

**Training activities in Western Australia  
during  
2 May – 21 June 2008**

**Dr Saad H. Mohammed  
(Agricultural Economist)**

**And**

**Mr. Raad A. Hameed  
(Barley Breeder)**

As part of a project  
“(ACIAR CIM/2004/024: *Better crop germplasm and management for improved production of wheat, barley and pulse and forage legumes in Iraq*)” –ACIAR/AusAID/ICARDA and Australia

Visits included agricultural activities in Esperance, Albany, and Perth.



# Objectives

gain first hand knowledge on :

- conservation cropping practices,
- cropping improvement in WA,
- socio-economic aspects in evaluation, adoption and impacts analysis, policy options and risk mitigation potential.

- A well organized program was arranged to ensure a successful training and to get maximum exposure of WA agricultural research, education and development .

- Professor Kadambot Siddique (Director of Institute of Agriculture, UWA);
  - Dr. Wal Anderson,
  - Mr Mark Seymour, Mr. Keith Alcock and Ms Kelly Jane Pritchard ( the Department of Agriculture and Food Western Australia)
- were responsible for developing the program of this visit.

# Main activities

- attending meetings, lectures, presentations, interactions, discussions
- field visits

with agricultural scientists, plant breeders, agricultural/social economists, pathologists and other relevant researchers and officers

## - Visits to research stations, laboratories and green houses of:

- Department of Agriculture and Food Western Australia (DAFWA) in Perth and district offices in Esperance and Albany.
- The University of Western Australia (UWA), Institute of Agriculture ,
- School of Agricultural and Resource Economics,
- Centre for Legumes in Mediterranean Agriculture (CLIMA),
- Future Farm Industries Cooperative Research Centre (FFI CRC);
- Grower Group Alliance (GGA)
- Short visit to CSIRO;

- Visits and interaction with farmer groups, companies and farmer's fields.
- (multiSEED Production)
- Cooperative Bulk Handling CBH
- (G X E & Crop Breeding Service).
- Farmers fields in Esperance and Albany.



- We discussed several areas of agricultural researches and related activities including the background of these organisations, areas of work, their interaction with the farming sector and the mechanism and process of transfer of information to farmers and other relevant agencies and organisations

## First attention :

- the agronomy and plant breeding , crop production;
- problems of soil, climatic changes, weeds and diseases;
- new crop/varieties;
- managing fertilizer applications;
- managing crop residues,
- conservation cropping system and other related issues;
- Pre-breeding, germplasm evaluation and documentation, inter-specific hybridisation;



- genotypic variation in metribuzin tolerance in some legumes crops;
- improving the disease resistance of crops, improving crop quality;
- hybridisation in barley and legumes, seed and embryo development in grain legumes;
- plant molecular genetics and evaluation, plant genetic diversity, food for health, oil seed crops, industrial oil,
- shortening breeding period



# Observing education activities

- presentations of the top eight postgraduate students at The University of Western Australia.
- High quality of work
- good organisation and facilities
- Several organisations, companies and farmers attended
- The work covered issues related to animals, soils, crops and socio-economics.

# Second part of training

## Agricultural Economic issues.

- Economic research and modelling,
- applied economics
- optimum allocation of inputs and
- priority settings.
- New models (e. g. value chain model).



# Presentation of Iraqi Visitors

- Dr. Sa'ad presented four seminars in Esperance, Albany, UWA and CSIRO.
- agriculture sector in Iraq, and the ACIAR-ICARDA-Iraq project, activities and achievements.



- This visit was a great opportunity to contribute to improving cropping systems in Iraq,
- Establish excellent linkages with key scientists in various institutions and organisations,
- Will help to support the second phase of the project.
- Helped to generate new research ideas on rainfed agriculture,
- Help future barley and cereal breeding programmes in terms of specifically targeting traits for superior adaptation to dryland conditions.

- Help in developing socio-economic models and new methodologies to handle objectives and activities that will assist in achieving the expected socio-economic outputs of the project, especially during the second phase.

**SOCIO-ECONOMIC STUDY IN  
AUSTRALIA ON ACIAR-ICARDA-IRAQ  
PROJECT**

**SEED OF CROPS SPECIES AND  
VARSITIES REQUESTED FROM WA**

# CONCLUSION

- The main characteristics of Australian cropping are:
- Extensive use of machinery..
- Farmers have organized themselves and activities into groups to facilitate getting updated results and findings.
- Scientifically updated practices by good communications with researchers and organisations and good interaction among/within farmer groups.
- High contribution of DAFWA, UWA and IOA into agriculture activities.

- Australian farmers adopted conservation cropping as a combination of practices. This includes:
- Reduced soil disturbance by using minimum tillage to keep moisture and reducing wind and water erosion.
- Improved fertilizer practices,
- Wide and diverse crop rotations.
- Good integration of crops, forages and livestock.
- Improved weed, pest and disease management.
- Strong connection and communication with agricultural specialists.
- Updated cropping practices.

- productivity per unit of input is the main factor in increasing total production rather than planted area.
- The widespread adoption and diffusion has made considerable progress over the last 20 years.
- No-till and zero-tillage could be seen as representing the current technological end-point of the conservation tillage movement.

- One of the interesting practices that we observed is related to seed quantities per unit of land. Farmers in WA use 70 kg/ha of seed, while farmers in Northern Iraq apply about 120-130 kg/ha.
- Flexi-N (urea ammonium nitrate solution, 24% N w/v) as fertilizer is preferred and in widespread use in WA agriculture.

- Western Australia is free from a number of plant pests, diseases and weeds which are present elsewhere in Australia.
- Import consignments must be presented for inspection to the Western Australian Quarantine and Inspection Services (WAQIS) upon arrival in WA.
- WAQIS provides inspection and surveillance services for the import and export of Quarantine Risk Material (QRM). WAQIS objectives are:
  - 1) National commitments to reducing the spread of pests, diseases and weeds, 2) Independent third party certification of integrity, and
  - 3) Undertake certification on behalf of all States to which WA exports.
- - Cereal seed dressing or fungicide applied at seeding are important tools in the management of a range of cereal diseases.

# Issues and Researches to address in Iraq:

- Project of Iraq has to pay attention to the issues of soil: compaction, ability to hold moisture, nutrient concentrations; having devices to measure these indicators; utilizing new models to predict productivity regarding these indicators.
- Improving methodology for WUE.
- New concept- management efficiency (Y<sub>man</sub> yield of well managed trials)
- Tactical nitrogen application
- Contributions of genotype, agronomic practices and locations to variation in yield of wheat and barley (t/ha).
- Value chain Model to analyze the impact of new technologies to the national level

- Economic analysis for salinity researches.
- Prepare a comprehensive guide about rainfed cereal varieties,
- Rebuild the Iraqi gene bank with collaboration of CLIMA.
- To deal with drought in Iraq, it is important to:
  - Produce varieties with early maturity.
  - Produce varieties with rich carbohydrate stems.
  - Applying K fertiliser with certain levels.
  - Applying low levels of seeds and fertiliser.

- Deep seeding (to compare with minimum-till).
  - It is important to get equipment or devices to: measure protein rate and moisture (NIR); and to measure seed characteristics (SKCS).
  - Also it is important for successful of trials to get special machines for trial sowing and harvesting (like those available in WA).

# ACKNOWLEDGEMENTS

- ACIAR-ICARDA-Iraq project
- University of Western Australia , Institute of Agriculture;
- Department of Agriculture and Food Western Australia (DAFWA)
- The principle acknowledgment is to Professor Kadambot Siddique (Director, Institute of Agriculture) for his initiative, encouragement, hospitality and on going support.
- Sincere gratitude and thanks to Dr Wal Anderson;
- Dr. M. A. Hamza; Mark Seymour Drs. NazruL Islam and John Connell (DAFWA) for their grateful efforts, support, discussions, and information.
- Prof. William Erskine (Director, Centre for Legumes in Mediterranean Agriculture) was much appreciated for his useful information and hosbitality.
- Many more individual both from mentioned in the program or unmentioned, DAFWA, WAU, provided assistance during this visit. All of their contributions are gratefully acknowledged.