion strategies for increased consumption of vegetables and nutritious/diverse diets by poor households emphasizing on women and children in Asia and sub-Saharan Africa**
- **Output Target: Approaches for effectively promoting indigenous vegetable utilization and overall vegetable consumption in Central Asia explored.**

- **Results: At present time information is collecting in CAC.**

Output 4: Policy recommendations with an aim to increase vegetable consumption developed, capacity strengthened and technology and knowledge disseminated

- **Activity 4.1**
- **Conduct training courses and other capacity building and knowledge sharing platforms to increase awareness and capacity of vegetable value chain actors and stakeholders to increase production, utilization and consumption of nutrient-rich vegetables in Asia, sub-Saharan Africa and Pacific**

- **Results: Farmer field days conducted in Central Asia and the Caucasus to promote increased production and consumption of vegetables.**

Farmers' Days in CAC countries

Research priorities in CAC region

- Development of vegetable research on various directions: PGR, breeding, IPM, seed production, improved cultivation technologies in various agro- ecologies; diversification, economic assessment, marketing, and other;
- Research on the influence of climate change on crops' productivity;
- Gender issues;
- Improving of a balanced diet and consumption.
- _____

Investments are needed to increase research;

Project proposals elaboration and submission to potential donors;

Strengthening of Regional and International partnership.

CAC Regional workshops

- **Workshop “Increased Market oriented vegetable production through research and development improvement”, 2005**
- **Steering Comity Meetings (CACVEG) - 2006, 2007, 2008,2009, 2012, 2013.**
- **Review and Planning Meetings in Vegetable Variety Selection and Adoption in Central Asia and the Caucasus - 2006, 2007,2008, 2009. 2011, 2012, 2013.**

Capacity building

Training of youth and farmers

Innovation Centers in TSAU and Bostanlyk college

AVRDC-CAC collaboration on Dryland System CRP 1.1.

Agreed topics on CRP 1.1.	**Aral see basin** Kazakhstan, Turkmenistan, Uzbekistan	**Fergana valley** Kyrgyzstan, Tajikistan, Uzbekistan	**Rasht valley** Kyrgyzstan, Tajikistan,
1. Identify and introduce stress-tolerant, high-yielding and improved quality varieties of cereals, potato, vegetable, horticultural and fodder crops in pure and mixed plantations through on-farm adaptive trials. (ICARDA, CIP, AVRDC, Bioversity Int., ICBA)	Tomato, pumpkin, sweet pepper, vegetable soybean, mungbean, common bean.	Onion, tomato, carrot, cabbage, cucumber, sweet pepper, vegetable soybean, mungbean, common bean.	Onion, carrot, cabbage, mungbean, common bean.
2. Establish a seed system platform compatible with existing agro-ecological environments to supply farmers with high quality seed and planting materials so as to improve livelihoods, food security and incomes of smallholders (ICARDA, CIP, AVRDC, Bioversity Int., ICBA)	Tomato, pumpkin, sweet pepper, vegetable soybean, mungbean and common bean. Trainings and Farmers' day (2014).	Onion, tomato, carrot, cabbage, cucumber, sweet pepper, vegetable soybean, mungbean, common bean. Trainings and Farmers' day (2014).	Onion, carrot, cabbage, mungbean, common bean. Trainings and Farmers' day (2014).

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Agreed topics	Aral see basin Kazakhstan, Turkmenistan, Uzbekistan	Fergana valley Kyrgyzstan, Tajikistan, Uzbekistan
3. Improve the productivity of marginal lands in irrigated farming and pastoral systems (ICBA, AVRDC)	Promotion of seed quality control and seed multiplication (at local level) of 2 selected varieties of sorghum, pearl millet; topinambur, quianoa; indigofera, licorice, legumes, vegetables; Analyzing their nutritional and values chain, processing technologies and marketing. Testing of local and non-conventional salt tolerant germplasms in the farming production systems as main crops (sorghum, pearl millet; topinambur, quianoa; indigofera, licorice, legumes, vegetables and others) in pure stands or in mixed planting (as an example of alley cropping system combined with salt tolerant shrubs) under different soils salinity. Introduction of legumes as covering crops (mungbean) in pearl millet fields after wheat with minimal land treatment (a model of biosaline conservation model) to increase fodder production on moderately saline soils in Priaralie.	Promotion of seed quality control and seed multiplication (at local level) of 2 selected varieties of sorghum, pearl millet; topinambur, quianoa; indigofera, licorice, legumes, vegetables; Analyzing their nutritional and values chain, processing technologies and marketing. 

AVRDC-CAC collaboration on Dryland System CRP 1.1.

Agreed topics	Fergana valley Kyrgyzstan, Tajikistan, Uzbekistan
4. Improve water use efficiency through innovative technologies in irrigation and farming in cereals, potato, vegetable, horticultural and fodder crops (IWMI, AVRDC)	Establishment of demonstration site for the selected varieties of potato and vegetables (vegetable soybean, common bean, mungbean).

Proposed projects (2015-2017)

- **Tajikistan Nutrition-Sensitive Vegetable Technologies (USAID, 2014-2016)**
- **Improved high-yielding and bruchid-resistant mungbean for higher income and better nutrition (BMZ-GIZ, 2015-2017)**
- **State grand of Uzbekistan**

Thank you for your attention!