ASLP-II Citrus Project

HORT/2010/002

The Enhancement of Citrus Value Chains Production in Pakistan and Australia through Improved Orchard Management Practices

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Project Objectives

1. To improve nursery production practices and introduce germplasm to extend the marketing season
    - 1.1 Select & establish superior germplasm
    - 1.3 Training evaluation of germplasm

2. Crop management
    - 2.1 Reworking, Thinning, Pruning, Quality payment

3. Capacity Building
    - 3.1 Nursery trainings: workshops; sanitation, potting media

1. Germplasm handling and multiplication

- **Multiplied and maintained germplasm in UAF screen house:**

Rootstocks

Fraser Hybrid
Troyer Citrange
Cleopatra mandarin
Benton
C35
Carrizo citrange
Poncirus trifoliata

Scions

Atwood
Daisy
Caffin
Hamlin
Keenan Valencia
Salustiana
Fisher
Neilson
Berri Valencia
Lane Late
Henderson
Tangor Ellendale
Beyenda Valencia
Nules
Clementard
Navelina
Harvard Blood
Arnold Blood
McMahan Valencia
Rayan Navel
Cara Cara Navel

1.1 Select & establish superior germplasm

Trees & budwood to Industry

- **Mother blocks:**
    - **Rootstocks: UAF, UAAR, NARC, CRI, ARI- 319 trees**
    - **Scion: UAF, TT Singh (3 sites), Patoki, Mian Chanun- 227 trees**

1.1 Select & establish superior germplasm

Trees & budwood to Industry

- **Sharing trees & budwood:**
  - **Nurseries: Al-Imran nursery, Mian Barkat nursery, Rehman nursery, growers**
    - **Bud sticks: 553 (~ 3 buds on each stick)**
    - **Trees: 501 (grafted on 8 rootstocks)**
  - **Collaborators: CRI, ARI- 171 trees shared**

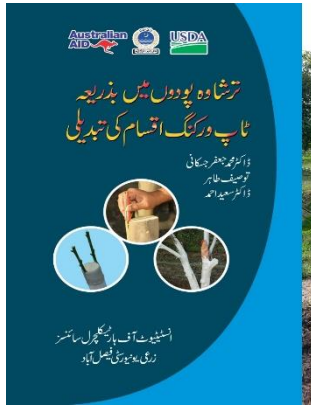
Trees & budwood to Industry

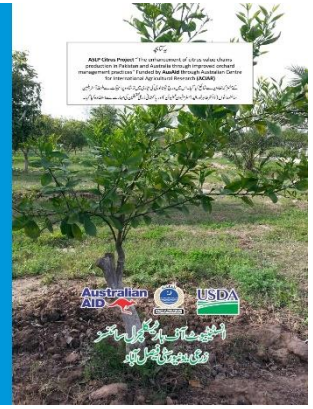
- **Growers field sites:**
  - **Faisalabad (18 cvs), TT Singh (13 cvs), Mian Chanun (12 cvs), Patoki (13 cvs)**
  - **3-5 trees each were planted**

1.1 Select & establish superior germplasm

Germplasm to growers

- **Reworking:**
  - **No. of sites: 4; Faisalabad, Sargodha, Bhalwal, TT Singh**
  - **No. of trees: 246**
  - **Reworking training package**





2.1 Reworking, Thinning, Pruning, quality payment

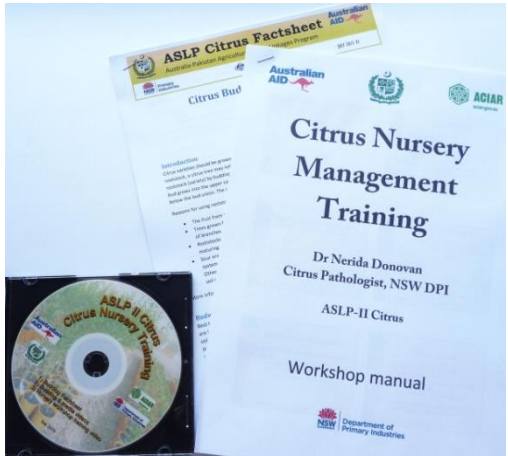
Containerized Nursery

- **Research on potting media:**
    - **Silt, rice husk, cotton waste**
    - **Sand, coconut coir, baggase (better growth rate)**

1.1 Select & establish superior germplasm

Nursery & Germplasm training

- **Workshops & Field days:**
  - **5 X Reworking/germplasm field days**
    - **Early evaluation of germplasm**
    - **Popularization of germplasm**
  - **9 X media/budding/nutrition**
    - **Clean nursery**



1.3 Training evaluation of germplasm

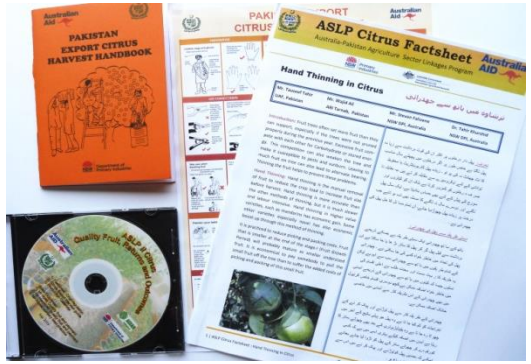
Germplasm multiplication- Outcomes

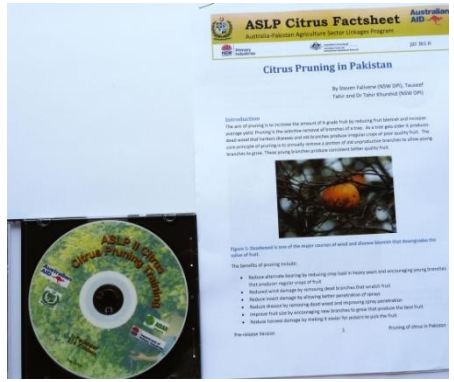
- Availability of mother blocks (scion & rootstock) for future use & enhancement of this material
- Germplasm expanded at 8 commercial Nurseries, 6 Farms, 3 universities & 3 research Institutes
- Specified 7 varieties to broaden the marketing window (mandarin & oranges) along with rootstock alternative to existing rough lemon
- Demo blocks at nurseries and farms to familiarize the growers with new varieties
- Way toward clean nurseries

2. Crop management

- Thinning:
  - Workshops: 2
  - Student research: 2 (M.Sc., Ph.D.)

- Pruning:
  - Workshops: 2



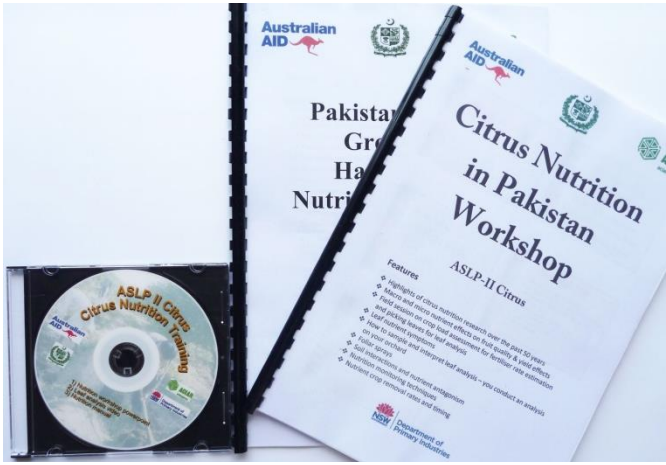


2.1 Reworking, Thinning, Pruning, quality payment

2. Crop management

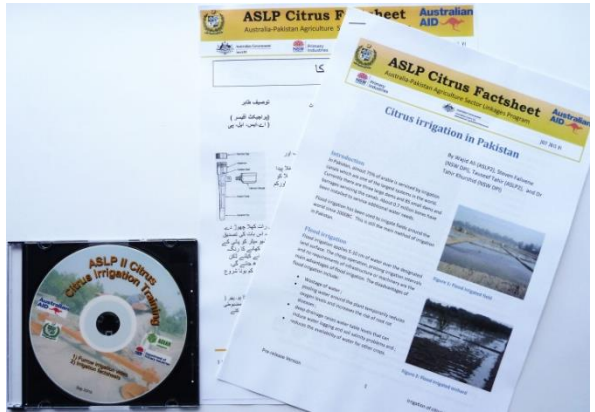
Nutrition

- 2 X Nutrition management workshops
  - Extension Officers and Growers (56)
    - Deficiency symptoms
    - Applications timings

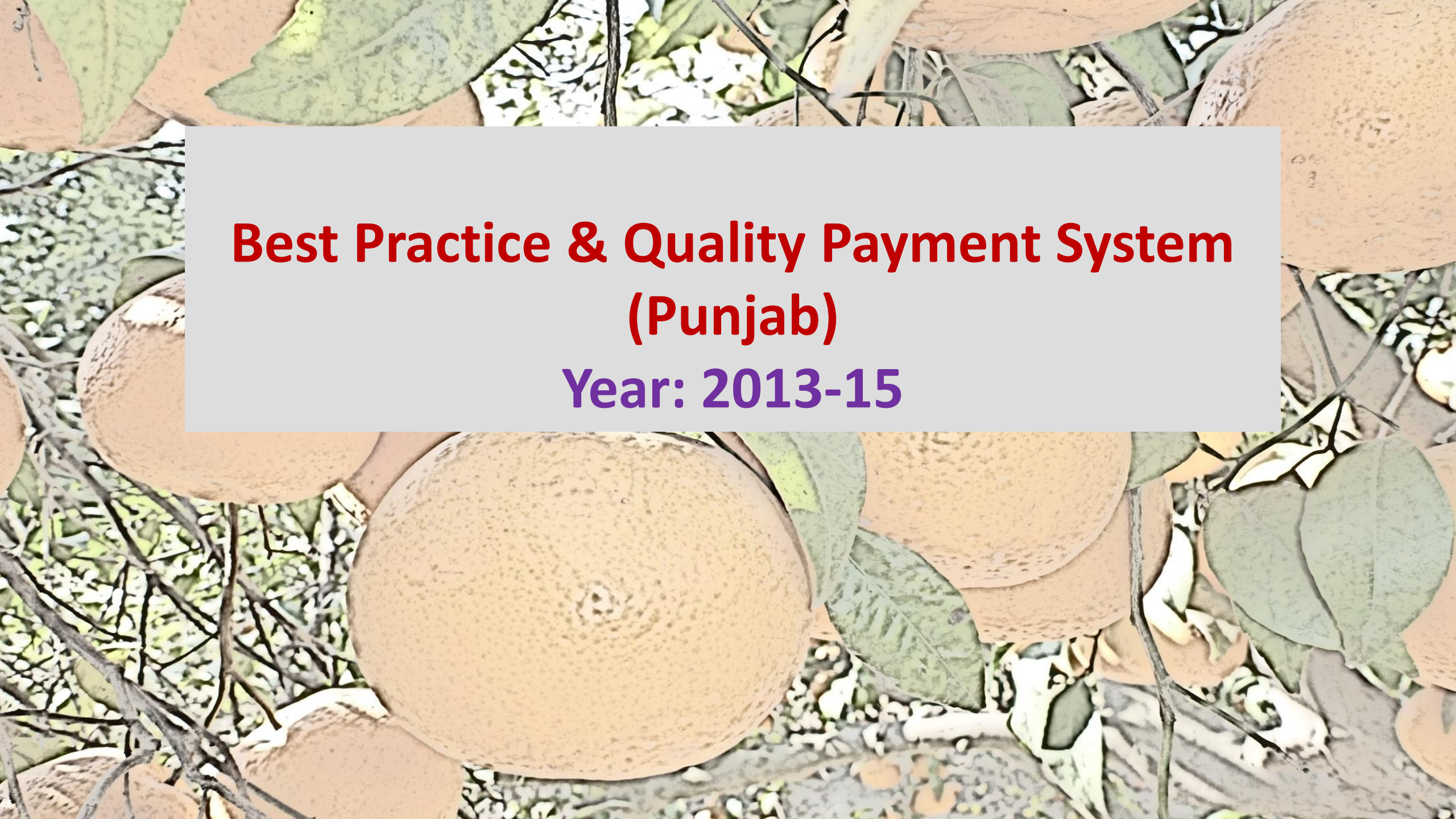


Irrigation

- 1 X Irrigation management workshop:
  - Faculty and students
    - Soil solution
    - Tensiometer



2.1 Reworking, Thinning, Pruning, quality payment



Best Practice & Quality Payment System (Punjab)

Year: 2013-15

Initiative

- Field Day (February, 2013)

- Participants Citrus Growers from Citrus growing regions: 95

INTRODUCTION

Aims

Increase farm gate returns to grower.

- Produce more A grade quality fruit by improving crop management
- Paid on volume of quality fruit

Locations

1. Village # 83SB Sargodha **(Mr. Illyas warriach)**
2. Village # 4 SB Bhalwal Sargodha **(Mr. Hamad Ahmed Tarar)**
3. Village # 91 SB Sargodha **(Mr. Muhammad Zubair & Adeel)**
4. Pest Scouting Consultant **(Mr. Abdul Ghafoor)**

Crop management improvements

Canopy Management

Proper/ Regular Fertilization

Frequent Irrigation

Insect & disease IPM

Targeted sprays

Fruit Thinning

Best Harvesting Techniques

Canopy Management & Regular Fertilization

- The canopy management plays a vital role in improving the quality of the produce.
- The adoption of pruning at a proper time work wonders with the overall health of the plant, which in turn maximizes the fruit quality.
- Regular fertilization is also required according to the Phenological stages

Frequent Irrigation

- The most common method of irrigation in Pakistan is flood irrigation.
- Furrow irrigation can reduce the humidity under trees and reduce disease incidence.
- Frequent irrigation is required by the citrus orchard.
- HPIS has many limitation.



IPM/ PEST SCOUTING

- Involvement of pest scouting consultant to check the insect/ pest population and remedies.
- Less insect pest infestation was observed in last couple of years.
- There is still opportunity to improve wind blemish/ diseases.

Activity Glimpses Prior to Harvest

Activity Glimpses at Harvest

Packing Houses

Packing Sheds: 2

- Farhad Enterprises

&

- Arshad & Co

QUALITY/ PAYBACK

Site I				
	Conventional		Best Practice Site	
Year	% A Grade	PKR ($) /ac	% A Grade	PKR ($) /ac
2014	37%	63,200 PKR	54%	91,125 PKR
2015	60%	72,000 PKR	72%	138,000 PKR

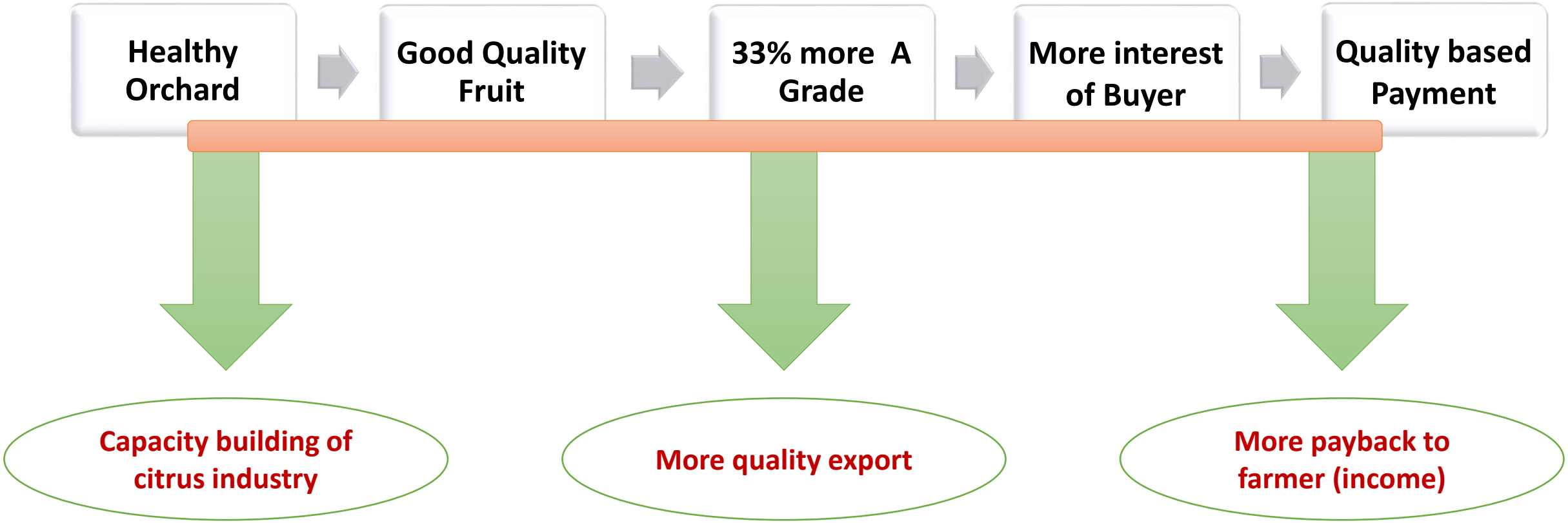
Site II				
2014	29%	49,400 PKR	42%	71,355 PKR
2015	37%	72,300 PKR	67%	127,500 PKR

Site III				
2015	19%	34,200 PKR	73%	131,250 PKR

Commercial outcomes

- Packers and contractors offered 20-25% more for best practice sites
- Quality payment price (paid on A,B,C grade) was 56% more

OUTCOMES


Healthy Orchard
Good Quality Fruit
33% more A Grade
More interest of Buyer
Quality based Payment
Capacity building of citrus industry
More quality export
More payback to farmer (income)

Farmer Field Days on Best Orchard Management Practices and Quality payment System

- **Conducted/ participants**: 91SB Sargodha (Participants: 48) 20-01-2015
  83 SB Sargodha (Participants: 32) 24-01-2015
  4 SB Bhalwal (Participants: 40) 26-01-2015

3. workshops/conferences

- Citrus stakeholders workshop: 1
  - Introduction of Australian citrus industry
  - How growers-industry work together

- Citrus growers conference: 1
  - Introduction of project activities
  - Emphasis on new germplasm, nursery & crop management

3.1 Capacity building

Workshop on Improved Harvesting Techniques

- One mega harvesting day

  (58 Participants; Contractors & Packing house representatives)

  - Use of fine snipers
  - Use of Picking Bags
  - Clean and fine cut on stem to harvest the fruit

3.1 Capacity building

Capacity Building Outcomes

Nursery management

9 X workshops

- Use of organic media
- Plants growing in poly bags
- Managing budding height

Crop management

14 X workshops/ lectures

- Germplasm spread through re-working
- Pruning is regular feature now
- Awareness about deficiency symptoms & nutrition management
- Introduction of quality payment system

Capacity building

2 X workshops/ conferences

- Aware Australia citrus production practices
- Contribution of growers & industry in citrus industry development
- Sharing of growers experiences

COMMUNICATION: ASLPII-Citrus Newsletter

- Biannual (9 issues published)
- Aim: update on activities, outputs & outcomes
- Circulated to collaborators & key growers


اے ایس ایل پی پروجیکٹ برائے ترشاوہ پھل

Australian AID

آسٹریلین ونڈ کا دورہ

آسٹریلیا کا دورہ اور فروٹ منڈی کا دورہ

سیکریٹری زراعت پنجاب اور سبزی کی ایم سے ملاقات

ترشاوہ پھلوں کی کسٹمائزڈ تربیتی ورکشاپ

ترشاوہ کی نرسری سے متعلق ایک روزہ ورکشاپ


اے ایس ایل پی پروجیکٹ برائے ترشاوہ پھل

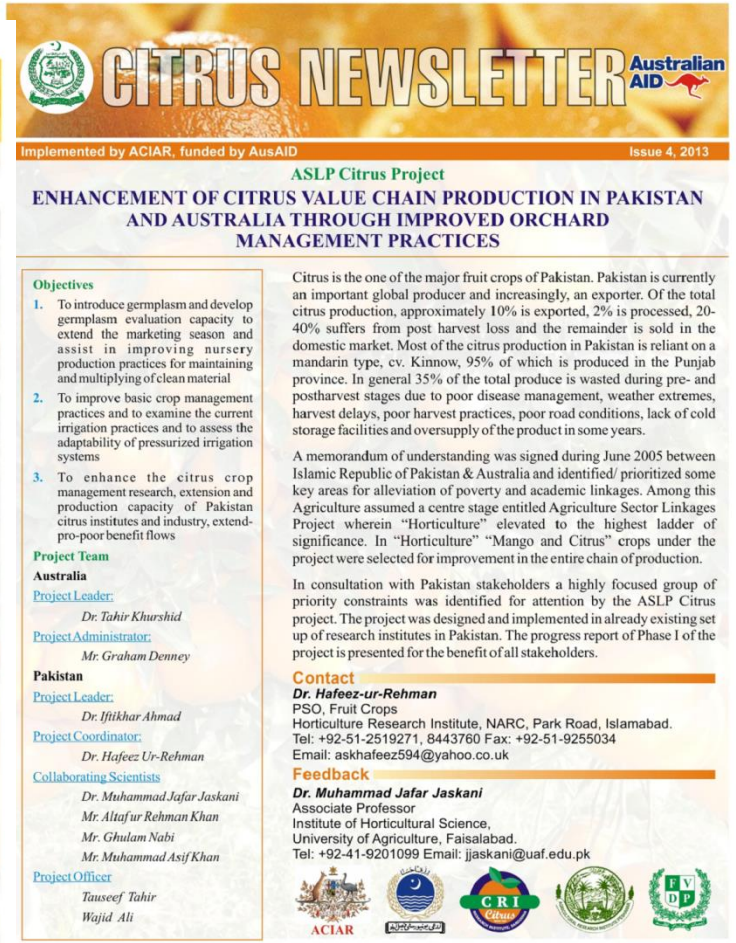
Australian AID

ترشاوہ پراجیکٹ کے سربراہ کا دورہ

وزیر زراعت کا دورہ

زرعی یونیورسٹی پشاور کے سب کیمپس سے طالبعلموں کا دورہ

ترشاوہ باغات کی دیکھ بھال سے متعلق ورکشاپ


CITRUS NEWSLETTER

Australian AID

Implemented by ACIAR, funded by AusAID — Issue 4, 2013

ASLP Citrus Project

ENHANCEMENT OF CITRUS VALUE CHAIN PRODUCTION IN PAKISTAN AND AUSTRALIA THROUGH IMPROVED ORCHARD MANAGEMENT PRACTICES

Objectives

1. To introduce germplasm and develop germplasm evaluation capacity to extend the marketing season and assist in improving nursery production practices for maintaining and multiplying of clean material
2. To improve basic crop management practices and to examine the current irrigation practices and to assess the adaptability of pressurized irrigation systems
3. To enhance the citrus crop management research, extension and production capacity of Pakistan citrus institutes and industry, extend-pro-poor benefit flows

Project Team

Australia

Project Leader:
Dr. Tahir Khurshid

Project Administrator:
Mr. Graham Denney

Pakistan

Project Leader:
Dr. Iftikhar Ahmad

Project Coordinator:
Dr. Hafeez Ur-Rehman

Collaborating Scientists
Dr. Muhammad Jafar Jaskani
Mr. Altaf ur Rehman Khan
Mr. Ghulam Nabi
Mr. Muhammad Asif Khan

Project Officer
Tauseef Tahir
Wajid Ali

Citrus is the one of the major fruit crops of Pakistan. Pakistan is currently an important global producer and increasingly, an exporter. Of the total citrus production, approximately 10% is exported, 2% is processed, 20-40% suffers from post harvest loss and the remainder is sold in the domestic market. Most of the citrus production in Pakistan is reliant on a mandarin type, cv. Kinnow, 95% of which is produced in the Punjab province. In general 35% of the total produce is wasted during pre- and postharvest stages due to poor disease management, weather extremes, harvest delays, poor harvest practices, poor road conditions, lack of cold storage facilities and oversupply of the product in some years.

A memorandum of understanding was signed during June 2005 between Islamic Republic of Pakistan & Australia and identified/ prioritized some key areas for alleviation of poverty and academic linkages. Among this Agriculture assumed a centre stage entitled Agriculture Sector Linkages Project wherein "Horticulture" elevated to the highest ladder of significance. In "Horticulture" "Mango and Citrus" crops under the project were selected for improvement in the entire chain of production.

In consultation with Pakistan stakeholders a highly focused group of priority constraints was identified for attention by the ASLP Citrus project. The project was designed and implemented in already existing set up of research institutes in Pakistan. The progress report of Phase I of the project is presented for the benefit of all stakeholders.

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Feedback

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ACIAR

Future Plan

- UAF funding two projects on “clean citrus” and “Re-working in citrus” to Dec 2016
  - Will conduct 2 X workshops per year to nurserymen and growers
- Training workshops for nurserymen and growers (in collaboration with CRI)
  - Next 5 year 10 X
- Germplasm education: Evaluation and demonstration of varieties fruits, which are now at bearing stage-- 5 X field days
- Germplasm to industry/growers
  - Germplasm source: UAF;
  - Rootstocks: Seed collection and sharing with nurserymen/researchers (2017)
  - Scion: 3000 budwood to nurserymen
- Renew mother block by 2020
- Student Crop management training : Re-working, pruning, thinning etc. (10 X)

THANKS