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CIMMYT International Maize and Wheat Improvement Center

AIP Newsletter

A newsletter of the Agricultural Innovation Program for Pakistan

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The beginning: message from the project leader

Pakistan's agriculture needs a collaboration between public and private stakeholders to mitigate the increasing demand for food and row material for the industry.

This collaboration will create a resilience for the sector currently in the tide of changes and challenges posed by among others: population pressure, climate changes, shortage of power, unwise use and depletion of natural resource, new crop diseases and pests and the growing reduction of expertise in the field of agriculture. The current agricultural technologies and practices needs to be continually improved to respond to the intricate challenges of today and tomorrow.

The Agricultural Innovation Program (AIP) for Pakistan is a four-year US$ 30 million multi-disciplinary and multi-stakeholders project financed by the United States Agency for International Development (USAID) to address the critical intervention areas of Pakistan's agriculture identified by the government of Pakistan through Pakistan Agriculture Research Council (PARC). It was officially launched in March 2013.

The International Maize and Wheat Improvement Center (CIMMYT in its Spanish acronym) is leading this project by bringing together national and international organizations under one umbrella to streamline the contribution of science-supported innovation to the economic growth of Pakistan's agriculture by utilizing the agricultural research for development (AR4D) paradigm.

AIP operates through three 'Activity Windows', namely: commissioned projects, a competitive grants system, and human resource development. Work within these activity windows is divided into four 'Science Windows' – cereals and cereal systems; livestock; vegetables; and perennial horticulture. Consideration of gender plays a key part in all activity windows and women will be actively encouraged to participate and contribute to the human resource element of AIP.

Apart from its overall responsibility for AIP, CIMMYT also provides direct oversight of the cereals and cereal systems science window. Four primary partners are part of the AIP team to ensure the program adheres to the A4RD principles and promote rather than compete with Pakistan's agricultural research systems. These are: the International Livestock Research Institute (ILRI) manages the livestock portfolio; the World Vegetable Center (AVRDC) manages the vegetables science window; UC Davis manages the human resource development component, perennial horticulture science window, and ICT support. training; the International Rice Research Institute (IRRI) will bring its global leadership in rice as a partner in the cereals/cereal systems science window and PARC manages a province-inclusive competitive grants system.

AIP started leaving its footprints in short span of time and we would like to share our achievements, lessons and what we will do next. The AIP Newsletter is one of our effort to update partners in our activities and to receive their feedbacks. We would like to thank our donor and all the stakeholders in their effort to make AIP a success.

Muhammad Imtiaz, AIP interim project leader. *m.imtiaz@cgiar.org*

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AIP at a glance:

- **A 30 million US$ project**
- **Financed by USAID to strengthen Pakistan's agricultural sector**
- **Operates under commissioned projects; province -inclusive grant system and human resource development**
- **Addresses cereals and cereals systems; livestock; vegetables and rice**
- **Introduced climate smart germplasms, agri. machineries and improved practices**

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News and events

President emphasized importance of collaboration in agricultural research:

The President of the Islamic Republic of Pakistan, His Excellency President Mamnoon Hussain, emphasized the collaboration and commitment of the government with CGIAR consortium and its members in mainstreaming research in the bio fortification of food crops with minerals and vitamins for the provision of sufficient and healthy food. This was mentioned during his speech on the occasion of commemorating 50 Years of Pakistan-US Cooperation in Agriculture and Celebrating Dr. Norman E. Borlaug s 100th Birthday. The president also applauds the collaboration of CIMMYT and USDA with Pakistan researchers for developing more than 130 wheat varieties in Pakistan. President full speech can be accessed at President of Pakistan .

President Mamnoon Hussain addressing the participants

CIMMYT management visits AIP-maize trials at NARC

The CIMMYT management pay a visit and held a brief discussion with NARC maize scientists regarding the ongoing AIP-maize trials. During the visit the breeders explained about the seven types of trials introduced by CIMMYT-Pakistan from Colombia, Mexico and Zimbabwe that were planted at this spring season. Valuable points were raised during the visit.
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NARC maize breeder explaining about the AIP-maize trials

KPK-Swat farmers gets training

The World Vegetable Center (AVRDC) organized a practical training to Swat farmers in the Khyber Pakhtunkhwa province that will help to produce healthy vegetable seedlings. The whole process of nursery raising were practically demonstrated to the farmers who later grouped in to four to apply what they learnt during the training. This learning-by-doing was organized in collaboration with Agricultural Research Institute of Mingora.
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New office for ILRI-Pakistan:

With the assistance of Chairman/ PARC and DG/NARC few rooms at the Animal Science Institute complex were allocated for ILRI, which were renovated, furnished and were ready for occupation in April 2014.
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AIP components updates

Accelerating the deployment of wheat varietal diversity in Pakistan: key to improving and sustaining wheat productivity gains

Pakistan is one of the top ten countries in the world in terms of wheat area and production. Ten mega wheat varieties account for nearly half of the over 8 million ha of wheat area and most of these are susceptible to one or the other rust diseases. A recent study showed high genetic similarities between mega varieties such as Faisalbad08, Pirsabak04 and Pirsabak08. Low genetic and varietal diversity with close kinship is really risky should there be a sudden outbreak of wheat rust which is caused due to a group of deadly, constantly changing fungal pathogens that pose serious threat worldwide. In this context, Agriculture Innovation Program (AIP) conducted a number of on farm demonstrations during last wheat season for creating knowledge among farmers about the value of replacing old and obsolete varieties with new high yielding and rust resistant wheat varieties and to generate demand for such seed varieties across various districts in Pakistan. These demonstrations were organized by five Provincial wheat Research Institutes; Cereal Crops Research Institute (CCRI), Prisabak, Nowshera, Barani Agriculture Research Institute (BARI), Chakwal, Wheat Research Institute (WRI), Faisalabad, Regional Agriculture Research Institute (RARI), Bhawalpur and Wheat Research Institute (WRI), Sakrand.

Eight wheat varieties and a total of more than 12 tons of seed were used to compose a total of 321 on farm demonstrations that were conducted across 45 districts of Pakistan (Figures 1). Approximately half of the farmers received seed packets of 50 kg, with the other half receiving packets of 25 kg. A follow up study will be conducted to assess the preference and uptake of wheat varieties by farmers included in the demonstrations and the study will also look into what size seed packets are more effective in terms of demonstrations, as well as facilitating further seed flow into farmer seed systems. k.d.joshi@cgiar.org

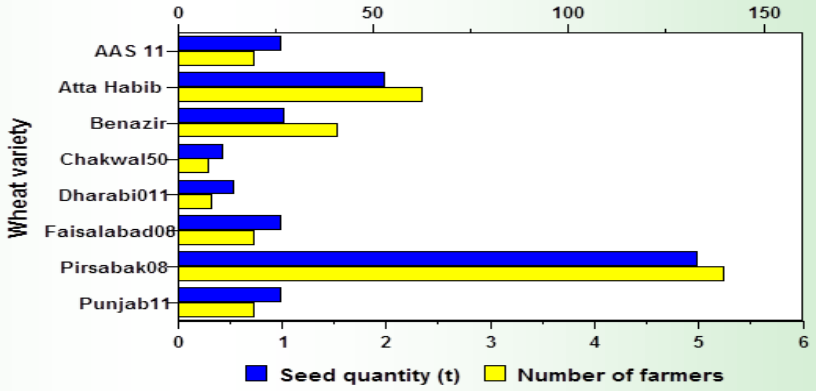

Figure 1. Number of collaborating farmers and quantity of wheat seeds used in on-farm demonstrations conducted under AIP

Public-Private variety evaluation network established under AIP-Maize

The maize industry of Pakistan faces challenges mainly due to lack of diverse germplasm and absence of vibrant maize seed system to ensure availability and access to improved quality seeds by the smallholder. Availability of nutritionally enhanced maize for food and feed and market opportunities for maize products are important to boost maize productivity in Pakistan. AIP-maize component created a public-private variety evaluation network to evaluate CIMMYT international trials consists of white and yellow kernel hybrids and OPVs in Pakistan.

The maize trials introduced from Colombia, Mexico, and Zimbabwe were distributed to five private companies, six public research institutes and two universities (Table 1). The evaluation of the trials began in this spring season and under this network partners will share performance information from the different sites and well adapted varieties will be proposed for registration by each participating partners. This approach will not only strengthen the already weak public-private partnership but also ensures accelerated diffusion of improved maize cultivars to the smallholder at affordable price. a.issa@cgiar

Table 1. AIP-maize trials distribution

AIP-maize partner	No. of trials
Maize and Millet Research Institute (MMRI)	4
Cereal Crops Research Institute (CCRI)	5
National Agricultural Research Center (NARC)	7
Jullundur Private Ltd	3
Four Brothers Group	3
Ali Akbar Group	2
Petal Seed Company	1
ICI Pakistan Ltd	2
Agricultural Research Institute - Quetta/Baluchistan	1
Agricultural Research Institute- Tandojam/Sindh	1
Agricultural Research Institute- Gilgit Biltistan	1
University of Agriculture Faisalabad	1
University of Agriculture Peshawar	1

AIP components updates

Improved agricultural machineries to enhance conservation agriculture in Pakistan:

CIMMYT provided conservation agriculture machineries including multi crop zero tillage planter, happy seeder and bed planters under AIP. Multi crop bed planter would provide an opportunity to initiate work on conservation agriculture technologies in Pakistan. Multi crop bed planter was used for planting of maize in field of Maize program, NARC Islamabad. In addition, the bed planter was successfully used for weeding and application of fertilizer in maize on already made beds at NARC. *Imtiaz Hussain:* i.hussain@cgiar.org

Multi crop bed planter on job at NARC maize field

ILRI organized farmers training on Artificial Insemination (AI) of goats:

Twenty four trainees from the provinces of Punjab, Sindh, KPK, Baluchistan, and AJK obtained 'hands-on' training on AI of indigenous goats and a training manual was prepared by the consultant for future use by AI practitioners. The post-evaluation of the training was rated highly satisfactory and trainees requested further assistance in making goat semen sustainably available and to revise the training manual to incorporate aspects of breeding animal selection and experiences. Pictures on goat artificial insemination practices were also shared during the training.

As a follow up to the above training, the trainers from KPK under the auspices of the Livestock and Dairy Department, KPK and the AIP-ILRI Livestock component conducted a similar training to 20 field veterinarians, livestock assistants and farm mangers at the Livestock Experimental Station Jaba from the 17 to 20 April 2014. In addition five Pakistani scientists received training on modern techniques available to assess/monitor forest/rangeland vegetation in Amman, Jordan from 6-12 April 2014. *Ibrahim Mohamed*: m.ibrahim@cgiar.org

Participants of the AI training

AIP-ILRI demo plots at Chakwal on:

- *Fodder*
- *Rangeland and*
- *Cactus*

Planting will begin this May 2014

IRRI is selecting rice germplasm that have tolerance to biotic and abiotic stresses prevalent in Pakistan:

A set of 25 BC3F8 and BC4F7 lines of Super Basmati derived from the cross Super Basmati x IRBB57 were tested to confirm the level of resistance to diagnostic bacterial blight strains and determine morpho-agronomic characters and grain quality in comparison to Super Basmati parent. Of these advanced lines of Super Basmati x IRBB57 (*Xa4+xa5+Xa21*), three best lines – PAK B-20, PAK B-24, and PAK B-25 were identified for seed multiplication and multi-location testing in disease hotspots in Pakistan during crop season 2014 for participatory varietal selection.

142 plants were selected from 2 backcross populations (IR6/Sub1 donor (IR105463 = IR6*2/IRRI 149) and Super Basmati/Sub1 donor (IR105474 = SUPER BASMATI*2/IRRI 149). A total of 138 of these plants were derived from backcross populations from the cross IR6/IR64-Sub1; the remaining 4 lines were derived from Super Basmati/IR64-Sub1. These lines will be tested for agronomic traits including plant height, flowering time and yield, in additional to submergence tolerance and quality traits in the 2014 rice season. a.rehman@irri.org

Photos: discussion with rice farmers at Sheikhupura and rice research field evaluation at Farooqabad (bottom).

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UCDAVIS *moving forward :*

Five PhD and Ten MS students to study in USA

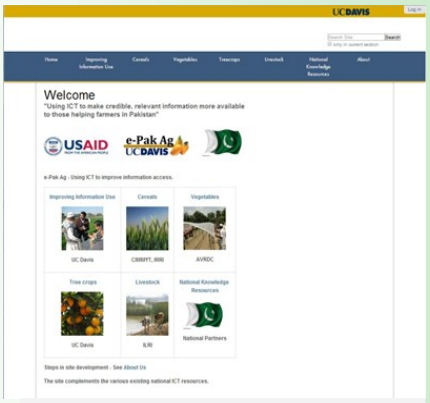
Sorting through the more than 200 applications hasn't been easy, but the selection committee – consisting of members from PARC, HEC, and the major Agriculture universities – have been working hard to score and rate the fellows. The selected candidates will receive scholarships to study agriculture at Land Grant Universities in the United States. Particular emphasis has been placed to select outstanding candidates while ensuring gender and disadvantaged areas receive due consideration.

Perennial Horticulture – How can we have impact when it takes 3 years for a new tree to produce fruit?

High investments for high rewards – that's one of the challenges for fruit trees. With a waiting period of 3-5 years for new trees to bear fruit, careful identification of constraints and diligent planning of interventions becomes critical. Pakistan's fruit growers have major problems developing orchards because the trees they purchase for orchard establishment are often not true-to-type and or often diseased. The result of such poor trees is poor yields, poor fruit quality and lower market prices. Thus planning is underway to carefully establish pilot sites to help farmers have access to enhanced genetic material, production and postharvest systems.

e-Pak Ag

Do you have a cell phone, a computer, a radio, a TV? Then you are geared to benefit from Information communication Technology (ICT). UC Davis is working with major parties to identify existing Agricultural information resources, the key players and how these resources can be strengthened. A major focus of the work is to help groups not just provide information, but package and present their information in a manner leads to change. In recent months, the e-Pak Ag team have been working with a number of in-country knowledge resources to devise its ongoing efforts. Contact : mark.andrew.bell@gmail.com



UC Davis vocational trainings will focus on:

⇒ *Communication skills*

⇒ *Experimentation*

⇒ *Technical topics*

Baseline Surveys in progress

Agreements were signed with the social sciences research institutes of PARC for carrying the baseline survey for wheat and agronomy component of AIP in all the major provinces of Pakistan. A total of 950 farmers (350 from Punjab, 250 from Sindh and Khyber Pakhtunkhwa and 100 farmers from Balochistan). In an effort to increase gender equity, the survey will include 50 female respondents in Punjab, and 25 in each of Sindh and KPK. Social and cultural norms make it difficult to obtain information from female respondents, hence female enumerators will be hired in the provincial teams. The baseline survey will be completed before June 30, 2014, and the collected data will be analysed and shared to assist with the introduction and up scaling of different interventions. The current baseline survey will be helpful for the wheat and agronomy part of cereal and cereals system and preparations are in progress to launch a separate baseline survey for maize. akhter.ali@cgiar.org

COMING UP: MAY 2014

⇒ Training on protected cultivation of vegetables, 21-22 May, Islamabad

⇒ Training on climate resilient maize breeding and seed production, 29-30 May, Sahiwal

⇒ Small ruminant value chain analysis, (date and place to be decided)

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