

# Integrated Pest Management Packages for Central Asia

## Progress Report 2010-2011

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Michigan State University



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# Central Asia Region IPM CRSP Project

## Three focus countries

- Uzbekistan
- Kyrgyzstan
- Tajikistan



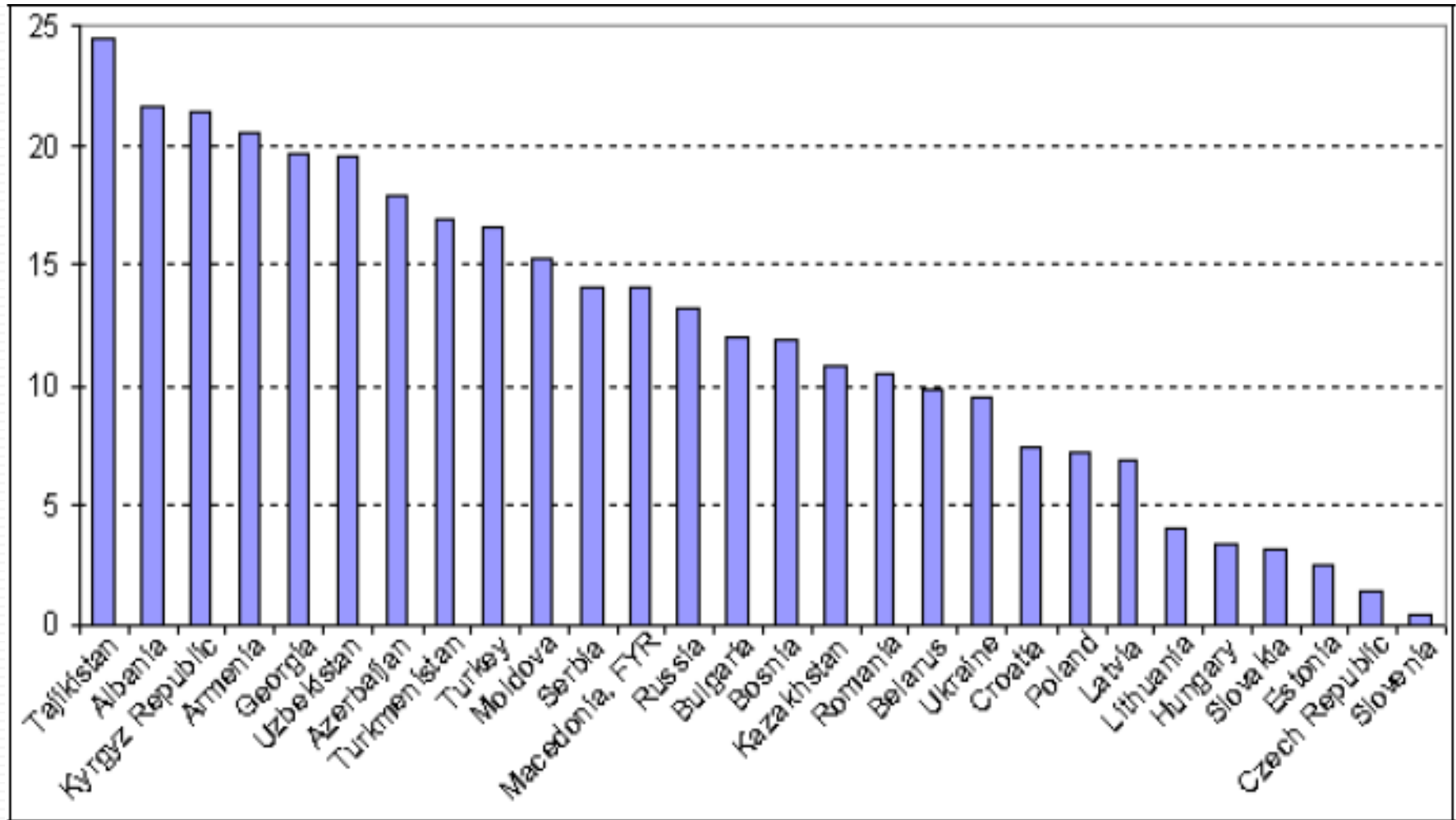
## Project Implemented by:

- Michigan State University
- University of California-Davis
- Kansas State University
- ICARDA/CGIAR-PFU Tashkent Uzbekistan
- Various institutions in the region

# Central Asian Partner Institutions

- Tajik Academy of Agricultural Sciences
- Tajik National University
- Tajik Agrarian University
- Kyrgyz Agrarian University
- AgroLEAD NGO, Kyrgyzstan
- MSDSP Aga Khan Foundation, Kyrgyzstan
- Tashkent Agrarian University
- Uzbek Institute for Plant Protection
- AVRDC and ICARDA regional programs

# Climate Change and Central Asia



Source: World Bank (2009)

# Pests and Diseases Impact Food Production and Food Security in Central Asia

- Insects
- Nematodes
- Weeds
- Pathogens
- Viruses



# Key Components: Central Asia IPM CRSP Program

- Development and delivery of IPM packages for wheat, tomato and potato to farmers
  - Research and demonstration sites
- Short term training (workshops, short courses) and graduate training through Ph.D. and M.S. degree program
  - Shahlo Safarzoda – Tajikistan
  - Bahodir Eshchanov – Uzbekistan
  - Sultanat Mombetova – Kyrgyzstan
- IPM communication with stakeholders
- Cross-cutting global themes:
  - Gender
  - Impact assessment
  - Pest diagnostics
  - Virus diseases
- Publications

# Central Asia IPM CRSP: Focus Crops

Wheat, Tomato, and Potato



# Wheat IPM Package





# Wheat IPM Team

- Dr. Nurali Saidaov – IPMCRSP Tajikistan Coordinator
- Dr. Anwar Jalilov – Institute of Farming, Tajikistan
- Dr. Doug Landis – MSU
- Dr. Mustapha Bohssini - ICARDA
- Dr. Megan Kennelly – KSU
- Ms. Shahlo Safarzoda – Graduate student from Tajikistan at MSU

**Two research and demonstration sites:  
North and Southern parts of Tajikistan**

# Key Pests of Wheat



# Wheat IPM Package Components

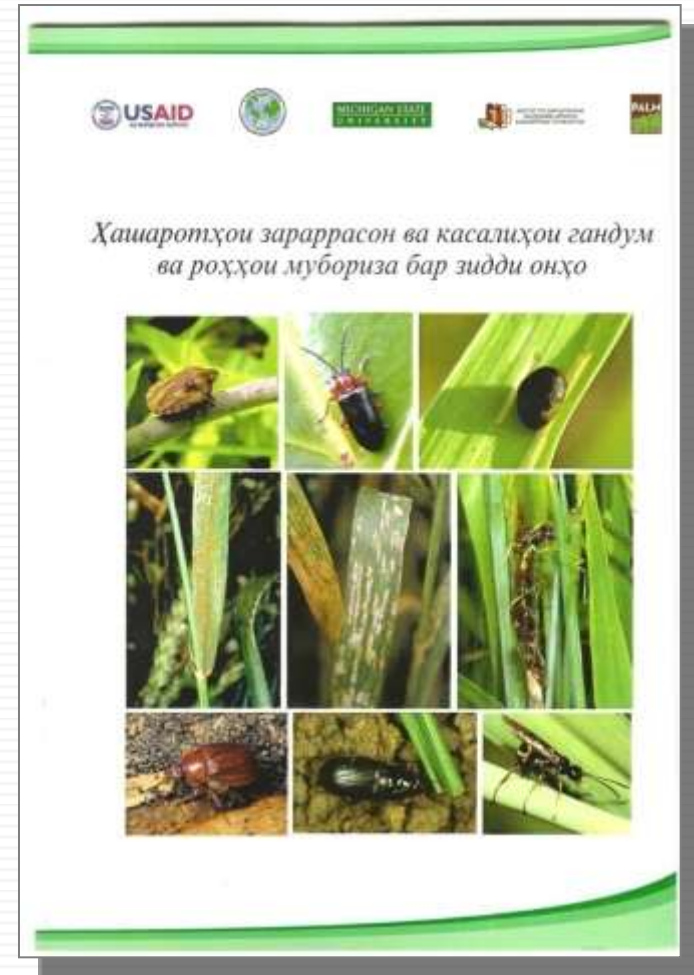
- Resistant Varieties - Yellow rust resistant wheat “Ormon” variety from ICARDA
- Introduction of flowering nectar plants to attract parasites and predators (plants such as coriander, sweet basil, marigold, etc.)
- Biological control - Cereal leaf beetle and sunn pest parasitoids
- Cultural control of Sunn Pest
- Planting and harvest date considerations

# Wheat IPM Research and Demonstration Site, Hissor, Tajikistan, June 2011



# Wheat IPM Extension/Outreach

- 2 seminars for scientists and stakeholders
- 3 trainings with 100 farmers participating
- Extension bulletin on “Wheat pests and their methods of control”, 2011
- 6 extension posters on wheat, potato, and tomato pests were published in 2011



# Tomato IPM Package

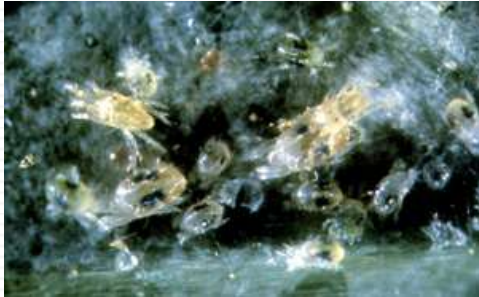


# Tomato IPM Team

- Dr. Barno Tashpulatova – IPMCRSP Coordinator, Uzbekistan
- Dr. Frank Zalom – UC-Davis
- Dr. Ravza Mavlyanova – AVRDC
- Mr. Bahodir Eshchanov - Graduate student from Uzbekistan at MSU

**Two research and demonstration sites:  
Greenhouse site and open field site near Tashkent**

# Key Pests of Tomato in Greenhouses - Uzbekistan



Spider Mites



Russet Mites



Damage on tomato  
caused by Russet  
Mites



Greenhouse Whitefly



Damaged tomato  
leaves by Leaf Miners



# Key Pests of Tomato in Open Fields - Uzbekistan



Bollworm larva



Peach Aphid



Larva of Leaf Miner  
inside of leaf



Adult bollworm



Big Potato  
Aphid



Damaged tomato  
leaf with Big Potato  
Aphid



Adult Leaf Miner

# Key Pests of Tomato in Open Fields - Uzbekistan



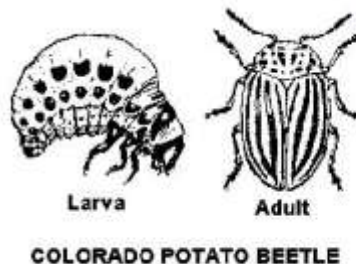
Tomato plants damaged by pests and especially by Russet Mites



Russet Mites



Tomato damaged by Russet Mites



# Key Diseases of Tomato in Greenhouses - Uzbekistan

*Cladosporium Fulvum*;  
*Macrosporium Solani*



# Key Diseases Identified on Tomato in Open Fields - Uzbekistan



*Phytophthora infestance*



Streak Mosaic Virus



*Fusarium oxysporum*



*Chino del Tomate Virus,  
CdTV*



*Alternaria solani*

# IPM Packages for Tomato – Greenhouse Cultivation, Uzbekistan

- Soil or seed treatments – (e.g *Trichoderma* spp.)
- Grafting on resistant root stock – *Fusarium* disease control
- Roguing in the nursery
- Yellow sticky traps
- Bacterial formulations
- Biological control

# IPM Packages for Tomato – Open Field, Uzbekistan

- Soil or seed treatments (Trichoderma)
- Grafting on resistant root stock – Fusarium Disease Control
- Biological control
- Mulching – Disease control and moisture conservation
- Rouging in the nursery
- Screening of resistant varieties
- Pheromone traps
- Yellow sticky traps
- Biopesticides

# Tashkent State Agrarian University - Grafting Technology



# Research of grafted tomato planted directly in furrows in greenhouse (common cultural practice)

- 16 tomato lines collected in AVRDC' Breeding Unit (7), GRSU (1) and Mycology Unit (8)
- Check local variety - Gulkand





# Tomato IPM Extension/Outreach



# Potato IPM Package



# Potato IPM Team

- Dr. Murat Aitmatov – IPM Coordinator, Kyrgyzstan
- Dr. George Bird - MSU
- Dr. Walter Pett - MSU
- Dr. David Douches – MSU
- Ms. Saltanat Mambetova – Graduate student from Kyrgyzstan at MSU

**Two research and demonstration sites:  
Osh region and Sokuluk**

# IPM Packages for Potato in Kyrgyzstan

- Certified Seeds – Use of Virus free clean seed tubers
- Soil or Seed treatment – Trichoderma spp.
- Resistant varieties – Late blight disease
- Biological and cultural control
- Mulching
- Roguing in the field
- Surveying for nematodes
- Biopesticides – e.g Neem

**Key Pests on Potato:** Colorado Potato Beetle, Potato Late Blight fungus, Viruses, Potato Cyst Nematode

# Global Themes: Regional Pest Diagnostics Workshop

## June 7-9, 2011, Dushanbe Tajikistan

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**CRP**

**ТАДЖИКСКОЕ НАЦИОНАЛЬНОЕ УНИВЕРСИТЕТ**  
TAJIK NATIONAL UNIVERSITY

**MICHIGAN STATE UNIVERSITY**

**ДУРУД БА ИШТИРОКЧИЁНИ СЕМИНАРИ**  
**БАЙНАЛМИЛАЛӢ – «ТАШХИСИ КАСАЛИҲО ВА ЗАРАРАСОНҲОИ**  
**ЗИРОАТҲОИ КИШОВАРЗИИ МИНТАҚАИ ОСИЁИ МАРКАЗӢ»!**  
**7-10 ИЮНИ СОЛИ 2011, ШАҲРИ ДУШАНБЕ, ТОҶИКИСТОН.**

**ПРИВЕТ УЧАСТНИКАМ МЕЖДУНАРОДНОГО СЕМИНАРА**  
**«ДИАГНОСТИКА БОЛЕЗНЕЙ И ВРЕДИТЕЛЕЙ СЕЛЬСКОХОЗЯЙСТВЕННЫХ**  
**КУЛЬТУР ЦЕНТРАЛЬНОЙ АЗИИ»!**  
**7-10 ИЮНЯ 2011 Г., ГОРОД ДУШАНБЕ, ТАДЖИКИСТАН.**

**WELCOME TO PARTICIPANTS OF “PEST DIAGNOSTICS**  
**WORKSHOP FOR CENTRAL ASIA REGION”,**  
**7-11 JUNE, 2011, DUSHANBE, TAJIKISTAN.**

# Regional Pest Diagnostics Workshop



# Global Theme: Gender

- The gender team conducted a Rapid Gender Assessment in Hissor 2010
- As a consequence of out-migration from Tajikistan, women make up the majority of agricultural workers
- Women, however, hold about 15% of land certificates
- Women are the primary caretakers of household gardens, the most productive sector of the economy in rural areas
- Studies have shown that women headed household utilize less fertilizer and that there may be gender differences in the use of pesticides and IPM practices
- A follow-up visit was made in June 2011 to understand the IPM packages

## ***Gender Team:***

**Dr. Linda Racioppi**

**Dr. Zahra Jamal**



# Global Theme: Viruses

- Virus Diagnostics and Virus Disease Management were identified as key priority areas for capacity building
- Need for special courses/training in virology at local universities
- Dr. Naidu will return to all 3 host countries for more in-depth training on viruses





# IPM Communication: Website

<http://ipm.msu.edu/central-asia.htm>

## Central Asia Integrated Pest Management Project

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**An ecologically-based participatory and collaborative IPM research and capacity building project in Central Asia**

USAID is sponsoring a Collaborative Research Support Program for Integrated Pest Management in Central Asia (IPM-CRSP). The project fosters development of a comprehensive IPM initiative, using an ecologically-based and multidisciplinary systems approach. **Michigan State University**, the **University of California-Davis** and **The International Center for Agricultural Research in the Dry Areas (ICARDA)** are the host institutions collaborating with colleagues from Uzbekistan, Kazakhstan, Kyrgyzstan, and Tajikistan.

The Project has three components based on the needs assessment and priorities identified at the regional IPM Stakeholders Forum organized in Uzbekistan in May 2005:

- Component 1) Landscape ecology** to enhance biodiversity and biological pest management.
- Component 2) Enhance efficiency, products line and crop usage of Central Asian biolaboratories.**
- Component 3) Develop and implement IPM extension/outreach and university education programs.**

**Funding Agency:** USAID IPM-CRSP, managed by **Virginia Tech University**  
**Related programs:** **MSU Institute of International Agriculture and World Technology Access Program.**

**View or print a flyer about the IPM project.**  
**News: Central Asia IPM project shares 2008 King Baudouin Award.**  
ICARDA, other CGIAR Centers and Michigan State University Consortium for Central Asia and Caucasus have been awarded the 2008 King Baudouin Science Award for Outstanding Partnership. **Read press release.**

Updated: 02/12/09. Web development provided through the MSU IPM Program. Contact web developer.

<http://ipm.msu.edu/central-asia.htm>

# Graduate Student Training in the US for Tomato, Potato and Wheat IPM



Saltanat Mambetova –  
Kyrgyzstan

Bahodir Eshchanov -  
Uzbekistan

Shahalo Safarzoda -  
Tajikistan

# Student from Local Universities Conducting Thesis Research at IPM CRSP Sites in Host Countries

## *a few examples:*

- Mr. Rashidov Sherzod – Student for Master degree “Whitefly control on vegetable crops”, Tashkent State Agrarian University
- Mr. Zufarov Sobir - Student for PhD degree, “Disease control on vegetable crops”, Tashkent State Agrarian University
- Mr. Karimov Bahtiyor – Student for Master degree on “Screening and grafting of resistant tomato varieties”
- Ms. Madina Pulatova – Biological faculty of Tajik National University, Dushanbe, Tajikistan; Tomato pest and its control
- Ms. Mijgona Siyamardova - Biological faculty of Tajik National University, Dushanbe, Tajikistan; Potato pest and its control

# Short Term Training



**Integrated Pest Management Short Course at MSU  
June 13 – 23, 2011**

# Outreach and Advocacy

Tajik Ambassador to the U.S., Mr. Abdujabbor Shirinov,  
visit to MSU, May 22-24, 2011



# Links with USAID Missions and other projects funded by USAID

- Tajikistan FTF Country – Regular contact with the USAID Mission in Tajikistan
- Links with the USAID funded Family Farming Program (FFP) in Tajikistan managed by DAI
- IPM CRSP Tajikistan Country Coordinator attends USAID Quarterly Project meetings
- Links with the South Asia Regional IPM CRSP program – e.g. Trichoderma Workshop in India, Grafting Technology

# Ultimate Goal

## Enhancing Agricultural Productivity and Food Security in Central Asia





**Thank you!**