Afghanistan-Pakistan Activities
Quarterly Report VIII
(July-August-September 2004)
Sustainable Development of Drylands Project
IALC-UIUC

Introduction:

This quarter saw the completion of all training programs and activities that were approved, funded and scheduled for delivery via the following contractual mechanisms:

A) Year Two (FY 2004) of the four-year Cooperative Agreement for "Sustainable Development of Drylands in Asia and the Middle East" between the IALC and USAID/ANE. This agreement provided a total of $367,464 in core support for the Afghanistan-Pakistan component.

B) Job Order #25 "Agriculture Sector Training in Afghanistan" which was funded by RAMP (Rebuilding Agricultural Markets in Afghanistan Program) to provide $400,000 in supplemental funding. This Mission-level funding allowed us to carry out all training programs that were envisioned for this component during the FY 2004 period. This comprehensive training program plan was elaborated in the Cooperative Agreement Renewal, submitted in September 2003.

In addition to the completion of FY 2004 activities, time was also given to forward planning. An FY 2005 work plan was prepared which, when combined with the FY 2005 budget, will constitute the Scope of Work and justify the continuation of core funding for this component. The next proposal, requesting $648,200 in supplemental funding from RAMP to support calendar year 2005 training programs, is in near-final form and will be submitted next month.

Activities of this period (July 1 to September 30):

The last four short courses in the FY 2004 program of offerings were completed during this period. Courses titled "Animal Nutrition" and "Integrated Pest Management" were held in Peshawar during the period June 14 through July 12. The previous quarter's report provided course outlines and lists of participants. The summaries of course evaluations that were completed by participants are attached to this report.

The other two courses held during this quarter were "Preservation of Fruits and Vegetables" (July 16 to August 13 at the Agricultural Research Institute, Tarnab, Peshawar) and "Post-Harvest Management and Marketing Skills" which was conducted at the NWFP-AU, Peshawar during this same period. Outlines, participant lists and evaluation summaries for these last two courses are attached to this report. Completion of these courses has brought us to a total of eleven courses delivered since the August

2003 inception of these training activities, reaching a total of 229 participants who were drawn from all segments and levels of the agriculture sector in Afghanistan.

Another significant activity was the enrollment of ten Afghans in M.Sc. programs at the NWFP-AU. They arrived on campus August 12 and are taking a full load of courses during the fall semester. These long-term trainees were previously serving as instructors in the Faculties of Agriculture at Kabul and Nangarhar universities. Their names and fields of study were given in the previous quarter's report.

The previous quarterly report also described progress that was being made on specialized small group training, which is an integral part of the long-range process of establishing "twinning" relationships between research stations in these neighboring countries. After seven Afghan scientists had been sent to two selected stations in the NWFP-AU system for structured short-term experiences, these research-oriented training programs were put on hold due to cash-flow problems, i.e., difficulty in transferring the supplemental funding from RAMP-Kabul to IALC headquarters.

To provide a more detailed description of this training approach, a report of activities completed at the Cereal Crops Research Institute (CCRI) by four scientists from the Shesham Bagh (Nangarhar) and Darul Amaan (Kabul) research stations is included as an attachment. These reports describe training that was conducted during the first two "calls" or "rounds" of four days each. This specialized training program will consist of four visits to CCRI by this group of four maize researchers during the cropping season. Their third visit took place during the September 6-9 period. That report is being prepared. Three other scientists from these same two stations were sent to ARS-Mingora for one week of cooperative research on vegetable crop production. Similar training programs have already been arranged for additional horticulturists and soil scientists. These programs will be delivered as soon as the cash flow problems are resolved.

The difficulty in moving supplemental RAMP funds from Kabul to Arizona, then through UIUC and out to the Field Office, has created serious deficits in our accounts. While this is not good business practice, we did not want to cancel short courses that had been announced, staffed by the NWFP-AU and filled by Afghan organizations that nominate participants for these courses. Nor did we want to cancel the M.Sc. programs of long-term trainees who had been selected by their universities and accepted by the NWFP-AU for August 2004 enrollment in post-graduate study.

The Afghanistan-Pakistan Training (APT) Group met on July 28 and made significant progress in taking on their role as an advisory body, as well as being a source of expertise in carrying out some of the activities that are envisioned for this component. Having met for the first time in January 2004, the APT Group will continue to meet twice each year to provide input. More details on this group can be found in Quarterly Report VI. The agenda for the July 28 meeting is attached. At the conclusion of the meeting a strong vote of confidence was given to this component, with especially high praise for the Field Office Director's performance.

Although we have worked together for 20 years, progress was made in re-formalizing the relationship between the NWFP-AU and the Illinois universities (UIUC and SIUC). This relationship had previously been formalized via a Memorandum of Understanding (MOU) which was executed in June 1994, at the conclusion of the TIPAN project. Our request to renew and extend the earlier agreement for a five year period of time was placed on the agenda for the July 10 meeting of the NWFP-AU syndicate, i.e., Faculty Senate. The renewal was approved and the Vice Chancellor was authorized to sign a revised MOU. When the MOU is fully executed, a Letter of Agreement will be drawn up between the UIUC Field Office and the Vice Chancellor's Office. This agreement will outline and formalize procedures being followed in delivery of training programs by the NWFP-AU.

Activities Planned for the Following Quarter (October-November-December):

The major challenge we face is transfer of the supplemental RAMP funding, so our accounts can be brought out of deficit and training activities resumed. Although the previous quarterly report states that this transfer was "In Process", the funds have still not left Kabul. A chronology of events may be useful as we continue to deal with this problem: 1) Our proposal, requesting $400,000 to supplement our core funding, was submitted in January 2004, 2) The proposal was approved by AID-Kabul in February and sent to RAMP-Kabul for their action, 3) In late March, we were informed that our submission had been approved by RAMP and that funds were available, 4) During April and May the Field Office Director worked with RAMP contracting personnel to provide documentation on past disbursements and anticipated expenditures, justifying the release of funds, 5) In late May, the RAMP-Kabul Grants and Contracts Manager requested banking information that would allow them to transfer a $300,000 installment to the University of Arizona, for subsequent transfer to UIUC and the Field Office in Peshawar, 6) This required negotiation of a Grant Agreement between the University of Arizona (for IALC) and RAMP. That agreement has been signed by both parties and returned to Kabul. The credibility of our Field Office Director and our Illinois institutions have allowed us to continue training programs while waiting patiently for financial relief.

Plans are being made for a TDY by Myers and Santas during the first half of November, with one week spent in Pakistan and one week in Afghanistan. Many changes have taken place and much progress has been made since our visit to the field one year ago. We anticipate the proposal for calendar year 2005 supplemental funding will have been submitted to RAMP-Kabul prior to our visit, so the centerpiece of our time in Kabul will likely consist of work with RAMP personnel to discuss and reach agreement on training activities they will support. Our proposal will include twenty M.Sc. degree starts in January 2005. If this portion of the proposal is approved by RAMP, we will need to move quickly on selection of these degree participants. They will likely be drawn from universities throughout Afghanistan that offer instruction in the agricultural sciences as well as from selected research stations and divisions of the Ministry of Agriculture and Animal Husbandry. If time and security conditions permit, we plan to visit Balkh University in Mazar-e-Sharif to discuss their training needs.

COURSE EVALUATION
ANIMAL NUTRITION-0904
HELD AT NWFP AGRICULTURAL UNIVERSITY, PESHAWAR
June 14 through July 12, 2004

Legend: A = Strongly Agree, B = Agree, C = Disagree, D = Strongly Disagree, E = No Opinion

No. of Respondents= 20

COURSE EVALUATION

No.		A	B	C	D	E
1.	The course was relevant to your professional responsibilities.	16	4	-	-	-
2.	The course improved your knowledge to a great extent.	8	12	-	-	-
3.	Enough time was given for classroom lecture/discussion.	12	8	-	-	-
4.	Enough time was given for field visits.	13	7	-	-	-
5.	Recent developments in research and latest knowledge of the subject were imparted.	10	10	-	-	
6.	Problems and issues, which you usually encounter during your professional duties, were discussed during the course.	8	12	-	-	

TRAINING METHODOLOGY

1.	Lectures were informative and very helpful in communication of knowledge.	17	3	-	-	-
2.	Group discussions and consultations with instruction provided an excellent opportunity for sharing of experience.	11	9	-	-	-
3.	Field visits provided the chance to see the problems as discussed in the classroom.	13	5	2		-
4.	Teaching Methodology was effective.	14	6	-	-	-
5.	Group discussions are more helpful than the lecture.	8	9	2	-	1
6.	Course duration was about right.	7	10	1	-	2

TRAINERS' PERFORMANCE

Give response about the trainer of the course through following statements:

1.	He has good knowledge of the subject.	15	5	-	-	-
2.	He presented the subject matter nicely and spoke clearly.	13	7		-	-
3.	He has the ability to relate subject matter with solutions of existing problems.	12	7	-	-	1
4.	He answered trainees' questions satisfactorily.	16	4		-	-
5.	His overall performance was good.	15	5	-	-	-

Suggestions for further improvement (if any):

- One month of course duration was not sufficient. It should be increased.
- The course, teaching material and practical work was “the best”. We are very much satisfied from Professors, researchers and technicians of NWFPAU. The course increased our knowledge and experience.
- Practical and laboratory work should be increased. Enough time should be given to participants to practice his or herself all laboratory analytical work.
- The course was very useful, teachers were expert and have a good knowledge and we have taken a lot of things in a short period of time.
- We have completed one-year study work in one month.
- If possible, the teaching material should be translated in Dari/Pushtu languages.
- Relevant technical books should be provided to the participants.
- M.Sc. program for B.Sc faculty members of Afghan Universities should be organized.

COURSE EVALUATION
INTEGRATED PEST MANAGEMENT-0604
HELD AT NWFP AGRICULTURAL UNIVERSITY, PESHAWAR
June 14 through July 12, 2004

Legend: A = Strongly Agree, B = Agree, C = Disagree, D = Strongly Disagree, E = No Opinion

No. of Respondents= 20

COURSE EVALUATION

No.		A	B	C	D	E
1.	The course was relevant to your professional responsibilities.	9	11	-	-	-
2.	The course improved your knowledge to a great extent.	4	16	-	-	-
3.	Enough time was given for classroom lecture/discussion.	6	8	6	-	-
4.	Enough time was given for field visits.	5	2	4	9	-
5.	Recent developments in research and latest knowledge of the subject were imparted.	3	17	-	-	-
6.	Problems and issues, which you usually encounter during your professional duties, were discussed during the course.	5	13	2	-	-

TRAINING METHODOLOGY

1.	Lectures were informative and very helpful in communication of knowledge.	4	16	-	-	-
2.	Group discussions and consultations with instruction provided an excellent opportunity for sharing of experience.	1	14	4	-	1
3.	Field visits provided the chance to see the problems as discussed in the classroom.	7	7	6	-	-
4.	Teaching Methodology was effective.	7	11	1	-	1
5.	Group discussions are more helpful than the lecture.	6	9	4	1	-
6.	Course duration was about right.	1	6	5	7	1

TRAINERS' PERFORMANCE

Give response about the trainer of the course through following statements:

1.	He has good knowledge of the subject.	9	11	-	-	-
2.	He presented the subject matter nicely and spoke clearly.	7	12	-	-	1
3.	He has the ability to relate subject matter with solutions of existing problems.	8	12	-	-	-
4.	He answered trainees' questions satisfactorily.	6	14	-	-	-
5.	His overall performance was good.	5	14	-	-	1

Suggestions for further improvement (if any):

- Satisfied with theoretical part, but practical part should be increased. After each lecture, practical work at Lab should be carried out.
- Ratio of male and female should be considered. (There was no female participant.)
- Academic level of the participants should be the same.
- Issues of the courses must be related to Afghanistan situation.
- Young lecturers of the Faculty of Agriculture of Afghanistan Universities should be encouraged for M.Sc. and Ph.D. program at NWFAPU. All the Universities of Afghanistan should have an equal opportunity for long-term degree training program.
- Textbooks should be given to participants.
- The course increased our knowledge in both practical and theoretical aspects.
- Training material should be translated in Dari language.
- Some of the lectures were not relevant to plant protection but concerned agronomy or extension
- One month of course duration was not sufficient. It should be increased to three months.
- At the end, a representative of the class I highly appreciate the efforts of Dr. Farmanullah.

COURSE SCHEDULE
0504 - PRESERVATION OF FRUITS AND VEGETABLES FOR AFGHAN PARTICIPANTS AT ARI, TARNAB, PESHAWAR

Date	Day	Lecture 8.00-10.00 AM	Tea break 10.00– 10.30	Practical 10.30-2.30	Resource Person
16.7.04	Friday	Arrival of the participants at Agri. University Peshawar, Registration, Inauguration by Vice Chancellor. Tea break, Short trip to ARI, Tarnab. Introduction to Food Machinery & Equipments.			Adam Khan
17.7.04	Saturday	Introduction and Importance of Food Preservation Preparation of Mango Squash	-do-	-do-	Adam Khan
18.7.04	Sunday	Holiday			
19.7.04	Monday	Preparation of Pomegranate and Guava Syrup	-do-	-do-	Adam Khan
20.7.04	Tuesday	Preparation of Strawberry & Lemon/Orange Squashes	-do-	-do-	Adam Khan
21.7.04	Wednesday	Preparation of Apple Jam	-do-	-do-	Adam Khan
22.7.04	Thursday	Preparation of Apricot and Plum Jam	-do-	-do-	Adam Khan
23.7.04	Friday	Preparation of Strawberry Jam	-do-	-do-	Adam Khan
24.7.04	Saturday	Preparation of Tomato Puree and Ketchup	-do-	-do-	Nazir Khan
25.7.04	Sunday	Holiday			
26.7.04	Monday	Preparation of Soy Milk and Other Products	-do-	-do-	Jan M. Khan
27.7.04	Tuesday	Preparation of Grape Juice & Syrup	-do-	-do-	Jan M. Khan
28.7.04	Wednesday	Preparation of Peach Canned & Preserve	-do-	-do-	Jan M. Khan
29.7.04	Thursday	Preparation of Pear Jam, Preserve/Canned	-do-	-do-	Jan M. Khan

30.7.04	Friday	Preparation of Almond and Peanut Syrup	-do-	-do-	Nazir Khan
31.7.04	Saturday	Preparation of Apple Syrup and preserved	-do-	-do-	Nazir Khan
1.8.04	Sunday	Holiday			
2.8.04	Monday	Preparation of Apple/Guava Jelly	-do-	-do-	Nazir Khan
3.8.04	Tuesday	Preparation of Fruit Pickles	-do-	-do-	Dr. Badshah Wahid
4.8.04	Wednesday	Preparation of Vegetable Pickle	-do-	-do-	Dr. Badshah Wahid
5.8.04	Thursday	Drying of Fruits like Apricot, Peaches, Mulberry, etc.			Dr. Badshah Wahid
6.8.04	Friday	Drying of Vegetable like Tomato, Onion, Bitter Gourd, etc.			Dr. Badshah Wahid
7.8.04	Saturday	Preservation of Mushroom by Drying & Freezing	-do-	-do-	Dr. Badshah Wahid
8.8.04	Sunday	Holiday			
9.8.04	Monday	Preservation of Mushroom by Canning	-do-	-do-	Dr. Badshah Wahid
10.8.04	Tuesday	Preparation of Jam from Dried Apricots	-do-	-do-	Dr. Badshah Wahid
11.8.04	Wednesday	Preparation of Chilli and Tomato Sauces	-do-	-do-	Dr. Badshah Wahid
12.8.04	Thursday	Preparation of Fruit Nectar	-do-	-do-	Dr. Badshah Wahid
13.8.04	Friday	Packing/Grading/ Labeling/Marketing and Quality Control Review / Discussion/ Evaluation. Distribution of Certificates	-do-	-do-	Dr. Badshah Wahid Adam Khan Director General Tarnab

Dr. Badshah Wahid
Agricultural Research Station, Mingora, Swat

Adam Khan
Agricultural Research Institute, Tarnab

List of Participants
Course No: 0504 Preservation of Fruits and Vegetables
(July 15 through August 16, 2004)

No	Name	Father Name	Date of Birth	Age In Years	Discipline	Govt. Department/NGOs/ Universities	Duty Station
1	Zabiullah	Abdu Rahman	1980	24	12th grade	Min of Agri & Animal Husb	Kabul Province
2	Abdulsami	Abdul Qadeer	1971	33	12th grade	Min of Agri & Animal Husb	Kabul Province
3	S. Noor Ahmadshah	Saydmir Ahmad	1956	48	Farmer	Min of Agri & Animal Husb	Kabul Province
4	Mohammad Saleem	Temoorshah	1956	48	B.Sc. Agri Fac Kabul	Min of Agri & Animal Husb	Kabul Province
5	Noor Mohammad	Atamohammad	1959	45	Farmer	Min of Agri & Animal Husb	Kabul Province
6	Abdul Qadir	Abdul Hakim	1971	31	12th grade	Min of Agri & Animal Husb	Kabul Province
7	Mohammad Aslam	Mohammad Akber	1959	45	Farmer	Min of Agri & Animal Husb	Kabul Province
8	Abdul Rahim	Abdul Ahmad	1969	35	Farmer	Min of Agri & Animal Husb	Kabul Province
9	Sayd Ismail	Sayd Mirza	1976	28	Farmer	Min of Agri & Animal Husb	Kabul Province
10	Rajab Ali	Ramazan Ali	1954	50	Farmer	Min of Agri & Animal Husb	Kabul Province
11	Abdul Manan	Khadim Hussain	1971	33	B.Sc. Agri Fac Balkh Uni	Agri Fac Alberoni University	Kapisa Province
12	Zamaryali (Tani)	Saadi	1975	29	B.Sc. Agri Fac Kanda Uni	Agri Fac KandaharUniversity	Kandahar Province
13	Najibullah	Ahmadullah	1978	26	B.Sc. Agri Fac Kanda Uni	Agri Fac KandaharUniversity	Kandahar Province
14	Reshad Ahmad				B.Sc. Agri Fac Nang Uni	Agri Fac Nang University	Nangarhar Province
15	Zarer	Abdul Ghani	1976	28	B.Sc. Agri Fac BalkhUni	Agri Fac Balkh University	Balkh Province
16	Abdul Razaq	Haji Pida Gul	1953	51	12th grade Agriculture	Mercy Corps Office	Helman Province
17	Rahima Noori		1969	35	B.Sc. Agri Fac Kabul Uni	Agri Fac Kabul University	Kabul Province
18	Sayed Hakim	Najafi	1976	28	12th grade	Min of Agri & Animal Husb	Kabul Province
19	Sayed Ali Ahmad	Ghulam Abbas	1983	22	12th grade	Min of Agri & Animal Husb	Maidon Province
20	M. Usman Karemi	Ali Ahmad	1972	32	B.Sc. Agri Fac Herat Uni	Agri Fac Herat University	Heart Province

Faculty of Agri Kabul University = 1 Faculty of Agri Nangarhar University = 1 Balkh University = 1 Herat University = 1
Ministry of Agriculture and Animal Husbandry = 12 Faculty of Agri Kandahar = 2 Aberoni University = 1 Mercycorps =1
Total participants for Course No: 0904= 1+1+1+1+12+2+1+1= 20

COURSE EVALUATION
PRESERVATION OF FRUITS AND VEGETABLES-0504
HELD AT AGRICULTURAL RESEARCH INSTITUTE, TARNAB, PESHAWAR
July 16 through August 13, 2004

Legend: A = Strongly Agree, B = Agree, C = Disagree, D = Strongly Disagree, E= No Opinion

No. of Respondents= 20

COURSE EVALUATION

No.		A	B	C	D	E
1.	The course was relevant to your professional responsibilities.	17	3	-	-	-
2.	The course improved your knowledge to a great extent.	15	5	-	-	-
3.	Enough time was given for classroom lecture/discussion.	19	1	-	-	-
4.	Enough time was given for field visits.	12	7	1	-	-
5.	Recent developments in research and latest knowledge of the subject were imparted.	14	6	-	-	-
6.	Problems and issues, which you usually encounter during your professional duties, were discussed during the course.	17	3	-	-	-

TRAINING METHODOLOGY

1.	Lectures were informative and very helpful in communication of knowledge.	14	6	-	-	-
2.	Group discussions and consultations with instruction provided an excellent opportunity for sharing of experience.	17	3	-	-	-
3.	Field visits provided the chance to see the problems as discussed in the classroom.	9	7	-	-	4
4.	Teaching Methodology was effective.	15	5	-	-	-
5.	Group discussions are more helpful than the lecture.	16	4	-	-	-
6.	Course duration was about right.	16	4	-	-	-

TRAINERS' PERFORMANCE

Give response about the trainer of the course through following statements:

1.	He has good knowledge of the subject.	18	2	-	-	-
2.	He presented the subject matter nicely and spoke clearly.	12	8	-	-	-
3.	He has the ability to relate subject matter with solutions of existing problems.	17	3	-	-	-
4.	He answered trainees' questions satisfactorily.	17	3	-	-	-
5.	His overall performance was good.	17	3	-	-	-

Suggestions for further improvement (if any):

- Training material should be translated in Dari Language.
- Other courses like this should be offered.
- The only female participant in the Preservation of Fruits and Vegetable Course Ms. Rahima Noori from Faculty of Agriculture, Kabul University commented: “1: women should be invited in this course; 2) this course should be offered in Afghanistan, if training equipment are made available; 3) Now I will teach this course to other women in Afghanistan; 4) more courses like this be offered; 5) In the end I thank all teachers especially Dr. Qayyum”.
- Equipment should be provided to the participants.
- All participants should have the same profession.

Course Contents & Schedule-0804

(Summary)

Post-Harvest Management & Marketing Skills

Program for 1st Week (July 16 through July 24, 2004)

Date 16.07.04 through 24.07.04

Topic: Marketing: Concepts & Definitions

Lectures:

Marketing & Agricultural Marketing: Marketing of Perishable versus Nonperishable Products

Marketing Functions & Utilities

Market Structure & Performance

Marketing of Agricultural Produce: Some Special Features

Topic: Post-Harvest Technology - I

Lectures:

Post-Harvest Technology: An Introduction

Post-Harvest Management of Horticultural Crops & Foodgrains

Classification of Horticultural Produce: An Introduction

Post-Harvest Produce losses and Perishability-I

Post-Harvest Produce losses and Perishability-II

Post-harvest physiology of fresh produce

Post-Harvest Physiology of Climacteric/Non-Climacteric Fruits

Program for 2nd Week (July 26 through July 31, 2004)

Date 26.07.04 through 31.07.04

Topic: Post-Harvest Technology - II

Harvesting and field handling

Packing Places/Sheds

Packaging of fruit, vegetables and root crops

Packaging materials

Packing & Packaging Technology: Some Recent Developments

Operations in packing of selected fruit and vegetables

Packaging materials in use & their suitability/unsuitability

Storage Principles, Practices & Structures

Warehouse Management: Inventory Management; EOQ Concept

Transport/Transportation: Technological Development

Processing & Value-Addition

Commodity Marketing: Market Channels & Intermediaries

Stages in Commodity Marketing; Marketing of Fruits, Vegetables, Root-Crops, Foodgrains, Livestocks, Meat, Poultry, Eggs and Milk & Milk Products

Program for 3rd Week (Aug. 2 through Aug. 7, 2004)
Date 02.08.04 through 07.08.04
Topic: Marketing & Marketing Efficiency and Afghanistan

- Marketing Efficiency: Technical & Economic Efficiency; Definitions
- Improving Technical & Economic Efficiency: Ways & Means
- Structure-Conduct-Performance Paradigm: Efficiency Criteria
- Marketing Efficiency: Afghanistan's scenario/Problems Identified
- Analyzing the Market: Market Research; Rapid Market Appraisal
- Afghanistan's Resources & Products Mapping: Horticultural Crops, Cereal Crops, Foodgrains & Pulses, Livestocks & Livestock Products
- Development of Marketing Plan: An Introduction
- Analyzing Market Situation & Opportunities
- Analyzing Market Situation & Opportunities for Afghanistan's Horticultural Crops, Cereals/Foodgrain, Livestock & Livestock Products
- Mass-vs-Target Marketing/Segmentation-Marketing

Program for 4th Week (Aug. 9 through Aug. 13, 2004)
Date 09.08.04 through 13.08.04

- Developing a Successful Marketing Strategy: Strategies for Individual Farmers-versus-Firms
- Market Entry & Marketing Strategies: General Marketing Strategies-versus-Entrepreneurial Marketing Strategies
- Developing Marketing Strategies for Afghanistan's Horticultural Crops, Foodgrains & Pulses, Livestock & Livestock Products
- Managing the Marketing Mix – 4Ms
- New Product Development: For Domestic/Export Markets
- New Horticultural Products for Afghanistan's Domestic & Export Markets
- Developing A Marketing Plan: Format
- Developing Marketing Plan for Afghanistan
- Developing Marketing Plan for Afghanistan's Horticultural Crops
- Developing Marketing Plan for Afghanistan's Foodgrains & Pulses
- Developing Marketing Plan for Afghanistan's Livestock & Livestock Products

Course Schedule- 0804
Post-Harvest Management & Marketing Skills

Date	Lecture/Topics
16.07.04	09.00-10.00 AM Inauguration Ceremony 10.00 AM-12.30 PM Introduction: Course/Organization of the Course Lecture: Marketing concepts Marketing & Agricultural Marketing: Marketing of Perishable versus Nonperishable Products
17.07.04	08.00-10.00 AM Lecture: Marketing concepts Marketing Functions & Utilities; Market Structure & Performance 10.30-12.00 AM Lecture & Group Work: Groups will prepare class presentations on Topics/Reading Materials provided, namely: G-1: Marketing of Agricultural Produce: Some Special Features - I G-2: Marketing of Agricultural Produce: Some Special Features - 2 12.30-02.00 PM Group Work: Group work continues: Groups prepare class presentations.
19.07.04	08.00-10.00 AM Class presentation & discussion: G-1: Marketing of Agricultural Produce: Some Special Features - I G-2: Marketing of Agricultural Produce: Some Special Features - 2 10.30-12.00 AM Lecture: Post-Harvest Technology: An Introduction Post-Harvest Management of Horticultural & Foodgrains 12.30-02.00 PM Lecture: Classification of Horticultural Produce: An Introduction
20.07.04	08.00-10.00 AM Lecture: Post-Harvest Produce losses and Perishability-I 10.30-12.00 AM Lecture: Post-Harvest Produce losses and Perishability-II 12.30-02.00 PM Group Work: G-1: Produce losses and Perishability G-2: Produce losses and Perishability G-3: Produce losses and Perishability G-4 Produce losses and Perishability

21.07.04 08.00-10.00 AM
Group Work:
Group work continues: Groups prepare class presentations.
10.30-12.00 AM
Class presentation & discussion:
- G-1: Produce losses and Perishability
- G-2: Produce losses and Perishability
- G-3: Produce losses and Perishability
- G-4 Produce losses and Perishability

12.30-02.00 PM
Lecture:
Post-harvest physiology of fresh produce-I

22.07.04 08.00-10.00 AM
Lecture:
Post-harvest physiology of fresh produce-II
10.30-12.00 AM
Lecture:
Post-Harvest Physiology of Climacteric/Non-Climacteric Fruits
12.30-02.00 PM
Group Work:
- G-1: Post-harvest physiology of fresh produce
- G-2: Post-harvest physiology of fresh produce
- G-3: Post-harvest physiology of fresh produce
- G-4: Post-harvest physiology of fresh produce

23.07.04 08.00-10.00 AM
Group Work:
Group work continues: Groups prepare class presentations.
10.30-12.00 AM
Class presentation & discussion:
- G-1: Post-harvest physiology of fresh produce
- G-2: Post-harvest physiology of fresh produce
- G-3: Post-harvest physiology of fresh produce
- G-4: Post-harvest physiology of fresh produce

12.30 PM → Friday closed

24.07.04 08.00 AM → Field Visits: Vegetable, Fruit & Foodgrain Markets, ARI Tarnab and Exporter Sunny International

26.07.04 08.00-10.00 AM
Lecture:
Harvesting and field handling-I
10.30-12.00 AM
Lecture:
Harvesting and field handling-II
12.30-02.00 PM
Lecture:
Packing Places/Sheds

27.07.04	08.00-10.00 AM Lecture: Packaging of fruit, vegetables and root crops 10.30-12.00 AM Lecture: Packaging materials 12.30-02.00 PM Lecture: Packing & Packaging Technology: Some Recent Developments
28.07.04	08.00-10.00 AM Group work: G-1: Operations in packing of selected fruit and vegetables G-2: Packaging materials in use & their suitability/unsuitability 10.30-12.00 AM Group Work: Group work continues: Groups prepare class presentations. 12.30-02.00 PM Class presentation & discussion: G-1: Operations in packing of selected fruit and vegetables G-2: Packaging materials in use & their suitability/unsuitability
29.07.04	08.00-10.00 AM Lecture: Storage Principles, Practices & Structures 10.30-12.00 AM Lecture: Warehouse Management: Inventory Management; Economic Order Quantity 12.30-02.00 PM Lecture: Managing Transport & Transportation: Technological Developments/ Advances; Vehicles Scheduling & Routing
30.07.04	08.00-10.00 AM Lecture: Processing & Value-Addition: Principles of Fresh Produce Processing; Processing & Preserving Methods; Value-Addition 10.30-12.00 AM Lecture: Commodity Marketing: Market Channels & Intermediaries; Stages in Commodity Marketing; Marketing of Fruits, Vegetables, Root-Crops, Foodgrains, Livestocks, Meat, Poultry, Eggs and Milk & Milk Products 12.30 PM → Friday closed
31.07.04	08.00 AM→ Field Visits: Agricultural & Livestock Commodity Markets, Packaging Industry-Mingora, Agricultural Research Station, Mingora

02.08.04 08.00-10.00 AM

Group work:

G-1: Commodity Marketing: Fruits
G-2: Commodity Marketing: Vegetables
G-3: Commodity Marketing: Foodgrains & Pulses
G-4: Commodity Marketing: Livestock & Poultry
G-5: Commodity Marketing: Livestock Products (Meat, Eggs, Fresh Milk & Milk Products)

10.30-12.00 AM

Group Work:

Group work continues: Groups prepare class presentations.

10.30-12.00 AM

Class presentation & discussion:

G-1: Commodity Marketing: Fruits
G-2: Commodity Marketing: Vegetables
G-3: Commodity Marketing: Foodgrains & Pulses
G-4: Commodity Marketing: Livestock & Poultry
G-5: Commodity Marketing: Livestock Products (Meat, Eggs, Fresh Milk & Milk Products)

03.08.04 08.00-10.00 AM

Lecture:

Marketing Efficiency: Technical & Economic Efficiency; Definitions
Improving Technical & Economic Efficiency: Ways & Means
Structure-Conduct-Performance Paradigm: Efficiency Criteria

10.30-12.00 AM

Group work: Participants to read the following article and take notes.

Marketing Efficiency: Experiences of South Asian Countries

12.30-02.00 PM

Group work:

G-1: Marketing Efficiency: Afghanistan's scenario/Problems Identified
G-2: Marketing Efficiency: Afghanistan's scenario/Problems Identified
G-3: Marketing Efficiency: Afghanistan's scenario/Problems Identified

04.08.04 08.00-10.00 AM

Group Work:

Group work continues: Groups prepare class presentations.

10.30-12.00 AM

Class presentation & discussion:

G-1: Marketing Efficiency: Afghanistan's scenario/Problems Identified
G-2: Marketing Efficiency: Afghanistan's scenario/Problems Identified
G-3: Marketing Efficiency: Afghanistan's scenario/Problems Identified

12.30-02.00 PM
Lecture:
Analyzing the Market: Market Research; Gathering Information for Market Research; Rapid Market Appraisal; Market Mapping

05.08.04 08.00-10.00 AM
Group work:
G-1: Afghanistan's Resources & Products Mapping: Horticultural Crops
G-2: Afghanistan's Resources & Products Mapping: Cereal Crops, Foodgrains & Pulses
G-3: Afghanistan's Resources & Products Mapping: Livestock & Livestock Products
10.30-12.00 AM
Group Work:
Group work continues: Groups prepare class presentations.
12.30-02.00 PM
Class presentation & discussion:
G-1: Afghanistan's Resources & Products Mapping: Horticultural Crops
G-2: Afghanistan's Resources & Products Mapping: Cereal Crops, Foodgrains & Pulses
G-3: Afghanistan's Resources & Products Mapping: Livestock & Livestock Products

06.08.04 08.00-10.00 AM
Lecture:
Development of Marketing Plan: An Introduction
Analyzing Market Situation & Opportunities
10.30-12.00 AM
Group work:
G-1: Analyzing Market Situation & Opportunities for Afghanistan's Horticultural Crops
G-2: Analyzing Market Situation & Opportunities for Afghanistan's Cereals/Foodgrain crops
G-3: Analyzing Market Situation & Opportunities for Afghanistan's Livestock & Livestock Products
12.30 PM → Friday closed

07.08.04 08.00-10.00 AM
Group Work:
Group work continues: Groups prepare class presentations.
10.30-12.00 AM
Class presentation & discussion:
G-1: Analyzing Market Situation & Opportunities for Afghanistan's Horticultural Crops
G-2: Analyzing Market Situation & Opportunities for Afghanistan's Cereals/Foodgrain crops
G-3: Analyzing Market Situation & Opportunities for Afghanistan's Livestock & Livestock Product
12.30-02.00 PM

Lecture:
Mass-vs-Target Marketing, Segmentation-Marketing & Setting up of Marketing Goals

09.08.04 08.00-10.00 AM
Lecture:
Developing a Successful Marketing Strategy: Strategies for Individual Farmers-versus-Firms
10.30-12.00 AM
Lecture:
Market Entry & Marketing Strategies: General Marketing Strategies-versus-Entrepreneurial Marketing Strategies
12.30-02.00 PM
Group work:
G-1: Developing Marketing Strategies for Afghanistan's Horticultural Crops
G-2: Developing Marketing Strategies for Afghanistan's Foodgrains & Pulses
G-3: Developing Marketing Strategies for Afghanistan's Livestock & Livestock Products

10.08.04 08.00-10.00 AM
Group Work:
Group work continues: Groups prepare class presentations.
10.30-12.00 AM
Class presentation & discussion:
G-1: Developing Marketing Strategies for Afghanistan's Horticultural Crops
G-2: Developing Marketing Strategies for Afghanistan's Foodgrains & Pulses
G-3: Developing Marketing Strategies for Afghanistan's Livestock & Livestock Products
12.30-02.00 PM
Lecture:
Managing the Marketing Mix – 4Ms

11.08.04 08.00-10.00 AM
Lecture:
New Product Development: For Domestic/Export Markets
Participants take notes on new products/enlist new products
10.30-12.00 AM
Group work: Class presentation & discussion:
G-1: Enlisting New Horticultural Products for Afghanistan's Domestic & Export Markets
G-2: Enlisting New Foodgrains/Pulses Products for Afghanistan's Domestic & Export Markets
G-3: Enlisting New Livestock/Livestock Products for Afghanistan's Domestic & Export Markets
12.30-02.00 PM

	Lecture: Developing A Marketing Plan: Format Developing Marketing Plan for Afghanistan
12.08.04	08.00-10.00 AM Group work: G-1: Developing Marketing Plan for Afghanistan's Horticultural Crops G-2: Developing Marketing Plan for Afghanistan's Foodgrains & Pulses G-3: Developing Marketing Plan for Afghanistan's Livestock & Livestock Products 10.30-12.00 AM Group Work: Group work continues: Groups prepare class presentations. 12.30-02.00 PM Class presentation & discussion: G-1: Developing Marketing Plan for Afghanistan's Horticultural Crops G-2: Developing Marketing Plan for Afghanistan's Foodgrains & Pulses G-3: Developing Marketing Plan for Afghanistan's Livestock & Livestock Products
13.08.04.01	8.00 AM→ Course Evaluation & Concluding Ceremony

List of Participants
Course No: 0804 Post Harvest Management & Marketing Skill
(July 15 through August 16, 2004)

No	Name	Father Name	Date/ Birh	Age in year	Discipline	Govt. Department/NGOs/ Universities	Duty Station
1	Mujeburahman	Jan Bazkhan	1977	27	B.Sc. Agri Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
2	Sadullah	Hazrat Jan	1970	34	B.Sc. Nang Agr Faculty	Mini of Agri & Animal Husb	Kabul Province
3	Ezatullah	Besmillah	1973	31	B.Sc. Agr Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
4	Mohammad Daud	M. Akhtar	1975	29	B.Sc. Agr Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
5	Mohammad Azim	Mohammadagul	1982	22	B.Sc. Agr Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
6	Ali Raza	Ghulam Raza	1971	33	B.Sc. Agr Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
7	Ghulam Abbas	Mohammad Ali	1961	43	B.Sc. Agr Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
8	Mohamad Amin	Mohammad Ali	1968	36	B.Sc. Agr Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
9	Abdul Rahim	M. Hasham	1965	37	B.Sc. Agr Fac Kabul Uni	Mini of Agri & Animal Husb	Kabul Province
10	M. Daud Eliasi	Abdul Rasool	1975	29	B.Sc. Agri Fac Kabul Uni	Alberoni University	Kapisa Province
11	M. Agha Zia	M. Akbar	1970	34	B.Sc. Agri Fac Nang Uni	Fac of Agri Kandahar Uni	Kandahar Province
12	Abdul Aziz Sabir	Gheiasudin	1978	26	B.Sc. Agri Fac Kand Uni	Fac of Agri Kandahar Uni	Kandahar Province
13	Ghulam Hazrat	Ghulam Sakhi	1974	30	B.Sc. Agri Fac Balkh Uni	Fac of Agri Balkh Uni	Balkh Province
14	Ghulam Nabi	S. Mohammad	1961	43	M.Sc. Agri Bulgharia	Fac of Agri NangarharUni	Nangarhar Province
15	Mohammad Ismail				B.Sc. Agri Fac Kand Uni	Fac. Of Agri. Nangarhar Univ	Nangarhar Province
16	Nasratullah A. Zad					Fac of Agri Kabul Uni	Kabul Province
17	Khan Mohammad	Faiz Mohammad	1970	34	B.Sc. Agri Fac Kand Uni	Mini of Agri & Animal Husb	Kabul Province
18	Hamayoon	Ghulambahlol	1963	41	B.Sc. Agri Fac Kand Uni	Mini of Agri & Animal Husb	Kabul Province
19	Ghulam Farooq	Mir Akbar	1958	46	Diploma Agr Tashkent	Mini of Agri & Animal Husb	Kabul Province
20	Abdullah Haleem	Sayed Haleem	1971	33	B.Sc. Agri Fac Herat Uni	Fac of Agri Herat Uni	Herat Province

Faculty of Agri Kabul University= 1 Faculty of Agri Nangarhar University = 1 Faculty of Agri Balkh University=1
Ministry of Agriculture and Animal Husbandry = 13 Faculty of Agri Kandahar =2 Aberoni University = 1 Fac of Agri Herat = 1
Total Participants for Course No: 0904= 1+1+1+13+2+1= 20

COURSE EVALUATION
POST-HARVEST MANAGEMENT AND MARKETING SKILLS - 0804
HELD AT NWFP AGRICULTURAL UNIVERSITY, PESHAWAR
July 16 through August 13, 2004

Legend: A = Strongly Agree, B = Agree, C = Disagree, D = Strongly Disagree, E = No Opinion
No. of Respondents= 19

COURSE EVALUATION

No.		A	B	C	D	E
1.	The course was relevant to your professional responsibilities.	11	7	1	-	-
2.	The course improved your knowledge to a great extent.	8	11	-	-	-
3.	Enough time was given for classroom lecture/discussion.	14	5	-	-	-
4.	Enough time was given for field visits.	8	6	5	-	-
5.	Recent developments in research and latest knowledge of the subject were imparted.	9	10	-	-	-
6.	Problems and issues, which you usually encounter during your professional duties, were discussed during the course.	7	10	1	1	-

TRAINING METHODOLOGY

1.	Lectures were informative and very helpful in communication of knowledge.	8	10	1	-	-
2.	Group discussions and consultations with instruction provided an excellent opportunity for sharing of experience.	11	8	-	-	-
3.	Field visits provided the chance to see the problems as discussed in the classroom.	7	9	3	-	-
4.	Teaching Methodology was effective.	5	11	2	-	1
5.	Group discussions are more helpful than the lecture.	11	7	1	-	-
6.	Course duration was about right.	5	9	5	-	-

TRAINERS' PERFORMANCE

Give response about the trainer of the course through following statements:

1.	He has good knowledge of the subject.	16	2	-	-	1
2.	He presented the subject matter nicely and spoke clearly.	4	8	6	-	1
3.	He has the ability to relate subject matter with solutions of existing problems.	4	14	-	-	1
4.	He answered trainees' questions satisfactorily.	9	9	-	-	1
5.	His overall performance was good.	6	11	-	-	2

Suggestions for further improvement (if any):

- One month of course duration was insufficient. It should be increased.
- Training material should be translated in Dari language.
- Field visits should be increased.
- Course was relevant to my profession.
- Excursion trips should be arranged.

Report on maize production training for Afghan Research Trainees at Cereal Crops Research Institute Pirsabak, Nowshera from July 1 to 5, 2004.

Overview of Agronomic Research at CCRI, Pirsabak

The participants were given brief description about Maize Agronomy programme at CCRI Pirsabak. The following experiments are included in maize agronomy programme 2004.

1. Effect of planting time on growth and yield of different maize varieties.
2. Growth and yield responses of maize OPV's to different planting densities.
3. Effect and efficiency of pre and post-emergence herbicides application in maize.
4. Evaluation of maize varieties at low, recommended and high levels of fertility.
5. Enhancing yield and nitrogen use efficiency of cereals under conventional and no-tillage system.

They were informed about importance of date of sowing and various varieties grown at CCRI. They were practically shown how planting date effect disease and insect epidemics and how it contributes to grain and stover yield. They were also told that three groups of varieties were included in the date of sowing experiment, mainly short season, mid season and full season. They were shown how to layout an experiment of different sowing date along with different varieties. Field was prepared before them. They were informed about the importance of a good seed-bed preparation for maize. After harvesting of previous crop the land is irrigated. If there are weeds and stables from the previous crop, it is advisable to use disc harrow or rotavator for initial ploughing in the field. This will destroy the weeds and stables etc. Then irrigate the field and at proper moisture conditions use disc harrow or cultivator two or three times. The more the field is ploughed the higher will be the yield. First the land was ploughed with disc harrow and then two times with cultivator. Before ploughing fertilizer; Urea, Single Super Phosphate, and sulfate of potash was applied to date of sowing trial, plant density trial, and herbicide trial. For fertilizer and tillage trial the respective dozes of fertilizers will be applied accordingly. The participants were told about the importance of fertilizers in maize plant growth. Importance of soil analysis and organic matter was also discussed.
After this, ridges were made with the tractor driven ridger 75 cm apart. The rigdes were made fine with running of bed shaper on ridges. Lay out of the experiments was done along with research fellows and planting was started. After planting the date of sowing (3^{rd} date of sowing) herbicide (Primextra 500 FW) was sprayed as pre emergence on fresh sowing. Furadon 3% granules application was demonstrated in 1^{st} date of sowing (planted on 01/06/04). The participants complained about the epidemic of maize stem borer. They were told that it is safe to use Furadon 3% granules along with seed at the time of planting to avoid early stage attack of maize stem borer. Second doze of Furadon 3G may be applied when the plants are 2 feet high or one month after planting. It will give protection against maize stem borer. On commercial scale furadon application at the time of planting is very difficult. To overcome this problem cofidor seed dresser insecticides may be used @ 5 gm per kg of seed. The confidor powder is mixed with small quantity of water enough just to moisten the seed. Then it is mixed with the seed and thoroughly stirred. The insecticide will stick to the seed and will provide effective control against maize stem borer for 20-25 days after emergence. The other alternative is the practice of crop rotation. If someone have an other piece of land for maize planting, it will be wise choice to plant

maize crop on that piece of land on which maize crop has not been grown previously. Maize stem borer problem usually comes from monoculture (growing same crop on same piece of land every year). If the soil moisture condition at the time of planting is poor (usually it is very difficult to maintain proper moisture in the in the field in months of June and July) it is advisable to irrigate the field on 5^{th} day of planting. This will ensure good germination and proper plant stand can be established. Similarly the other experiments were also demonstrated practically to participants. The participants were involved in land preparation, fertilizer application layout and planting practically.

Maize Seed Production

Although in general, agronomic practices in maize seed production are usually similar to those used in producing a commercial grain of maize. However, there are some additional requirements to seed production. The value of a good seed is higher than that of grain. Therefore seed crop needs greater care and more inputs than a grain crop. Similarly seed yield obtained from a given cultivar in a given site very often produced different quality, in term of genetical quality (purity) physiological quality (viability and vigor) and physical quality (inert matter).

1. **Site selection:**

Production of certified maize seed would often require a field that is well drained. The land may be owned or leased but managed by commercial farmers as contract growers. Therefore an essential aspect of successful maize seed production is the selection of good growing areas and possibly contract growers.

Growing conditions:

It is important to select a site that will allow reproduction of all plants to reduce the risk of rapid shifts in the genetic make-up of a given variety. Lack of extreme temperatures, lack of extreme drought, and water logging that make severe to the crop, pest pressure etc should be avoided. Harvest time should be dry to minimize the cost of drying and reduce seed quality. Preference to plant in a field previously sown to another crop to reduce problem of a volunteer crops in order to reduce contamination that will reduce genetical quality of the seed. Consider field topography, soil fertility, weed population etc. The lower the fertility of filed the higher will be production cost. Similar trend to the weed population and slope. Find out the planting time and selection of variety in the neighboring field to avoid contamination of other varieties with-in the field or from the other fields. Therefore isolation either based on date of flowering or distance, should be properly determined. It should be important to consider during site selection to facilitate the delivery of inputs such as seed and fertilizers as well as to transport the harvested crop. It is very important to minimize the time period from harvesting to processing time. The longer the time between harvesting to processing /drying the higher opportunity of the seed to be lost in term of seed quality.

2. **Isolation:**

The cross-pollinated nature of maize, along with its abundant production of light and wind carried pollen, often time make it very difficult for seed procedures to avoid contamination. Proper isolation is essential to minimize contamination from undesirable pollen, in order to obtain genetically pure seed.

Isolation can be accomplished by three ways:

Seed producers say that best isolation is a perfect nick, that is when pollen parent start shedding just before silk emergence in the female parent.
The second one is proper distance between two varieties.
The third one is the time isolation. Planting may be done in different dates so that in one variety pollination is completed and in other pollination starts.

Factor affecting isolation distance:

Greatest contamination occurs within 50 to 75 meters of the contaminating maize.
Pollen from boarder rows dilutes contamination.
Natural barriers may reduce contamination.
Abundant supply of pollen from male parent at the right time reduces contamination.
The larger the field the less is the risk of contamination.
Direction from contaminating pollen and prevailing winds influence the amount of contamination.
Environmental conditions during pollination affect quality of seed produced.

Minimum Isolation distance:

The major factors affecting the standards for isolation distances are:
Whether the crop is a hybrid or open-pollinated variety.
Call of seed being produced (breeder, pre-basic, basic or certified).
The grain colour/texture of the contaminating maize.
The size of the seed production field.

The minimum isolation distance for pre-basic seed is 400 meter and 200 meter for basic seed production. In open-pollinated varieties seed production only in Breeder Nucleus Seed (BNS) and pre-basic class there is need for separate rows of male and female. The number of male rows depends on pollen producing ability of the male parent. If male is good pollinator the 1 male to 4 rows of female or 2 to 4 rows are planted.

Personnel:

Mr. Abdul Azim, Agronomist Maize
Mr. Manzoor Akbar Assistant Agronomist Maize
Mr. Zubair Shah, Research Officer

Report on Afghan Research Trainees at Cereal Crops Research Institute, Pirsabak Nowshera from 9th to 12th August 2004

Date of sowing trial:

The trainees were shown the various varieties sown on 1st, 15th June, 1st, 16th July and 1st August 2004. In the 1st June planting silking was almost completed in Pahari and Azam varieties while Jalal-2003 was in silking stage. They were told about the damage caused by hailstorm. The remedy measures taken for the control of damages is nitrogen application. The participants were informed that if short duration varieties are sown early there be a lot of barrenness in the plants as the pollination will take place in very hot weather. The 15th June planting was also in silking stage. The early varieties in the experiment started silking and they were told about the silking process. Furthermore, they were shown other dates planting, germination processes and weed control.

Herbicide trial

The pre–emergence herbicides are applied just after sowing in maize crop while the post emergence herbicide is applied when the plant has 4 to 6 leaves. The participants were showed how to apply the herbicides. First of all doze of each herbicide i.e. Primetra 500FW, Primextra Gold 730 EC, Dual Gold 960 EC calculated to participants. They were practically shown how to calculate doze for each sub-plot. The hand pump was filled with water and the water level was noted and only water was sprayed on a sub-plot. The amount of water used in a sub-plot was noted. This calibration is very essential for effective spray. If the amount of water used on a subplot is more or less this will affect the concentration of herbicides. If we use less water some area of the plot will be left without spray. If we use more water then the concentration of herbicides will be low and the desired result will not be obtained. After calibration the calculated amount of herbicides was thoroughly mixed in required amount of water. An important point to note is that one should not walk in area of the field that is sprayed. Because it will break the film made by herbicide on soil surface. The participants were informed about the economic benefits of the herbicides. Based on experimental results if you spend one rupee on chemical weed control, the benefit is five rupees. If you spend one rupee on manual weed control, the benefit is two rupees.

Fertilizer trial

The role on NPK and other nutrients is very important in maize production. As maize is a short duration crop and if the soil is not fertile enough to supply essential nutrients to the crop, yield is adversely affected. A fertile soil supplies nutrient requirements of the plants for high yield. Soil fertility evaluation is the process by which nutrient problems are diagnosed and the fertilizers, lime, soil management and amendments are made. Soil fertility level is different in different locations and soil types. Soil fertility depends on rate and kind of fertilizers used, yield, crop removal, rain fall, parent material, leaching, cropping system, nature of soil and soil management. The purpose of soil fertility evaluation is to obtain data on nutrient status chemical properties as basis for determining fertilizer needs and soil management to improve nutrient availability. Soil fertility evaluation can be done by nutrient deficiency symptoms and plant analysis. When the plant nutrients are not adequately supplied by the soil or are not utilized by

the crop, several physiological processes are affected causing plant to show physiological and morphological appearance that is different from normal, particularly when deficiency is severe. A more or less characteristics symptoms appear if the element is very deficient. The specific nutrient deficiency symptoms are produced using culture solutions, pot or field experiments. The pictures are taken and then pictures are compared with the appearance of plants in the field or with samples. Deficiency symptoms are grouped according to the plant affected (a) color changes in older leaves: N, P, K, Mg, Zn. (b) Deficiency symptoms in young leaves with death of terminal buds: Ca, Bo.
(c) Deficiency symptoms in young leaves with terminal bud alive: Fe, Mn, Cu, Mo, and Cl. This method has the following advantages (i) Experienced agronomist can identify the symptoms immediately (ii) It is very cheap. The disadvantages are (i) The deficiency of an element does not necessarily produces symptoms. There may be a hidden hunger zone where no symptoms are produced despite the fact that nutrient element is deficient to give top yield. (ii) Difficulty in identifying some symptoms (chlorosis). (iii) Nutrient deficiency symptoms are sometime relative i.e. sufficient at low level of another but become deficient when the other becomes abundant. Deficiency of one element may prevent the uptake of another element. It is very difficult to determine which is the cause or the effect. For example low P may cause N+K deficiency. (iv) Sometimes deficiency symptoms are similar to disease, pest or environmental problems. (v) When the deficiency is very severe, it appears in late stage of growth and it become too late to correct.

Plant Analysis: Determination of the nutrient content by chemical analysis of a plant part or whole plant at a selected stage of growth. Analysis data are expressed on dry matter basis.

Deficiency Symptoms

A seed has adequate supply of essential nutrient to support germination and seedling emergence in the absence of supplemental nutrition. The rate of germination or the rate of seedling emergence is not affected by nutrient availability. Plant nutritional problems rarely occur for several days after plant emergence. The type of nutrient deficiency symptom that develops depends on the function of nutrient in plant, mobility of nutrient with in the plant and the growth stage at which the deficiency occurs. Common deficiency symptoms are given below.
Chlorosis:- Yellowing, a common deficiency symptoms that may also be caused by other environmental stresses.
Interveinal Chlorosis: Commonly termed stripping, when leaf tissue between veins turns yellow while veins remains green.
Necrosis: Commonly termed firing, which is complete drying or death of plant tissue. It is usually begins on tips and edges of older leaves and also may be caused by drought, herbicides, diseases and foliar application of fertilizer.

Stunting: Reduced growth rate and/or shortened internodes, which may give a plant a stocky or weak spindly appearance.
Abnormal coloration: Red, purple, brown or abnormal dark green- reddish purple coloration caused by the pigment anthocyanin, which forms due to sugar accumulation.
Identifying the type of deficiency symptoms and its location on the plant and knowing some of the properties of the soil in which the plant is growing will aid in correctly diagnosing nutrient deficiency.
Nitrogen: Nitrogen deficiency causes the whole plant to be pale, yellowish green and have spindly stalks. V shaped yellowing on the tip of the leaves appears later. Because N is a mobile nutrient in the plant, yellowing begins on the older, lower leaves and progresses up the plant if the deficiency persists.
Phosphorus: Phosphorus deficiency is usually identified on young plants. Phosphorus is readily mobilized and translocated in the plant. Plants are dark green with reddish purple tips and leaf margins. Phosphorus deficient plants are smaller and grow more slowly than plants with adequate P.
Potassium (k): Potassium deficiency symptoms are first seen as a yellowing and necrosis of the leaf margins beginning on the lower leaves. If the deficiency persists, the leaf deficiency symptoms will progress up the plant, because K is mobile in the plant and is translocated from old to young leaves.

Factors affecting the growth of maize

Climatic factors: Precipitation (quantity and distribution) air temperature, base saturation, relative humidity, light, altitude, latitude, wind velocity and CO_2 concentration affect maize growth.
Soil Factors: Organic matter (quantity) texture, cation exchange capacity, Base saturation, slope, topography, soil temperature, soil management (tillage, drainage soil depth and structure).
Crop Factors: Species variety, planting date, seeding rate, row spacing, seed quality, evapotranspiration, water availability, nutrition, pests, diseases weeds, harvesting time etc.

Major factor affecting crop growth: Environmental factors non-controllable under field conditions: Temperature, Radiant energy, composition of air, soil air composition,
Environmental factors controllable under field conditions: Moisture, soil structure, soil pH, biotic factors, nutrients, growth restricting substances.

Implication of growth attained in different environments:

a) Plant is a product of its genetic make up and the environmental factors.
b) With the same variety and constant genetic composition grown in different places, crop growth becomes a function of the different environmental factors. Their amount and combinations determine the growth and yield of the crop.
c) The fairly constant genetic make-up set the limit of growth or maximum possible growth under favorable or unfavorable conditions. The potential yield controlled by genes.

Genetic Factor: It controls the mechanism for the synthesis of enzymes and compounds that affect biochemical and physiological processes. This affects adaptability, yield, and resistance to adverse environmental conditions. Yield differences result in different nutrients uptake or

removal. Higher yield remove more nutrients resulting in faster depletion and deterioration. This needs replenishment of nutrients in the soil.

AGENDA

Afghanistan-Pakistan Training (APT) Group Meeting
Wednesday, July 28 in 350A ERML

10:00 to 10:30 am Assemble (coffee and pastries)

10:30 am Greetings: Steve Pueppke, Director, ACES Global Connect

1. Review of short courses completed since January meeting
2. Photos taken during courses in Kabul and Peshawar
3. Specialized training and "twinning" progress
4. Progress on degree (M.Sc. level) training
5. June 8 meeting with RAMP Management in Chemonics
6. Relationship between UIUC/SIUC and the NWFP-AU
   a. Renewal of the Memorandum on Understanding
   b. Status of the AU Strengthening Proposal submitted to AID/Islamabad in December 2003
   c. Possible Illinois visit by the AU Vice Chancellor
7. Review of Job Order submitted to RAMP in January 2004 and APT suggestions on content of the next job order
8. Thoughts from the Field Office Director
9. Recommendations and input that Jeff Dawson and Earl Kellogg will carry to the August 11 IALC Board of Directors and Technical Advisory Committee meetings
10. Other items contributed by APT members

2:30 pm Adjourn