

First Annual Report

May 2005 – June 2006

Project: Better crop germplasm and management for improved production of wheat, barley and pulse and forage legumes in Iraq

Project number:	CIM/2004/024
Project title:	Better crop germplasm and management for improved production of wheat, barley and pulse and forage legumes in Iraq
Period covered by this report:	01 May 2005 – 30 June 2006

PROJECT DETAILS (PUBLIC CIRCULATION VIA WWW.ACIAR.GOV.AU)

1. PROJECT OBJECTIVES (PUBLIC CIRCULATION VIA WWW.ACIAR.GOV.AU)

No revisions

2. PROGRESS SUMMARY (PUBLIC CIRCULATION VIA WWW.ACIAR.GOV.AU)

The implementation of the project has been and remains difficult given the political and security situation in Iraq. There have been changes in MOA Minister (twice) and MOA Coordinator, a referendum and election, and land disputes and security concerns, which have meant that no planned activity has been possible in Tel Afar and Al Rashidya research stations. The MOA project co-ordinator, Dr Awad Abbas, DG of the State Board of Agricultural Extension was assassinated in Baghdad after returning from the September 2005 planning meeting at ICARDA, which was a severe setback, although his replacement, Dr Saleh Bader, DG of the State Board of Research, is providing excellent support. There has been severe violence and bombings in Mosul and Tel Afar, where much of the project activity is located, which has made it difficult and dangerous for project personnel in both the office and field – these problems have escalated considerably since the start of the project. Another constraint is that in-country field visits by ICARDA and Australian collaborators for planning, implementing and checking the work are not possible.

Despite these difficulties, the project has gone remarkably well since commencement on 1 May 2005. This has been facilitated by the enthusiasm, flexibility and dedication of Iraqi collaborators, the proximity of ICARDA, and the interest and support of ICARDA and Australian scientists. There have been two major planning meetings at ICARDA in July and September 2005, which were well attended by Baghdad, Mosul, ICARDA and Australian scientists. A major baseline survey of 260 farm families has been undertaken and is being analyzed and evaluated by University of Mosul, MOA Baghdad and ICARDA socio-economists, the former introduced as collaborators after the project commenced. The Ninevah Implementation Committee, set up by MOA to manage the project, has met and produced minutes from 18 meetings which discussed and coordinated the Iraqi activity. The agreed workplan for the demonstration program has been carried out at 13 locations in the four main agroclimatic zones as planned. However, because of heavy rain, security concerns, land disputes and transport shortages, it was only possible to undertake 30 of the 80 planned research trials evaluating better adapted lines/varieties. The agreed training program at ICARDA for 23 Iraqi scientists was exceeded. Capital purchase of zero-till seeders was completed and seed cleaning plants are under way. Operational funds were transferred to all partners. This is detailed below.

Activities were initiated and facilitated through three major meetings to identify “best-bet” varieties and technologies for demonstrations and varieties/lines and technologies for further research. These meetings were held at ICARDA in June 2005 with ICARDA scientists, in July 2005 with ICARDA and Iraq scientists, and in September 2005 with ICARDA, Iraqi and Australian scientists. Much of the discussion was based on previous experience by collaborators in Iraq and in similar environments in north-east Syria.

To provide background and a base for future impact assessment, a baseline survey was developed and

conducted with 260 farmers in July/August 2005 by MOA and University of Mosul socio-economists, which characterized the dryland environments and farming systems in Ninevah and identified constraints. Preliminary results were collated and presented at the September 2005 planning meeting to help guide selection of crop varieties and technologies for testing/promotion.

Varieties and technologies of interest identified in these meetings and the baseline survey were incorporated into a detailed 2005/06 workplan prepared at the September 2005 meeting, which formed the basis of trials and demonstrations undertaken in 2005/06. ICARDA and Australia provided seed for trials and demonstrations based on this evaluation and workplan.

On-farm demonstrations of improved varieties were conducted as planned in the following locations:

High Rainfall Areas: Al Shekhan, Rabiah, Al Kosh
Medium Rainfall Areas: Al Hamdaniah, Tel Keyf, Basheeka, Al Namroud
Low Rainfall Areas: Tel Abta, Al Hadar, Al Mahlabiah
Supplementary Irrigation: Rabiah, Al Namroud, Humeysat

Best-bet technologies and new lines/varieties were tested and demonstrated at these sites in a participatory manner with farmers. Experiences were also promoted more widely amongst farmers through field days at each of the demonstration sites. Many farmers were interested in some of the improved varieties which seemed to perform better than farmer varieties. Dissemination will be encouraged through distribution of seed from the demonstrations/trials to interested farmers for planting in 2006/07.

Planned demonstration trials on crop management issues such as tillage (farmer practice vs modified tillage), fertilizers (recommended and reduced rates of N and P), weed control (plus and minus herbicides) were not conducted because of heavy rain, security concerns, land disputes, lack of machinery and transport shortages; it is planned to conduct them in 2006/07.

Research trials evaluating better adapted lines/varieties of the project crops were planned at ten locations: Rabiah (HRA), Al Kosh (HRA), Al Rashidya (MRA), Baashika (MRA), Telkeyf (MRA), Al Namroud (MRA), Bartala (LRA), Al Hadar (LRA), Tel Abta (LRA), Tel Afar (LRA). However, it was only possible to conduct 30 of the planned 80 research trials as listed below. Many trials could not be established because of heavy rain, security concerns, land disputes and transport shortages. This was disappointing although the plan was very ambitious; it is planned to conduct them in 2006/07.

- Wheat: 6 of 14 planned durum/bread wheat experiments conducted at Al Rashidya research centre
- Barley: 5 of 17 planned experiments conducted at Al Rashidya and Al-Hadar
- Chickpea: 14 of 16 planned research experiments conducted at Al Rashidya, Bartala and Al-Kosh
- Lentil: 4 of 8 planned experiments conducted at Al Rashidya and Bartala
- Faba bean: 1 of 9 planned experiments conducted at Al Rashidya
- Forage legumes: 16 forage legume experiments could not be planted because of heavy Jan-Feb rains.

In project-linked research at ICARDA, a range of varieties/lines of oats, peas, canola and other oilseeds (*Brassica napus*, *B. juncea*, *B. carinata*, *B. rapa*, *camelina sativa*, *C. abyssinica*, *Sinapis alba*, *Linum usitatissimum*) from Australian collaborators was introduced and tested for adaptation and use in Iraq. Some varieties grew and seeded very well. The trial was inspected and discussed with several groups of visiting Iraqi scientists and seed was collected for broader testing of material of interest in Iraq and ICARDA in 2006/07.

Demonstrations and trials have been harvested and measured and data collected, analyzed and evaluated. Reports are being prepared and will be presented at the September 2006 annual reporting/planning meeting at ICARDA.

The project has re-established international linkages amongst Iraqi, ICARDA and Australian scientists. Twenty six Iraqi scientists have participated in six ICARDA training courses, and there were several other visits by MOA/DOA scientists to discuss and plan project activities. Australian collaborators presented four seminars in the September 2005 planning meeting on advances of relevance to Iraq in cereal and legume improvement, crop management and crop-livestock interactions in Australia.

Lists of priority items for capital purchase were discussed and developed between MOA and ICARDA according to the agreed budget. Four zero-till seeders from India were purchased, with three sent to DOA Mosul in May 2006 and one kept at ICARDA for project research and training. Specifications and prices for high-priority seed cleaning equipment were obtained – MOA/DOA are still considering the most appropriate machines for purchase.

There were major delays with dispatch of the budget to Iraq. Fortunately, fund transfer delays did not affect technical progress and the extensive 2005/06 demonstration and research programs were implemented with a special allocation of funds from MOA, support with fertilizers and time/money from farmers, and willing contributions of vehicles and time from DOA staff. The fund transfer issue was eventually solved and the first-year Iraq operational funding was transferred to the MOA Baghdad Bank in June 2006.

3. PROJECT IMPACTS (NOT FOR PUBLIC CIRCULATION)

Community impact

Participating farmers at the 13 demonstration locations have been impressed with the performance of some new varieties of tested crops and expressed interest in obtaining seed for planting in 2006/07.

Capacity impact

Twenty four Iraqi scientists undertook short-term training and increased their capacity in the following areas: Seed enterprise development and management; Chemical and Physical Soil Analysis; Insect taxonomy, anatomy and biological control; Plant taxonomy/herbarium/seed bank management; Analysis of feed stuffs; and Experimental designs, data analysis, field plot techniques, scientific writing, and data presentation.

4. PROJECT MANAGEMENT (NOT FOR PUBLIC CIRCULATION)

4.1 Progress towards prescribed outputs in project document

1. To identify, promote and widely disseminate among farmers in the rainfed cropping regions of northern Iraq “best-bet” improved varieties and crop management systems for wheat, barley and pulse and forage legumes.

1.1 Constraints/limitations in rainfed crop production identified through diagnostic study of farmers' existing practices.

A baseline survey was developed and conducted with 260 farmers in July/August 2005 by MOA and University of Mosul socio-economists, which characterized the dryland environments and farming systems in Ninevah and identified constraints. This will provide a base for later impact assessment. Preliminary results were collated and presented at the September 2005 planning meeting to help guide selection of crop varieties and technologies for testing/promotion. Analysis has proceeded with several visits of MOA and the University of Mosul socio-economists to ICARDA. The final results and report will be presented at the annual reporting/planning meeting at ICARDA in October 2006.

1.2 Available “best bet” technologies identified and prioritized based on existing knowledge.

There was a major effort to discuss and identify best bet varieties/lines and technologies for testing in demonstrations and research trials in the 4 target agro-climatic zones: high rainfall areas (HRA), medium rainfall areas (MRA), low rainfall areas (LRA), supplementary irrigation (SI). This was done at three major meetings held at ICARDA in June 2005 with ICARDA scientists, in July 2005 with ICARDA and Iraqi scientists, and in September 2005 with ICARDA, Iraqi and Australian scientists. Much of the discussion was based on previous experience by collaborators in Iraq and in similar environments in north-east Syria.

During the July 2005 inception meeting, discussion was stimulated by presentations from Iraqi scientists as follows:

- agricultural extension in Iraq	Dr Awad Abbas, MOA Baghdad
- agricultural research in Iraq	Dr Saleh Mahdi, MOA Baghdad
- seed production in Iraq	Dr Nakd Khamis, MOA Baghdad
- agriculture in Ninevah	Dr Abdul-Satar Alrajbu, DOA Ninevah
- agricultural research in Ninevah	Dr Adnan Adary, DOA Ninevah
- agricultural extension in Ninevah	Dr Faod Abdullah, DOA Ninevah

During the September 2005 planning meeting, Dr Adnan Adary also presented a review of the crop R&D situation in Ninevah.

Varieties and technologies identified in these meetings were incorporated into the 2005/06 workplan prepared at the September 2005 meeting, which formed the basis of trials and demonstrations undertaken in 2005/06. The seed supplied to Iraq from ICARDA and Australia for trials and demonstrations was based on this evaluation and workplan.

The September 2005 discussion stimulated agreement to prepare a review of experiences and literature on rotations and sowing dates/rates in Ninevah/Iraq by Dr. Kasim Khalil Kasim of DOA Iraq. A preliminary report dated 1 June 2006 on crop rotation experience in Ninevah was drafted and circulated to all project collaborators. This needs further input and editing. It will be discussed and used in the annual

reporting/planning meeting in October 2006.

1.3 On-farm demonstrations established.

On-farm demonstrations of improved varieties were conducted according to the workplan in 3-4 locations per environment as follows:

High Rainfall Areas: Al Shekhan, Rabiah, Al Kosh
Medium Rainfall Areas: Al Hamdaniah, Tel Keyf, Basheeka, Al Namroud
Low Rainfall Areas: Tel Abta, Al Hadar, Al Mahlabiah
Supplementary Irrigation: Rabiah, Al Namroud, Humeysat

- Demonstrations were up to 1ha in farmer fields with farmer/researcher input to management/evaluation
- All demonstrations included 2-3 best-bet lines of each of the cereals (bread wheat, durum wheat, barley) and legumes (chickpea, lentil, faba bean, forage vetch)
- Soil samples were collected from these sites and analysed at the MOA laboratory for soil analysis. Results will be reported and presented at the October 2006 meeting
- Most crops were sown in December 2005/January 2006, although some in the high rainfall areas were delayed until February/March 2006 because soils were too wet
- Establishment and growth of all crops was excellent. Urea (100kg/ha) was applied to cereal crops
- Regular inspections/observations and necessary management (weeding, pest control) were undertaken
- Plots were signposted and field days conducted at all sites
- Harvesting commenced in June and was undertaken in the presence of DOA scientists. Yield data is being prepared and will be reported at the October 2006 meeting
- Harvested seed was saved for 2006/07 trials, demonstrations and distribution to new farmers. Depending on the quantity of seed saved and the requirements for the demonstration/research program agreed at the October 2006 planning meeting, ICARDA will consider supply of extra seed.

Planned demonstration trials on crop management issues such as tillage (farmer practice vs modified tillage), fertilizers (recommended and reduced rates of N and P), weed control (plus and minus herbicides) in at least three locations in each agro-climatic zone (HRA, MRA, LRA) were not conducted because of heavy rain, security concerns, land disputes, lack of machinery and transport shortages; it is planned to conduct them in 2006/07.

Demonstrations were implemented and managed under the Ninevah Implementation Committee (NIC), which was established by MOA under the designated Project Director, Dr. Abdul-Sattar Asmair Alrajbu, Director of Ninevah DOA. The NIC met in Mosul 18 times between 29 July 2005 and 17 May 2006 to monitor, direct and report on the demonstration program. Minutes were circulated from these meetings.

1.4 Potential constraints to adoption identified.

The baseline survey and farmer responses to demonstrations will provide guidance on potential constraints to adoption and also indicate attractive technologies for further promotion. This will be discussed at the October annual meeting to guide demonstration and promotion activities in 2006/07.

1.5 Acceptable technology packages promoted and disseminated.

Best-bet technologies and new lines/varieties were tested and demonstrated in 13 locations in a participatory manner with farmers. Experiences were also promoted more widely amongst farmers through field days at each of the demonstration sites. Many farmers were interested in some of the improved varieties which seemed to perform better than farmer varieties. Dissemination will be encouraged through distribution of seed from the demonstrations/trials to interested farmers for planting in 2006/07.

1.6 Assessment of potential adoption and impact

Given that this is the first year of project trials and demonstrations, there is not yet adoption or impact of best-bet technologies.

2. To introduce, evaluate and select improved germplasm of wheat, barley and pulse and forage legumes for adaptation to rainfed farming systems in northern Iraq

- ### 2.1
- Cultivars of these crops that produce higher yields and/or better satisfy local market requirements through better disease resistance, drought tolerance, bread quality characteristics, etc., identified and evaluated with farmers at research stations and in farmers' fields.

Research trials evaluating better adapted lines/varieties of the project crops were planned at ten locations: Rabiah (HRA), Al Kosh (HRA), Al Rashidya (MRA), Baashika (MRA), Tel Keyf (MRA), Al Namroud (MRA), Bartala (LRA), Al Hadar (LRA), Tel Abta (LRA), Tel Afar (LRA). However, it was only possible to conduct 30 of the planned 80 research trials as listed below. This was disappointing although the plan was very ambitious. Where trials were postponed until 2006/07, this was because of heavy rain, security concerns, land disputes and transport shortages.

- Wheat: 6 of 14 planned durum/bread wheat experiments conducted at Al Rashidya research center
- Barley: 5 of 17 planned experiments conducted at Al Rashidya and Al Hadar
- Chickpea: 14 of 16 planned research experiments conducted at Al Rashidya, Bartala and Al Kosh
- Lentil: 4 of 8 planned experiments conducted at Al Rashidya and Bartala
- Faba bean: 1 of 9 planned experiments conducted at Al Rashidya
- Forage legumes: 16 forage legume experiments could not be planted because of heavy Jan-Feb rains.

Research trials were implemented and managed under the direction of Dr Adnan Adary, Head of the Department of Research, MOA Ninevah. The Ninevah Implementation Committee (NIC) monitored and reported on the research program at its regular meetings during the year.

2.2 Efficient production systems of the seed needed in research and demonstrations established.

This was commenced in several ways. Firstly, required seed for 2005/06 research and demonstrations was agreed at the September 2005 planning meeting. This seed (16 tonne) was prepared, tested and supplied by road from ICARDA to DOA Mosul. This was a good demonstration of the planning and logistics needed to support a good, functional seed production system. Secondly, three scientists from Ninevah State Board for Agricultural Resources and the State Board for Seed Inspection and Certification attended a seed management course in ICARDA in November 2005 and are assisting in the development of seed production systems in Ninevah and more widely. Seed harvested from 2005/06 trials/demonstrations will be part of this system for Ninevah and is being stored for 2006/07 activities. Thirdly, the project is purchasing and will provide training for mobile seed cleaners which will support the development of efficient seed production systems for MOA and farmers in Ninevah.

3. To identify, evaluate and select improved cropping system management options suited to rainfed farming systems in northern Iraq.

3.1 Specific production constraints, identified under Output 1.1, for which there are no immediate available technologies are identified and prioritized.

Potential research areas identified with Iraqi partners in the 2005 planning meeting and other discussions were tillage and sowing systems (especially zero-tillage), pest and weed management, and new crop rotation options (especially oilseeds, oats, peas).

3.2 New crop management options that solve these constraints identified, tested and evaluated with farmers.

Planned research trials in Iraq on conservation tillage (cultivation vs zero tillage, plus and minus stubble mulch) could not be conducted because of the lack of zero-tillage machinery. With the supply of three small Indian zero-till seeders in 2006, it is planned to conduct these trials in 2006/07. Sowing date/rate trials and long-term rotation trials were discussed in the September 2005 planning meeting but were targeted for the 2006/07 cropping season following the review of literature and past experience.

Several demonstrations comparing zero-tillage and conventional cultivation with chickpea on wheat stubble and wheat on chickpea stubble were conducted at ICARDA. These showed promise with zero-till technology. Yields of zero-till versus conventional cultivation were 1.5 vs 1.0 for wheat on chickpea stubble and 1.0 vs 0.4 for chickpea on wheat stubble. These demonstrations, and the operations of the new Indian zero-tillage seeder, were shown and discussed with the Iraqi group of district supervisors attending the statistics training course. Further long-term trials and demonstrations of zero-till will be established at ICARDA and in Iraq in 2006/07.

Seed of a range of varieties/lines of oats, peas, canola and other oilseeds (*Brassica napus*, *B. juncea*, *B. carinata*, *B. rapa*, *Camelina sativa*, *C. abyssinica*, *Sinapis alba*, *Linum usitatissimum*) with potential for adaptation and use in Iraq was received from Australian collaborators, checked for pests and diseases, and planted in late November in a quarantine area at ICARDA. Some varieties of oat, pea, canola, Indian mustard, Ethiopian mustard, turnip rape, camelina, white/English mustard, and linseed grew and seeded well. The trial was shown and discussed with several groups of visiting Iraqi scientists and seed was collected for 2006/07 testing of material of interest in Iraq. Results will be presented at the September 2006 meeting.

4. To enhance the capacity of Iraqi research and extension programs to identify and evaluate potentially valuable germplasm and better crop/soil management technologies and promote their adoption by

farmers

4.1 Enhanced capabilities of Iraqi research program through joint research and specialized training programs.

Twenty-six Iraqi scientists took part in six training courses conducted at ICARDA. Details are listed below under Section 4.5. This was more than the 22/23 trainees identified and budgeted for in the Project Document.

4.2 Research and extension staff are better able to promote and disseminate new technologies in partnership with farmers.

Iraqi staff capability to plan and implement a program to identify, demonstrate and disseminate new technologies has been enhanced through involvement in planning and conducting the research and demonstration activities. They have received good guidance from ICARDA and Australian scientists but, because of their isolated situation, have been completely responsible for implementation. This has encouraged communication and innovation.

4.3 Enhanced capabilities in evaluating adoption and impact of improved technologies.

Four Iraqi socio-economists from the University of Mosul and MOA Baghdad have collaborated in the baseline survey. This involved several visits to ICARDA to design the questionnaire, plan the survey, analyse data, interpret the information and prepare the report. This has been excellent training. This will be on-going with further data collection to assess uptake and impact and with publication of results.

4.4 Effective international collaborative networks between Iraqi, ICARDA and Australian institutions and scientists.

The project has re-established close contact between ICARDA and Iraqi scientists, with regular visits and participation by 24 Iraqi scientists in 6 training courses, and several other visits by MOA/DOA scientists to discuss and plan project activities.

The project provided an opportunity for all partners to get together at the September 2005 planning meeting. Australian participants presented 4 seminars sharing experiences of relevance to Iraq on advances in cereal and legume improvement, crop management and crop-livestock interactions in Australia with Iraqi and ICARDA participants. The seminars were as follows:

- A decade of research on cool season grain legumes in dryland environments of Australia: Lessons learned - Professor Kadambot Siddique, Director, CLIMA, UniWA
- Cereal improvement in Australia – Dr Reg Lance, Barley Breeder, AgWA
- New horizons for farming systems suited to Southern Australia – Dr David Coventry, Professor of Sustainable Agriculture, UniAdelaide
- The benefits and challenges of crop-pasture-livestock integration in Australian agriculture - Professor Kadambot Siddique, Director, CLIMA, UniWA

A further opportunity to promote collaborative networks could not be taken when the planned visit of 6-8 weeks by a young Iraqi scientist to the Sustainable Agriculture group at Roseworthy campus of Adelaide University to undertake training on conservation cropping (zero-tillage, stubble mulching) was postponed due to nomination difficulties in MOA Baghdad. This visit, along with others to CLIMA and AgWA, will now probably take place in 2007.

4.2 Describe any variations to activities scheduled in the flow chart [§3.3a] of the project document

The planned study visit in early 2006 by a young Iraqi scientist to the Sustainable Agriculture group at the Roseworthy campus of Adelaide University to undertake training in conservation cropping was postponed because of nomination difficulties in MOA Baghdad. This visit will now hopefully take place in 2007.

4.3 Project personnel changes

Dr Awad Abbas, the Project Coordinator and Director General of Extension in the Ministry of Agriculture in Iraq, was killed in Baghdad two days after returning from the 4-8 September 2005 planning meeting at ICARDA. This

has been a major setback. Dr Awad helped greatly in the first 6 months facilitating understanding and commitment to the project in MOA during a change of Minister and obviously difficult and disruptive times. He was an active participant in workplan meetings in July and September and contributed greatly to developing manageable workplans and identifying suitable locations and staff in the Ninevah Governorate. Dr Saleh Bader (Director General Agricultural Research) has taken over Baghdad coordination responsibilities.

The Iraqi MOA and collaborators set up a national MOA technical committee, and established a Ninevah Implementation Committee (NIC), in May-October 2005. Dr. Abdul-Sattar Asmair Alrajbu, Director of Ninevah Agricultural Directorate, was designated as the Project Director. The NIC met in Mosul several times a month during the year to implement and monitor the research trials at/near the Tel Afar, Rabia and Al Rashidya Research Stations and the demonstrations in three locations in each of the high, medium, low and supplementary irrigation zones.

The College of Agriculture and Forestry of Mosul University was added as a collaborator to the project with the responsibility of undertaking baseline survey and impact studies. Involved scientists are Dr Salem Younes Ismail Al-Niamey and Dr Emaad Yousif Ismail Abdullah Al Abaali. They are working in collaboration with Mr Saad Hatem Mohamed and Mr Wathik Abdul Kadar Abdullah from the State Board of Agricultural Research MOA Baghdad). The socio-economic work will help direct research efforts and evaluate project outcomes and impacts.

Dr. Peter White, who had been included as a CLIMA-AgWA pulse agronomist in the project (5%), has been transferred to the lupin program within CLIMA/AgWA. He was replaced by Mr. Mark Seymour, also a pulse agronomist.

4.4 List of publications, communications and dissemination activities

The project has produced the following internal project reports:

Minutes of the ACIAR CIM/2004/024 Iraq Project Inception Meeting, 2 June 2005, ICARDA, Aleppo, Syria, 7pp.

Report of the Project Planning Meeting, 10-14 July 2005, ICARDA, Aleppo, Syria, 16pp.

Minutes and 2005/06 Workplan, Project planning meeting, 4-8 Sept 2005, ICARDA, Aleppo, Syria, 22pp.

Kasim, Kasim Khalil (2006) Review of background information on crop rotation under the rainfall conditions in North of Iraq. Internal project report, ACIAR project CIM/2004/024 Better crop germplasm and management for improved production of wheat, barley and pulse and forage legumes in Iraq. June 2006, 6pp.

4.5 Training activities

ICARDA training

The following six short-term training courses were held at ICARDA with a total of 26 participants from Iraq. Courses and participants are listed below. Funding was provided by the project.

- 1) Seed enterprise development and management, 13-24 November 2005. Three (3) trainees:
 - a) Mr. Diyab Ahmed Khasim, Director, Crop Section, Department of Ninevah State Board for Agricultural Resources
 - b) Mr. Mohammad Wali Thijeel, Director, Salas Addin Branch, State Board for Seed Inspection and Certification
 - c) Mr. Alaa Hassan Mohammad, Director, Qadisiyah Branch, State Board of Seed Inspection and Certification

As well as seed management training, the trainees were able to interact on the purchase of seed cleaning plants for Mosul requested by the Minister and MOA from the project Capital allocation, as well as interact and develop links with scientists from other countries such as Afghanistan, Syria, Pakistan and Yemen.

- 2) Chemical and Physical Soil Analysis: 23-27 April 2006. Ten (10) trainees:
 - a) Mr Mahana Fadel Taha Altek, Supervisor, Soil and Plant Lab, Ninevah Agricultural Directorate
 - b) Mr Saady Raouf Yacoub, Soil and Plant Lab, Ninevah Agricultural Directorate
 - c) Mr Zuhair Hamed Ali, Soil and Plant Lab, Ninevah Agricultural Directorate
 - d) Ms Maysoun Baker Marie, Soil and Plant Lab, Ninevah Agricultural Directorate
 - e) Ms Hanan Abdul-Wahed Ali, Soil and Plant Lab, Ninevah Agricultural Directorate

- f) Dr Saad Dawoud Taha, Supervisor, Soil and Water Lab, Agricultural Research Department, Ninevah
- g) Mr Ali Jasem Mohamed, Soil and Water Lab, Agricultural Research Department, Ninevah
- h) Mr Kohshfi Mohammed Mahmoud, Soil and Water Lab, Agricultural Research Department, Ninevah
- i) Mr Zuhair Younes Sharif, Soil and Water Lab, Agricultural Research Department, Ninevah
- j) Ms Ahlam Ghanem Mohamed, Soil and Water Lab, Agricultural Research Department, Ninevah

3) Insect taxonomy, anatomy and biological control: 23 April 23-4 May 2006. One (1) trainee:

- a) Mr Mutaz Mohamed Sadiq, Protection Laboratory/Insect Museum, Ninevah Agricultural Directorate

4) Plant taxonomy/herbarium/seed bank management: 7-11 May 2006. Completed – 2 participants:

- a) Dr Kasem Khalil Kasim, Director of Research, MOA, Rashidia Research Station, Ninevah
- b) Mr Salou Sito Murad, Agricultural Directorate of Ninevah

5) Analysis of feed stuffs including microbiological tests for feed and food stuffs: 11-22 June 2006. Two (2) trainees:

- a) Dr Noura Jan Thomas, Livestock Laboratory, Agricultural Directorate of Ninevah.
- b) Ms Maha Hamadallah Malallah, Livestock Laboratory, Agricultural Directorate of Ninevah

6) Experimental designs, data analysis, field plot techniques, scientific writing, and data presentation: 25 June - 6 July 2006.

Eight (8) trainees, all from Ninevah DOA, mostly leading the agricultural directorate and sections in locations in Ninevah where the project has research and demonstration activities:

- a) Mr Jafaar Sideeq Saeed – Deputy Director, DOA, Mosul
- b) Mr Sabah Abalhed Elias – Al Hamdania Agricultural Section
- c) Mr Fares Younes Dawoud – Humeysat Agricultural Section
- d) Mr Hasan Ali Mohamed – Rabiah Agricultural Section
- e) Mr Amir Hamdoun Shehab – Tel Afer Agricultural Section
- f) Mr Sami Ibrahim Moustafa – Al Kosh Agricultural Section
- g) Mr Hazem Aziz Saleh – Observation Section, Mosul
- h) Mr Adel Abdul Wahab Ezzeldin – Mechanisation Section, Mosul

These trainees spent a half-day with the ICARDA Farm/Agronomy groups inspecting and discussing zero-tillage work and seeing a demonstration of the recently-purchased National Agro-Industries zero-till seeder. This will help them assemble and operate the three similar seeders supplied to Ninevah for zero-till research and demonstrations. This will assist establishment of zero-till trials and demonstrations in the 2006/07 cropping. They also participated in a half-day discussion on project operations and plans with ICARDA scientists involved in the project, especially concerning performance of crops in 2005/06 demonstrations and the October 2006 reporting/planning meeting.

Australian training

There was some confusion on a nominee for the 6-week autumn visit to Adelaide University to study crop establishment (zero-tillage, stubble mulching) with Professor David Coventry. Four persons were nominated in April 2006 by Dr Subhi M Al Julaily, Deputy Minister, Department of Relations, MOA, Baghdad. This was not in accordance with the project plan or budget. MOA was requested to reconsider and nominate several suitable candidates from Ninevah with good English, MSc or PhD qualifications, and expected continuing involvement on crop research. In May, as the Australian cropping season had started, it was agreed to postpone the Australian training until May-June 2007. MOA will propose some names with CVs, according to the criteria requested, for discussion at the October 2006 meeting.

4.6 Intellectual property

None

4.7 Current or potential research or logistical problems

Implementation of the project has been and remains difficult given the political and security situation in Iraq. There have been changes in the Minister of Agriculture (twice) and MOA Coordinator, a referendum and election, and land disputes and security concerns affecting 2 of the 3 research stations targeted for activity which are on-going and have meant that no activity has been possible in Tel Afer and Al Rashidya. Our MOA project co-ordinator, Dr Awad Abbas, was assassinated in Baghdad after returning from the September 2005 planning meeting at

ICARDA, which was a severe setback, although his replacement, Dr Saleh Bader, DG of the State Board of Research, is providing active support. There has also been severe violence and bombings in Mosul and Tel Afar, where much of the project activity is located, which makes it difficult and dangerous for project personnel in both the office and field – these problems have escalated considerably since the start of the project. Another constraint is that in-country field visits by ICARDA and Australian collaborators for planning, implementing and checking the work are not possible.

There were major delays with dispatch of the budget to Iraq. The US\$5000 cash advance to MOA/DOA (Dr Abdul Sattar Al Rajbu) provided during the ICARDA planning meeting of September 2005 was reportedly banked but not released. There were extensive efforts over the period September 2005 to June 2006 to establish workable fund transfer procedures through the MOA and Ministry of Finance. Fortunately, fund transfer delays did not affect technical progress and the extensive 2005/06 demonstration and research programs were implemented with a special allocation of funds from MOA (ID25 million = US\$17,000), fertilizer and time/money support from farmers, and willing contributions of vehicles and time from DOA staff. The fund transfer issue was eventually solved with the visit of an accountant team from DOA Mosul (Mr. Thanoon Mohammed Younis Ismail, project auditor; Mrs. Hayfa Sultan Jasim, project accountant; Mrs. Amerra Abdul-Fattah Abdul-Majeed, project curator) to ICARDA on 24-29 June 2006. They interacted extensively with ICARDA's Finance department to acquit funds already advanced from the MOA Baghdad for project operations and establish a secure system approved by the MOA Minister to transfer project funds to MOA/DOA Iraq. This was achieved and the balance of the first-year Iraq operational funding of A\$60,000 (US\$43,754.10) was transferred to the MOA Baghdad Bank via the ICARDA office in Amman, Jordan, on 28 June 2006.

The purchase of capital items is taking considerable time but it has not been possible to expedite the process. Although the funds were allocated in the first half-year this was because AusAID wanted to transfer funds before the end of the 2003/04 financial year. There was no practical expectation that this money would be committed or spent within 6 months for either research station refurbishment or capital purchases. Lists of priority items were discussed and developed between MOA and ICARDA according to the agreed budget.

- four zero-till seeders from India were purchased for the project. Three were sent to DOA Mosul in May 2006. One was kept at ICARDA for project research and training. Cost was about US\$10,000.
- seed cleaning equipment: the DOA/MOA requested that a major part of the capital refurbishment budget to be allocated to seed cleaners, as provision of clean seed is considered a major constraint to the dissemination of better crop varieties to farmers. ICARDA obtained specifications and prices for a range of seed cleaning equipment. The DOA Ninevah recommended the purchase of Agrosaw mobile seed processing units from India, priced at about A\$60 000 per unit (with shipment, spares and training), making it possible to purchase 4 units from the available budget of around US\$264,000 (A\$356,669 x 0.74). Specifications and order documentation were prepared for the MOA/DOA-preferred Agrosaw mobile seed cleaning plants and confirmation sought to go ahead and purchase 4 units. DOA/MOA was considering as of the end of June 2006 whether to purchase up to 10 cheaper Syrian-made units.

In view of the above, the project has gone remarkably well since commencement on 1 May 2005. This has been facilitated by the enthusiasm, flexibility and dedication of Iraqi collaborators, the proximity of ICARDA and the support and interest of ICARDA and Australian collaborators. There have been two planning meetings well attended by Baghdad and Mosul scientists in July and September 2005 at ICARDA. The Ninevah Implementation Committee, set up by MOA to manage the project, has met and produced minutes from 18 meetings. The agreed workplan for the demonstration program has been carried out in 9 locations in the 3 main agroclimatic zones (high, medium, low rainfall) and about 40% of the ambitious research program in 3 locations on or near research stations, with the research program curtailed by heavy rain, security concerns, land disputes and transport shortages. A major baseline survey of 260 farm families has been undertaken and is being analyzed and evaluated by University of Mosul, MOA Baghdad and ICARDA socio-economists, the former introduced as collaborators after the project commenced. The agreed training program at ICARDA FOR 23 Iraqi scientists was exceeded. Capital purchase of zero-till seeders was completed and seed cleaning plants are under way. Operational funds were transferred to all partners.

4.8 Budget discussion

Allocations and expenditure (A\$) have been as follows:

Institution	Payment 1 (1/5/05)	Acquittal (1/5/05 to 31/4/06)
ICARDA	54 203	57 752
AgWA	13 000	13 500
CLIMA	13 000	26 000
UniAdelaide	19 000	46 000

MOA Iraq	356 000	15 491
Total	455 863	155 743

Unexpended carryover balance: \$300 120

This unexpended balance is due to:

- 1) low expenditure on the capital budget pending MOA approval for the purchase of MOA-requested seed cleaners
- 2) inability to transfer operational funds to Iraq because MOA/DOA was unable to advise bank transfer details

The 1/11/05-31/4/06 fund allocation of A\$182,137 was requested/invoiced (F06/2006) from ACIAR on 14/2/06
The 1/5/06-31/10/06 fund allocation of A\$107,203 was requested/invoiced (F33/2006) from ACIAR on 17/5/06

4.9 Other issues

- (a) The ICARDA-MOA Iraq agreement for the project was signed on 7 July 2005 by H.E the Minister of Agriculture Dr. Ali Al-Bahadly and the Director General of ICARDA, Dr Adel El-Beltagy.
- (b) Further possible AusAID support for the seed, station and genetic resource rehabilitation “modules” initially submitted with the proposal was discussed with Greg Takats (AusAID Program Manager, Iraq, Middle East and Afghanistan) at an AusAID-World Bank sponsored meeting on agricultural assistance for Iraq held in Jordan in October 2005 and at AusAID in January 2006. This remains high-priority assistance to link with the project.