



The mango orchard management project under Pakistan -Australia Agriculture Sector Linkages Program (ASLP) aims at mutual transfer of knowledge and expertise to enhance crop productivity and profitability to help alleviate poverty and build R & D capacity.

It is pleasing to note that the team has identified the pest and production problem of mango, a step forward in right direction. However, major challenge to the team will be the transfer of the knowledge i.e. empowering the growers regarding how to grow good crop through the season, manage pests and diseases and tackle post harvest issues of the produce. It is a difficult task. Past experience of top down policy for the transfer of technology has not been very successful, thus, Farmers Field School (FFS) and other new approaches have to be exploited to achieve the desired results. I am confident that the team has the experience and capabilities of accepting the challenge and will become victorious at the end, opening window of opportunities for the export of Pakistani mangoes.

To develop strong linkages among stakeholder's frequent contacts, exchange of view and flow of information is of utmost importance. The idea to bring out Newsletter will be able to provide a forum where all the stakeholders can share their views, disseminate new information and will also keep informed all interested in the project activities.

I wish success to all team members of this project, with the hope that they will rise to the expectation of the growers, fellow researchers and policy makers.

Vice-Chancellor, BZU, Multan



Pakistan-Australia agriculture Sector Linkages Programme (ASLP) is an initiative of Government of Pakistan and Australia. This Programme has launched a project for quality mango production and for improvements in management strategies for mango orchard management. The Project Leadership has selected the right place for interventions regarding mango because Multan and Mango are together since old times. Multan is known as city of mango for Pakistan. Mango is essential part of life of people of this region. B.Z. University is situated right in the middle of mango orchards and one of the prime objectives of the University is to cater the local needs of knowledge. So by involving University in the project, a chance has been given to the concerned quarters of the University to serve the local mango growers.

It is a great opportunity for our scientists and faculty members to exchange experiences with their Australian counterparts which will improve and refine orchard management strategies for mango orchards. The blend of local experiences with exotic knowledge will definitely help our growers.

To share the results of Project activities a continuous interaction with growers is necessary and this newsletter is one step in the right direction. Such newsletter was desired by long time. It gives me great pleasure and satisfaction that our University has been chosen by the Project Management to initiate a Newsletter about mango orchard management under ASLP. I assure full support and continuous cooperation for the successful implementation of the Project in Multan. I wish the Project all well.

National Project Leader



The objective of the Australia-Pakistan Agriculture Sector Linkages Program (ASLP) is to strengthen agriculture sector interaction between Australia and Pakistan's commercial, academic and research institutions through joint activities and institutional links. Under ASLP, mango has been identified as one of the key area. Australia has comparative strengths in horticulture in general and mangoes in particular. This spans the entire production system and supply chain. The systems approach and integration of end-users in the planning, execution and evaluation of the research is a unique attribute that could be brought to bear in Pakistan. It promises significant opportunities for impacts on productivity and more efficient supply chain systems. The industry faces major constraints and inefficiencies, among which a critical issue is the level of major losses (around 40%) in the supply chain from over-ripe, immature, damaged and diseased fruit. These losses are related to the high perishability of the mango, sub-standard production, harvesting, and postharvest practices, compounded by lack of grading, handling and storage infrastructure. If postharvest losses could be reduced, the ensuing gains would provide more and better quality fruit for local and export markets, it would generate more value, share it more equitably, and create more jobs. To me the important word in Agriculture Sector Linkage Programme is "Linkage". The whole life of human beings revolves around this word. There are many forms of linkages and this news letter is one of them. I hope it will bring all the desired results and stakeholders of mango industry will be linked through this Newsletter.

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Introduction of the Project



The Agriculture Sector Linkage Program (ASLP), in negotiations with the Pakistan Ministry of Food, Agriculture and Livestock (MINFAL) and the Pakistan Agricultural Research Council (PARC), identified as key priorities the horticulture sector in general and mango disease management and improved mango production systems specifically. In accordance with the goals of the ASLP, this project has three main objectives:

1. To facilitate the establishment of disease-free mango nurseries in Pakistan so that new plantings could be undertaken with clean planting material.
2. To develop improved tree husbandry and management options to produce sustainable and quality fruit.
3. To develop improved detection and management strategies for the sudden death disease syndrome and other major diseases and pests of mangoes.
4. To build capacity in the mango industry to undertake integrated crop management research.

The key partners involved in the project will be the Queensland Department of Primary Industries and Fisheries (QDPI&F), the Pakistan Agricultural Research Council, Ayub Agriculture Research Institute, the Sindh Agricultural Research Institute, the Punjab and Sindh Directorates of Agricultural Extension, selected mango farmers and mango contractors. Apart from addressing the problem of sudden death and emerging pest problems such as the mango

midge, another common research issue will be the need to better understand the interactions between abiotic stresses such as drought/water logging, salinity, and nutrient deficiencies and the role these factors have in increasing the predisposition of disease outbreaks, especially the sudden death syndrome. Hence the project is likely to generate a strong synergy between the Pakistan and Australian components.

A major impact of the project is anticipated to be the strengthening of the mango research capacity in Pakistan to a point that an efficient and well targeted mango research program is in place after the project ends. By including the provincial Directorates of Agricultural Extension in the training and extension components of the project, it is anticipated that in at least one district of Punjab and Sindh provinces, a more efficient extension system will be in place that is firmly grounded in participatory approach to extension. In economic terms, in Pakistan the impact 5 yrs after termination of the project is estimated to correspond to an increase in gross revenue of \$1.8M per annum at the farm level. In Australia, the benefits would mainly be realised through a reduction of yield losses due especially to postharvest diseases, which now are estimated at about \$14M annually.

The Project is being supported by a sister project which aim at improving the supply chain management.

Munawar Raza Kazmi

National Project Coordinator
National Agricultural Research Centre



The project "Development of Integrated Crop Management Practices to Increase Sustainable Yield & Quality of Mangoes in Pakistan & Australia" covers aspects of mango production and disease management. Queensland Department of Primary Industries and Fisheries, Australia and Pakistan Agriculture Research Council (PARC) in collaboration

with Provincial Agricultural Research Systems is implementing this project. This project seeks to establish 'clean' mango nurseries so that high quality planting material is made widely available to the Pakistan industry, also to develop improved tree husbandry and management options to produce sustainable yields and quality fruit;

to develop improved detection and management strategies for mango sudden death disease syndrome (MSDS), and to build research capacity in the mango industry.

The beauty of this project is that it has been tried from the very first day that all the stakeholders should be kept on board. This newsletter is one of effort from the project team to keep everyone clued-up. This belongs to everyone so everyone is expected to share their comments, views and observations not only for this newsletter but also about the project activities. I appreciate the assiduous efforts of my colleague Mr. Nazim Hussain Labar for this newsletter. Moreover I am thankful to the Vice Chanacellor and administration of Bhauddin Zakriya University for the support and cooperation.



Training for setting up modern Nursery in Private sector

One of the objectives of the Orchard Management Project is to develop model nursery for disease free certified plants of mango for growers in Pakistan. Two model nurseries are being developed on Government Research Station, one at Mango Research Station, Shujabad and other at Sindh Horticultural Research Institute Mirpur Khas. Beside these, it was decided that if some private nursery operator wants to establish model nursery, all technical support will be extended. Mr. Ijaz Rajwana was the first to take this initiative. Therefore on the recommendation Orchard Management Project team, ACIAR supported Mr. Ijaz for a short training on nursery management and establishment in Australia.

During his short training Mr. Ijaz spent time at three accredited nurseries. These nurseries were:

1. Andersons Avocado Nursery,
2. Birdwood Nursery, 71-83 Blackall Range Road, Nambour, QLD 4560 28-29
3. Lavers Mango Nursery, Walkamin, QLD



Ijaz practicing in filling of at Birdwood nursery.

Ijaz got the opportunity for practical exposure about nursery hygiene protocols. He says "I discussed different issues with the owner and came to know that they had started this nursery to fight against phytophthora (a soil borne fungal pathogen). They had successfully overcome the problem by applying highest standards of hygiene. Before visiting the nursery, I was feeling it difficult to implement nursery hygiene protocols, but after my visit and discussion with different people, I feel myself more confident to apply those hygiene protocols at my own nursery in Pakistan".

He worked in different departments of nursery like sterilization, media mixing, water chlorination, fertigation, grafting and sales. He also told how to collect clean bud woods and storage of the material.

He gained useful knowledge on shade house design and construction as the recently constructed structures on Peter Lavers' farm are the same size as he is planning to construct in Pakistan. He also learned about shade house floor construction using plastic film and rock gravel that would be suitable for Pakistan while maintaining nursery hygiene.

Later on he had the chance to visit Nurseries outlets and suppliers which gave him an opportunity that how nursery plants are presented for sale to the public. The visit to suppliers exposed him to a wide range of farm machinery and information and the range of pots, sprinklers and landscaping products that were available. He had the opportunity to speak with suppliers of horticultural products such as shade netting, cartons, agricultural chemicals, grading equipment, nursery supplies, market agents, exporters and retailers.

Australian Team Visits Mango Orchards



Under the ASLP-Mango Orchard Management Project, a Project team consisting of Australian and Pakistani Scientist visited different orchards in Punjab and Sindh. Dr. Chrys Akhem, Project Leader from Australia led the team. The main objective of the visit to get the first hand information from growers about the mango management Practices.



Dr. Chrys Akhem, briefed the growers about mango diseases prevalent in Australia. The team shared their expert opinion about different problems apparent in mango orchards. Dr. Ian Bally, who is the expert in mango breeding shared different suggestions regarding nursery management, root and scion stock selection for healthy mango propagation.

Visit of Australian Experts

In the coming month two Experts from Queensland Department of primary Industries will be visiting Pakistan. During their visit two trainings will be arranged in the provinces of Punjab & Sindh. One training will be on Integrated Disease Management while other training will be on Extension Methodologies. Researchers, extension workers and students from the Agricultural Universities will participate in this training. In Punjab the venue of the training will be Agricultural College, B.Z. University Multan while in Sindh the training is being organized at Agriculture Training Institute, Tandojam. In addition to these training one day training for growers will also be arranged regarding general orchard management.



All possible Support for ASLP-Mango Orchard Management Project

The Secretaries of Agriculture, Punjab and Sindh assures that the Provincial Agriculture Research Systems will extend all possible help for successful implementation of ASLP-Mango Orchard Management Project. This assurance came from the Provincial Secretaries in separate meetings with Australian Experts. The Secretaries also welcomed the initiative of ACIAR and Australian Government in the field of Horticulture.



In a meeting with Dr. Christian Roth, Director South Asia for ACIAR, the Secretary Agriculture Punjab nominated Mr. Khalid Mahmood, Deputy Director Fruit & Vegetable Development Project, as Focal Person for this Project. The Secretary Agriculture informed that establishment of Mango Research Institute at Multan in Public-Private Partnership is almost ready and by the end of the year it will start working. The meeting was attended by Director General Agriculture, Research, Senior Director Horticulture, PARC, Project Coordinator and other officials of Punjab Government.



After the visit of Sindh a wrap up meeting was organized at the end at Southerzone Agriculture Research Centre, Karachi under the Chairmanship of Secretary Agriculture Sindh. In this meeting National Project Leader Dr. Iftikhar Ahmad, Member (PSD), along with Dr. U.N. Khan, Director General, SARC, DG, Research Sindh Mr. Hadiyatullah Chajro, National Project Coordinator, Munawar Raza Kazmi and some of the progressive mango growers also participated. The Project Coordinator explained the background of the Project and future strategy of the Project. The Secretary appreciated the efforts of ACIAR and Australian Government for lending support in Horticulture sector. Dr. Atta Hussain Soomro was nominated as the Provincial Coordinator for the Project.

ASLP Mango Supply Chain Management Project

ASLP Mango Supply Chain Management Project is the second integrated component of the ASLP Mango Project in Pakistan which deals with optimizing the mango supply chains for increased profitability. The project has been formally initiated in May 2007 during the visit of the Australian counterparts of the project. The team of Australian counterparts is comprised of Dr. Ray Collins (Project Leader), Associate Professor, University of Queensland, Australia; Dr. Tony Dunne (Collaborating Scientist), University of Queensland, Australia; Ms. Jodie Campbell (Collaborating Scientist), Department of Primary Industries and Fisheries, Australia; Mr. Peter Jhonson (Collaborating Scientist), Western Australia Department of Agriculture and Food, Australia; and Dr. Ximing Sun (Project Research Officer), University of Queensland, Australia. The ASLP Mango Supply Chain Management Project team of Pakistan comprises of Mr. Muhammad Iqbal (Project Co-ordinator), Pakistan Horticulture Development & Export Board, Pakistan; Dr. Aman Ulah Malik (Collaborating Scientist), University of Agriculture Faisalabad, Pakistan; Dr. Khalid Mustafa (Collaborating Scientist), University of Agriculture Faisalabad; and Mr. Muhammad Sohail Mazhar (Project Development Officer), University of Agriculture Faisalabad. The project is working in Pakistan in collaboration with ASLP Mango Disease Management Project; Mango growers, contractors, commission agents and exporters; University of Agriculture Faisalabad; Pakistan Horticulture Development & Export Board; Fruit and Vegetable Development Project, Punjab; and Agribusiness Development and Diversification Project.



Project Team at a grower's Farm in Sindh

In the current year, the project has conducted an Australian mango industry supply chain case study for some 16 members including mango growers, contractors, commission agents & experts to Singapore & Australia; conducted Mango Quality Improvement workshops in Sindh and Punjab; Monitoring studies of the existing supply chains to explore the short falls of the existing postharvest handling and marketing practices; and domestic and export market research. Further the project has helped exporters (IAC, M.A. Links and Roshan Enterprises) in exporting sapburn free consignments to UK, UAE, Spain and Germany and technically studied various aspects of these export consignments.