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**Australian Centre for  
International Agricultural Research**

# Final report

*project*

## **Improving productivity in farming systems of the Nile Delta**

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## 1 Acknowledgments

The timing of this project was challenging as it was during a period of rapid political and social change in Egypt, and ultimately it was foreshortened with changes to policy by the Australian Government. However, the commitment by Egyptian partners (Ministry of Agriculture and Land Reclamation and its Agricultural Research Center; International Center for Agricultural Research in the Dry Areas and Aim Shams University) contributed to the development of a strong project. All Egyptian partners have shown a willingness to consider the project and its objectives in their further national planning.

ACIAR provided continuous support and encouragement for all developments in Egypt from 2010 to 2014. Their support of an earlier small project (C2011/210 Egypt socio-economic survey) provided the opportunity to work with several hundred farmers and other stakeholders on the Nile Delta, and to demonstrate the value of participatory development.

The former President of the ARC Dr Saleh Abdel Momen and his successor Prof Dr Abd El Moneam El Banna both provided strong support for the development of the project and identification and inclusion of key staff.

The support of the Australian Embassy in Cairo through Ambassador Stephanie Schwabsky (June 2011) and Ambassador Dr Ralph King (from Jan 2012) in participating in sessions of the program was greatly appreciated by all of the project team. AusAID representatives at the Embassy (Ms Kirsty McMaster, Ms Clemency Oliphant and Mr Paul Harrington) also provided local liaison support throughout the development and inception of the program.

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## 2 Executive summary

*Due to changes in Australian Government policy in 2013, this Final Report is very much a record of significant interactions between Australian and Egyptian partners in establishing the foundations for a project of significance for Egypt. The project was founded on strong participatory values;*

- *Full participation*
- *Mutual understanding*
- *Inclusive solutions*
- *Shared responsibility*

*With this basis, and some of the concluding activities in Amman and Australia in 2014, the project team is sure that Egypt will take some or all of the elements of the project forward as it identifies appropriate resources. The Egyptian Minister for Agriculture and Land Reclamation is currently working to further develop and prioritise the Sustainable Development Strategy Towards 2030. At its core, this project provides an action pathway that is consistent with the Strategy.*

In 2010 the Australian Government initiated discussions to build partnerships to support development objectives for Egypt. These were reinforced in March 2011 following the significant political and social changes in Egypt during the period known as the “Arab Spring”. The key Australian agencies involved in implementation were AusAID<sup>1</sup> and the Australian Centre for International Agricultural Research (ACIAR). Partners in Egypt have included the Ministry of Agriculture and Land Reclamation, Ministry of Water Resources and Irrigation, Ain Shams University and the International Center for Agricultural Research in the Dry Areas (ICARDA). Rural Solutions South Australia (RSSA) has been the Australian partner for projects discussed in providing a broad perspective for this report.

Egypt and Australia have strikingly different agricultural systems which principally relate to the population and population density of Egypt. However, we share all of the challenges associated with agricultural development and irrigated agriculture. These include management of water distribution and delivery, crop choice based on adapted varieties, the use of annual and perennial plants, management of drainage, and management of threats such as water scarcity and salinity, as well as the integration of plant and animal systems.

In both Egyptian and Australian systems overall strategy and implementation for productive agricultural systems is managed by multiple agencies and organisations which make high demands on cooperation and collaboration to ensure a shared vision for outcomes. With this in mind, earlier development activities focussed on capacity building in Egypt and Australia which provided the opportunity to compare and contrast the respective approaches to systems management. This then expanded to a socio-economic study of farmers in the Meet Yazid Command area of the Nile Delta to ensure that knowledge of farming systems in that region and the challenges faced by its farmers were strongly and appropriately reflected in the design of a large project on improving productivity in farming systems of the Nile Delta.

The aim of this Report is to reflect the collective experience of all partners and to demonstrate pathways where the project objectives can be managed in a more enduring way by Egyptian agencies and other potential stakeholders and investors.

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<sup>1</sup> AusAID operations since 2014 are now incorporated in the Australian Government’s Ministry of Foreign Affairs and Trade

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## 3 Background

Egypt is dependent on agriculture which contributes 13% of GDP and absorbs about 50% of its labour force. Despite relatively high yields, research is needed on crop and livestock management to improve productivities and farm household livelihoods. The aim of this AusAID-ACIAR supported project was to increase farm household livelihoods by on farm research (OFR) to improve agronomic and economic productivity of eight villages in the Meet Yazid irrigation command area of the Nile Delta. In parallel, the project aimed to strengthen participatory processes and capabilities for farmer-managed OFR in the Egyptian Agricultural Research Center (ARC) of the Ministry of Agriculture and Land Reclamation and one lead University. Implementation will be coordinated with the ACIAR AusAID funded sister project LWR/2011/045 Management of water and salinity in the Nile Delta.

Preliminary survey work on the Nile Delta by Rural Solutions South Australia (RSSA) and the ARC has shown that Egyptian smallholders are willing to participate in joint work with research and extension staff and have an interest in changing their farming systems in order to increase water productivity and incomes. Thus, it is necessary to deepen the understanding of critical constraints for different farmer groups (e.g., weak agricultural support systems for farm inputs, knowledge, extension and marketing) and also to identify other constraints which may shape the future adoption of improved technologies and the development of farming systems in the Delta. The survey showed that Berseem clover (*Trifolium alexandrinum*) is a critical component of the farming systems and a useful entry point for improving whole farm productivity and household livelihoods.

To address these constraints, sites and farms will be selected and technologies and institutional innovations will be tested with farm women and men using participatory methods. The project will use on-farm cropping trials for knowledge development and sharing, and crop and livestock monitoring to build a more quantitative approach to the understanding of farming systems on the Nile Delta. Simplified models will be developed and used to integrate production, financial and other livelihood data for farmer training and extension activities.

This project will lead change amongst all stakeholders by working directly with farmers to deliver options for farming systems appropriate to 82,740 ha of irrigated agricultural land in the Meet Yazid command area. Based on the survey, the area contains approximately 75,000 farms with an average size of 2.63 feddan (1.1 hectares) and has a gross value of crop production of about US\$ 226 m (El Agha *et al*, 2011). With about 30-60 farmers sharing irrigation facilities at each of the on-farm research sites within a village, farmer training and communications will lead to practice change within the lifetime of the project on up to 500ha of crop land. Based on conservative estimates of a 20% increase in income over 10% of the command area within five years of project completion, the aggregate benefit of the research would be about \$4 m per annum (excluding spill-over effects to other parts of the Nile Delta).

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## 4 Objectives

This project aimed to work directly with farmers on the Nile Delta to develop opportunities to improve their production systems and physical and economic productivity, especially in relation to water use. The use of on-farm trials was the planned basis for knowledge development and sharing, and to build a more quantitative approach to the understanding of crop and livestock operations.

The four project objectives were:

**Objective 1.** To define current limitations to crop production for food and animal feed, and demonstrate that better management practices and new technologies can improve whole-farm income.

**Objective 2.** To quantify the value of the legume Berseem clover as a key part of crop rotations, as an animal feed, and as a source of income for farmers.

**Objective 3.** To accelerate the adoption of improved farming practices based on quantitative crop and livestock assessment.

**Objective 4.** To build capacity for decision makers, researchers and extensionists, farmers and other stakeholders through targeted communications and training

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## 5 Methodology

The methodology and approach used in planning for activities on the Nile Delta was heavily influenced by Australian interests in farming systems that must be economically, socially and environmentally sustainable. In all cases design and delivery of modern technologies (products and services) has proven to deliver using participatory processes with a special focus on on-farm trials that are accessible to communities.

This work was supported by an earlier project ACIAR C2011/210 (Egypt socio-economic farmer survey) which identified and worked with farmers in 8 village sites of Meet Yazid Command area. These farmers all had a range of cropping strategies and also owned livestock (often for milking) to provide for family nutrition and for sale of products and young animals.

While the methodology was seeking to improve productivity, and productivity from water, it also recognised the need for enhanced farmer skills, and improvement in the skills of scientists and extension workers.

Especially important to the development of communities of small farmers are continued efforts to encourage cooperative behaviours in relation to both irrigation and mechanisation (e.g. Yang *et al*, 2013).

## 6 Achievements against activities and outputs/milestones

This section is provided essentially as a guide to the project plan due to early termination.

**Objective 1: To define current limitations to crop production for food and animal feed, and demonstrate that better management practices and new technologies can improve whole-farm income**

no.	activity	outputs/ milestones	completion date	comments
1.1	Undertake on-farm trials at a maximum of eight village sites (identified as part of C2011/210) using a range of inputs including tillage practices and seeding systems, fertiliser use, options for raised bed farming, ZT seed drills, and the management of crop residues.	<p>1.1.1 Eight sites chosen and characterised for on-farm trials and development of local farmer participation groups</p> <p>1.1.2 Eight field experiments (1 per village) designed, implemented and analysed using farmer inputs to choice of management appropriate to local priorities</p> <p>1.1.3 Communications and extension activities conducted at each of the villages using the field experiment sites</p>	Sept 2014	Only planning completed but actions in <b>LWR/2011/045</b> Management of water and salinity in the Nile Delta: A cross-scale integrated analysis of efficiency and equity issues, have also worked with farmers in the Meet Yazid area.
1.2	Undertake evaluation research activities amongst farmer focus groups, to gauge the applicability and adoption characteristics associated with the various technologies and practices demonstrated	<p>1.2.1 Data set formed from feedback from local farmers (at each village) for capital, operating costs and knowledge needs to adopt new tactics.</p> <p>1.2.2 Technical options for enhanced adoption identified by comparative analysis across villages.</p>	Sept 2014	Only planning completed.

PC = partner country, A = Australia



**Objective 2: To quantify the value of the legume Berseem clover as a key part of crop rotations, as an animal feed, and as a source of income for farmers.**

no.	activity	outputs/ milestones	completion date	comments
2.1	Determine household use and sales of Berseem clover as animal feed and estimate total feed demand by animals in their production system	<p>2.1.1 Individual producer and total village livestock population and structure determined for each of 8 villages</p> <p>2.1.2 Estimates of individual and total village production of berseem (by quantity and value), for area in production, and home and market use; decision about area sown explored with farmers</p> <p>2.1.3 Simplified feed budgets to quantify animal feed requirements and feed sources for improved production developed.</p>	Sept 2014	No activities beyond planning.
2.2	Determine the potential contribution of Berseem clover to the nitrogen economy of the farming system	<p>2.2.1 Preliminary estimates of Berseem contribution to the system N economy (kgN /ha) based on dry matter production and nitrogen established</p> <p>2.2.2 The quantity of N fixed by Berseem in the Delta environment determined using <sup>15</sup>N methods</p>	Sept 2014	No activities beyond planning.

PC = partner country, A = Australia

**Objective 3. To accelerate the adoption of improved farming practices based on quantitative crop and livestock assessment.**

no.	activity	outputs/ milestones	completion date	comments
3.1	To use participatory research and extension approaches to enhance the adoption of improved farming practices.	<p>3.1.1 Build four farmer groups at each village, one of which will be women only, who will commit to engagement with the project for its full duration</p> <p>3.1.2 Eight project personnel identified who will have a lead role in maintaining communications and engagement with each village</p> <p>3.1.3 An annual survey developed, conducted and analysed to document farmer (men and women) responses to project developments and emerging opportunities</p>	Sept 2014	Part of planning processes leading to inception meeting in Cairo, Dec 2013.
3.2	Undertake an evaluation of crop and livestock monitoring methods applicable to farmers	<p>3.2.1 Body condition scoring appropriate to livestock species and breeds developed</p> <p>3.2.2 Develop and introduce crop monitoring systems that contribute to seasonal management tactics developed to support increased farmer knowledge of factors limiting yield</p> <p>3.2.3 A system developed and implemented to appropriately document and record water use under different crops</p>	Sept 2014	No activities beyond planning.

PC = partner country, A = Australia

**Objective 4: To build capacity for decision makers, researchers and extensionists, farmers and other stakeholders through targeted communications and training**

no.	activity	outputs/ milestones	completion date	comments
4.1	Develop a communications strategy to meet the needs of all stakeholders in understanding the project and its advances	<p>4.1.1 A Communications plan developed within 3 months of project starting that meets the needs of farmers, project stakeholders and raises the profile of the project in Egypt.</p> <p>This will include consideration of channels (e.g. print, mobile phone, email and internet) and meeting needs for materials to be available in Arabic. The target is to provide appropriate project based information to the 72,000 Meet Yazid men and women farmers.</p>	Sept 2014	<p>Effective communications between project partners leading to inception meeting in Cairo, Dec 2013.</p> <p>Meeting in Amman, June 2014 to provide basis for further actions by Egyptian partners to seek resources to continue with whole project, or by activities focussed on single objectives (see Appendix 2).</p>
4.2	Test a range of production scenarios amongst focus groups for each village (farmers and farm input suppliers) and explore these with farmers and farmer groups	4.2.1 Production scenarios developed with research and extension personnel and input providers, and explored with at least 35 farmers from each of 8 villages either individually or as groups	Sept 2014	No activities beyond planning.

4.3	Training activities to support professional development	<p>4.3.1 Gross margins model developed to incorporate cropping and livestock options for the 8 target villages and used in one training workshop for research and extension presentations and presentations to the 8 villages.</p> <p>4.3.2 Professional study visit undertaken to Australia, to explore opportunities for adaptation of techniques and technologies applicable to Egyptian farming systems (Target 3 or 4 younger professionals, including women, working at the interface</p>	Sept 2014	Study visits to Australia by 3 senior scientists from ARC and 1 from ICARDA during Sept 2014. Focus of these visits on organisational operations (policy and planning) and integration of Australian farmers into R, D & E activities. Some more specialised attention given to raised bed experiences in Egypt and how these may have some parallels for some unique irrigation areas in the lower Murray River.
4.4	Develop appropriate monitoring and evaluation framework for change and adoption in target area as a result of project outputs	4.4.1 Framework for monitoring and evaluation developed and implemented with the project team and reported to annual review and planning meeting	Sept 2014	No activities but principles built into project design.

PC = partner country, A = Australia

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## 7 Key results and discussion

The key results from this work were the development of active networks within Egypt to explore, develop and prioritise a set of key actions that could drive change on the Nile Delta. The Egyptian and Australian partners shared knowledge of different systems and approaches to project planning, and the understanding of agricultural development. In some ways the Australian farming system might be regarded as “survival of the fittest”. Thus, some reflection on that background is necessary to see why the Australian team could approach Egypt’s complexity as a systems problem that would require technical and human adaptations.

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### 7.1 Australian interest in international agriculture has a very practical base

*The birth of farming, as we know it today, started from very humble beginnings. Three months after the arrival of the 'first fleet' in January 1788, the livestock in the colony consisted of seven horses, seven cattle, 29 sheep, 74 pigs, five rabbits, 18 turkeys, 29 geese, 35 ducks and 209 fowls (Year Book Australia 2001, 1301.0).*

Just over 225 years ago Australia was colonised. At that time only two species groups existed that have subsequently been commercially exploited on any scale for food. The first the kangaroo; a native marsupial that thrived with the development of water supplies and agricultural crop and pasture resources, and has been commercially hunted for its lean red meat as animal and human food. The second, the macadamia tree (several species but *Macadamia integrifolia* the main commercial species) produces a fruit or “nut” that is highly prized and while grown in Australia was first seriously commercialised in Hawaii.

Thus the development of agricultural and horticultural cropping and the major livestock industries in Australia is a history of introductions of species from across the globe. Any student of agriculture in Australia is rapidly exposed to the ideas of Vavilov (Wilsie, 1962) and the centres of origin of cultivated plants, and to the global ecology of domesticated animals. Australian agriculture has grown and expanded continuously for 225 years by processes of adaptation, breeding and selection and a systematic exploration of a vast continental land mass (>7.6 m km<sup>2</sup>) for biogeographic zones suited to agriculture. These range from mild temperate to Mediterranean to large areas of arid rangelands to wet and dry tropics in the north of the country.

So while Egypt has had over 5000 years to develop its agriculture and associated agrarian support systems, Australian developments have been compressed into 225 years. During this time about 30 million hectares of land have been developed for cropping, about 40 million hectares for grazing with improved pastures and about 300 million hectares mostly in the centre and north of the country used for rangeland grazing of natural vegetation. About 2.4 million hectares is irrigated, with areas widely distributed across Australia.

To support these activities Australia has developed a culture of agricultural research, development and extension in association with all of its agricultural stakeholders that has not only driven Australian agriculture, but provided a core of Australian professionals and other resources, that can adapt and adopt these experiences to many other developing environments. ACIAR has cultivated and directed this process, in this case with Egypt.

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## 7.2 Scope of Australian knowledge and support systems

The following is a brief outline of the Australian experience, with all elements contributing to our collective understanding and approach to agricultural issues in approaching and defining development pathways in countries such as Egypt.

### 1. Science

- a. To drive development across a hugely diverse geographic and climatic range; Australia is a large continental land mass with biogeographic and production zones extending from mild temperate, to Mediterranean to sub-tropical and tropical conditions.
- b. To expand opportunities for new crops / pastures /livestock
  - i. General; Australia through the systematic exploration of public organisations (e.g. CSIRO, State departments of agriculture and Universities) has always sought to identify the value of new species with the potential to be adapted to widely differing biogeographic zones and conditions. This has been particularly strong in all areas of plant science, plant introductions and plant breeding. Animal science has always had strong linkages with private industry who have led with breeding and dispersal of elite genetics.
  - ii. Quality; from its very beginnings, Australian agriculture has been about utilising resources to generate exports. Because of this, minimum quality standards are often set by international customers and, to be successful in this trade, Australian agribusiness has had to make a continuous effort to understand the needs of foreign markets (AWB, 2006; MLA, 2014). Given distances from markets a sound understanding of storage and transport has also been an essential part of the Australian capability set.
- c. To solve problems; Australia is an ancient and challenging environment for agriculture. Problems of policy in relation to target areas for development, the balancing of crop and livestock systems when confronted with changing commodity prices, and the individual challenges around optimising different plant and animal species have all required systematic consideration.
- d. To address broad environmental issues e.g. wind & water erosion, dryland and irrigation related salinity, management of biodiversity; Like Egypt, water is very valuable in Australia and management has been continuously modified to improve water use efficiency in rainfed and irrigated environments. Irrigation systems are a mix of flood, overhead sprinkler and pressurised drip or micro-sprinklers for crops such as pastures, cotton, fruit trees and vines and vegetables. Water policy development has been significant in Australia and all water is metered and has charge. Being able to trade water also has an influence on the type and location of crop being grown.
- e. To model systems to provide both tactical and strategic support for decisions and planning; as a large country it has been important to use both biological and economic modelling to understand probability and risk underpinning complex decisions for policy makers, researchers and farmers. These “tools” have proven valuable in building and focussing discussions amongst people with diverse skills and continue to be extended to new challenges such as climate adaptation (e.g. Farquharson *et al*, 2013) and smallholder agriculture (Lisson *et al*, 2010).

2. Sustained period of pressure on small farmers; with the combined forces of a free market economy and agricultural mechanisation, most Australian farms continue to grow in size resulting in rural depopulation. While this is quite different to Egypt and many other countries, it results in a high level of labour efficiency but it also changes the capital base for the whole agricultural sector.
3. Demographic shifts; Rural township decline, lack of interest in agriculture as a career path, and an aging population of land owners are issues shared in farming communities across the world.
4. Urbanisation challenges; in Australia this is mostly an issue of peri-urban planning but in Egypt these challenges extend through the Nile Delta. Interactions with urban communities can create management issues (e.g. burning of rice straw on the Nile Delta) or moving agricultural machinery on roads (e.g. regulations govern machinery movement in Australia).
5. Unsustainable water use due to lack of fully integrated planning; lack of measurement and integration in Australian irrigation planning meant that serious over-allocation of water has occurred which was seriously demonstrated by a long term drought in the early 2000's. In environments such as Egypt, the reminder is that measurement is required at all scales, and that water use efficiency can only be achieved when management targets are shared by all stakeholders. This is important for Egypt to consider when it plans for further new land expansion and diversion of water from the Nile River.
6. For farmers to manage under systems of continued reduction in government support and services; Australia is a free market economy with agricultural subsidies amongst the lowest in the world, and farmers receiving prices for product that reflect the world market price. This encourages farmers to take a direct interest in marketing (including forward selling), and the more immediate issues of understanding the gross margins of various farm activities.
7. Shifts from government led extension to private services; the expansion of farmer initiated and led research & development and private extension and consultancy services are now a feature of all agricultural systems in Australia. The system is strongly participatory, active in its knowledge sharing and embraces a wide range of expertise.
8. Management of dramatic change and conversion; the value of crop vs. livestock has seen nearly 100m sheep removed from the Australian farming system over about 20 years; changes in perennial systems (e.g. table grapes / juicing oranges / dried fruit) under pressures from imported products have seen dramatic reductions in such activities. This has meant that farmers wishing to stay in agriculture have had to learn and adjust to completely new systems.

While this can be seen as a subset of challenges and opportunities in agriculture, it is how these challenges are integrated that makes Australia a unique place for understanding and managing change processes in agriculture. Most of these experiences can be translated and adapted when working with colleagues and farmers internationally.

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## **8 Impacts**

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### **8.1 Scientific impacts – now and in 5 years**

No direct scientific impacts gained due to early termination.

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### **8.2 Capacity impacts – now and in 5 years**

Limited capacity impacts due to early termination.

Some share experience in project design and development with multiple partners.

Some gains in sharing Australian systems knowledge and policy frameworks with visits to Australia from four key project personnel from Egypt (ARC and ICARDA).

Specific technical interests explored based on Egyptian experience with raised bed planting to improve irrigation efficiency and the potential for this type of activity to improve options in the lower lakes area of the Murray River.

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### **8.3 Community impacts – now and in 5 years**

Limited impacts due to early termination. Follow-up with the Nile Delta target villages will need further actions to be developed by Egyptian partners.

#### **8.3.1 Economic impacts**

No direct impacts due to early termination.

#### **8.3.2 Social impacts**

No direct impacts due to early termination.

#### **8.3.3 Environmental impacts**

No direct impacts due to early termination.

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### **8.4 Communication and dissemination activities**

Most communications activities confined to the project team, and sharing knowledge with others like the World Bank, CIRAD and the American University Cairo who have ongoing activities in the region.

A key meeting was held with partners represented in Amman in June 2014. See Appendix 2.



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## 9 Conclusions and recommendations

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### 9.1 Conclusions

- The systems approach which was driven by the analysis of farmer activities on the Nile Delta was embraced strongly by the whole project team.
- The use of participatory processes in the design of the project and planning for its implementation highlighted the need for research, demonstration and community level extension activities to operate closely if change is to be achieved on the Nile Delta.
- The project identified real issues where change would add value for farmers and their families on the Nile Delta. Proposed actions included technology change and adoption (e.g. raised bed cropping), communications and outreach (e.g. on farm trials & crop and livestock monitoring), and targeted training opportunities for project participants.
- The project was designed to be delivered in a region that is broadly typical of challenges confronting much of the Nile Delta, but with sufficient diversity to encourage recognition of the need for local adaptation of processes and inputs (e.g. differential access to water, variable issues with salinity).

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### 9.2 Recommendations

The key recommendation is for the Egyptian partners to continue to pursue the objectives of this project by sharing its developments internally in Egypt, and being proactive in exploring new funding opportunities with international agencies.

Australian funding (through ACIAR) provided the opportunity for time to be invested in the design of a robust systems project addressing real issues with farmers on the Nile Delta. The combined inputs from Egyptian scientists and the farmers of the Meet Yazid region demonstrated the real value in participatory processes. With leadership, particularly from the ARC and ICARDA, further momentum should be possible for the whole project, or targeted elements of the objectives.

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### 10.2 List of publications produced by project

None

## 11 Appendixes

### 11.1 Appendix 1: Project activities in Egypt 2011-14

It is important that these project activities be recorded as all were integral to establishing strong working relationships amongst a wide range of partners and individuals in Egypt and Australians operating in both the project activities and support.

Code	Date	Title
<b>ACIAR CSE2011/017</b>	June 2011 – January 2012	Developing a participatory framework for research adaptation and extension for Egypt, and determination of priorities and approaches for embedding this framework institutionally (a training program with ARC and other participants)
<b>Council of Australia Arab Relations and Rural Solutions SA</b>	July 2011	Irrigation and Water Management Knowledge and Information Exchange between Egypt and Australia: Developing Links for Long Term Collaboration.
<b>AusAID Australian Leadership Awards</b>	30 Jan – 27 Feb 2012	Developing Egyptian agriculture through enhancing leadership potential of young professionals (delivered in South Australia)
<b>ACIAR C2011/210</b>	April – Oct 2012	Egypt socio-economic farmer survey (8 village sites of Meet Yazid Command area)
<b>ACIAR CSE 2011/036</b>	July 2013- Aug 2014	Improving productivity in farming systems of the Nile Delta
<b>Closely related ACIAR project</b>		
<b>LWR/2011/045</b>		Management of water and salinity in the Nile Delta: A cross-scale integrated analysis of efficiency and equity issues

## 11.2 Appendix 2: Strategy meeting for exit project finalisation, AMMAN Jordan June 2014

### Record of Meeting & Recommendations

#### CSE 2011/036 Improving productivity in farming systems of the Nile Delta

A workshop was a concluding requirement for project to capture a shared view of the achievements of Australian investments in Egypt, and to provide content for a final report for ACIAR, partners and potential stakeholders in continuing to deliver outcomes from developments between 2010 and 2014.

Amman, Jordan 24-27 June 2014

#### Participants

Name	Title
<b><u>ARC</u></b>	
<i>Ahmed</i> Bedier <b>EL SAADY</b>	Head Research at the Agricultural Economics Research Institute and Prime Agricultural Economics Research Unit at the agricultural research station in Sakha " Kafr El-Sheikh"
<i>Sami</i> Reda <b>SABRY</b>	Research Professor
<i>Mohamed</i> <b>ISAMAIL</b>	Head of Remote Sensing & GIS Unit, Soil, Water and Environment Research Centre
<i>Abobaker</i> <b>ALI</b>	Deputy Director of Field crops Research Institute for Extension and Training
<i>Yousry</i> Abel Mawla <b>Hassan</b>	Deputy Director of Extension and Training, Rural Development & Extension Research Institute
<b><u>ICARDA</u></b>	
<i>Atef</i> <b>SWELAM</b>	Water and Irrigation project leader
<b><u>AIN SHAMS</u></b>	
<i>Yasser</i> Ezzat <b>ARAF</b> A	Irrigation Specialist
<b>Rural Solutions SA</b>	
<i>Jim</i> (James) <b>FORTUNE</b>	Project Leader
<i>Erica</i> <b>HANCOCK</b>	Project Manager
<i>Duncan</i> <b>TULLETT</b>	Project Support & Nile Delta Survey

## Introduction

In 2010 the Australian Government initiated discussions on development support for Egypt. These were reinforced in March 2011 following the significant political and social changes in Egypt during the period known as the “Arab Spring”. The key Australian agencies involved in implementation were AusAID and the Australian Centre for International Agricultural Research (ACIAR). Partners in Egypt have included the Ministry of Agriculture and Land Reclamation (MoA), Ministry of Water Resources and Irrigation (MoWRI), Ain Shams University and the International Center for Agricultural Research in the Dry Areas (ICARDA). Rural Solutions South Australia (RSSA) has been the Australian partner for projects discussed in providing perspective for this workshop.

Changes in Australian Government policy have meant that project CSE 2011/036 is being terminated earlier than its original plan. (As part of these changes it should also be noted that AusAID is now a part of the Australian Governments Ministry of Foreign Affairs and Trade.)

The aim of this workshop was to contribute to the final project report in a way that reflected the collective experience of all partners and to importantly deliver pathways where the project objectives (for CSE 2011/036) can be managed in a more enduring way by Egyptian agencies and other potential stakeholders and investors.

## Agenda

Item	Information	Timing/lead
1.	Team arrival from Cairo and Australia and introduction meeting	24/6/14; 3-5pm Holiday Inn Amman
2.	Welcome and thank you to ARC, ICARDA and Rural Solutions team	Jim Fortune
3.	Housekeeping items for team for duration of workshop	RSSA
4.	Introductions to team members and respective roles and experience of Australian projects with Egypt	Whole team
5.	<p>Workshop objectives</p> <ul style="list-style-type: none"> <li>a) Content preparation for reporting document for CSE 2011/036 (and related projects) that reflects experience in Egypt, Australia and combined in the period 2010-2014</li> <li>b) The “audience” will be the key stakeholders represented in the meeting (ACIAR, Rural Solutions SA, ARC, ICARDA and Ain Shams University</li> <li>c) The document distribution will be to existing and potential stakeholders who may be in the position to build on from the project activities</li> <li>d) The report will capture individual and collective experiences from the Australia-Egypt activities.</li> </ul>	
6	A shared background to the experience and delivery of	a.m. Wed 25 June
7	Identify gaps and developing solutions with delivery potential in Egypt	p.m. Wed 25 June
8.	Taking identified objectives forward in Egypt	a.m. Thurs 26 June
9.	Document outline with draft content	p.m. Thurs 26 June
10.	Team departure for Cairo	27/6/14
	Team departure for Australia	28/6/14

## **Tues 24 June 2014**

Following the team arrival in Amman, a meeting was held to allow introductions as the team comprised members with considerable experience of all Australia-Egypt activities and ARC participants who will be an important part of taking development activities forward in Egypt. Team members were from the ARC, ICARDA, Ain Shams University and Rural Solutions SA. The outline and agenda were discussed, along with routine housekeeping matters.

## **Wed 25 June 2014 – morning**

Background information for all Australia-Egypt projects were presented and actively discussed so that the full team shared an understanding of the scope of activities, and the development of relationships between Australian and Egyptian organisations and team members.

**Presentation 1:** Dr Jim Fortune provided an overview of project activities in Egypt and Australia that led to the development and contracting of project CSE 2011/036 *Improving productivity in farming systems of the Nile Delta* and its preliminary activities in Egypt.

**Presentation 2:** Dr Atef Swelam provided an overview of the second major ACIAR project LWR 2011/045 Management of water and salinity in the Nile Delta: A cross-scale integrated analysis of efficiency and equity issues. His focus was on the linkage and collaboration aspects of the two projects with special reference to the shared region of the Meet Yazid canal. This is an area of 82,740 ha of irrigated agricultural land with about 75,000 farms with an average size of 2.63 feddan (1.1 hectares).

**Discussion 1:** Duncan Tullett described the activities and general recommendations arising from the small CAAR scoping project *Irrigation and Water Management Knowledge and Information Exchange between Egypt and Australia: Developing Links for Long Term Collaboration*. This project was a key part of building an early understanding for the Australian team of the systems and challenges confronting the Nile Delta and involved strong support from the ARC and the MoWRI. Mr Tullett also drew on this experience in designing and leading the AusAID Leadership project *Developing Egyptian agriculture through enhancing leadership potential of young professionals held in Australia*.

**Discussion 2:** Dr Yasser Arafa described and compared his experiences as a participant in both CSE 2011/017 *Developing a participatory framework for research adaptation and extension for Egypt, and determination of priorities and approaches for embedding this framework institutionally*, and the AusAID Leadership project *Developing Egyptian agriculture through enhancing leadership potential of young professionals held in Australia*. He focussed on the value of the participatory training in Egypt and the linkages and application of the training that were developed (and that continue) as part of the two training phases and the team project activities in the workplace that were part of the project design. He also reflected on the Australian leadership project and cultural aspects of the experience. One of his key experiences related to time management in projects and his practical experience of this in the four week program in Australia.

### Wed 25 June 2014 – afternoon

This session involved facilitated discussions around two focus questions. The team were asked to write their answers and then share them with the group for discussion.

- A. Given the nature of the project one of our first steps in moving towards a more experimentally based project would be to go back to the 8 villages (280 farmers and families) that were the basis of the survey project. **From your perspective how could you influence your organisations to invest in going back to the farmers and talking to them again? If so what resources would they use and how would they do it?**

Firstly is it possible to go back to;

1. Visit villages?
2. Explain developments?
3. Invest to continue some activities?

The outcomes of this discussion were strongly in support of continuing to build on the value of this early investment which had contributed to the design of CSE 2011/036 *Improving productivity in farming systems of the Nile Delta*. Discussions also identified additional elements such as soil testing and mapping that could occur in the clearly identified areas of the Meet Yazid command region. These would further complement the detailed water studies of the LWR project in part of the region.

- B. As of today you are in a position of high authority. Extension and Research are quite separate in Egypt and often distant from farmer's needs. **What is your solution to bring Research and Extension closer together?**

This question was based on farmer feedback in the survey activities, elements of reviews, feedback and discussion in training activities, and informal comments in a range of discussions during the development and delivery of the Australia-Egypt projects. These challenges relate to the role of effective extension and the application (adoption) of research. In Australia these processes have evolved and continue to evolve resulting in much closer integration of research, extension and farmers by both public and private stakeholders.

Workshop responses were very focussed on the need for Egyptian extension services to be revitalised through targeted capacity building (training, and recruitment of young, qualified people) and more closely integrated with research and development activities. This was seen as key to credibility of the extension services with farmers and researchers.

Options explored included further specific technical training, development of train-the-trainer systems with those who have had training opportunities. Additionally, the tertiary education environment seems to need to consider further technical skills in addition to communications for extension programs. This is to support the building of confidence in technical matters for extension workers when working with researchers and farmers.



**Thurs 25 June 2014 – morning**

While the workshop (and Dec 2013 Inception meeting in Cairo) had strongly endorsed the planning and objectives of CSE 2011/036 *Improving productivity in farming systems of the Nile Delta*, it was important to recognise that the plan was based on significant funding from the Australian government. While the endorsement of the whole systems approach for “research for development” remained strong, it was important to consider if opportunities could be explored on a different scale to the original project.

To potentially expand opportunities for Egyptian partners and new stakeholders to continue to add value for Egypt and Egyptian farmers, the workshop team considered each of the objectives as a potential target for separate projects, perhaps even in different locations to the original plan for the Meet Yazid region.

The following general framework for project development and implementation was used to guide the discussion.

IDEA GENERATION	<b>Frame:</b> What are the objectives and constraints?	<ul style="list-style-type: none"> <li>• Define decisions to be considered</li> <li>• Understand scope of potential solutions</li> <li>• Clarify work processes that will govern the work</li> </ul>
	<b>Baseline:</b> What is the current situation with performance and capabilities?	<ul style="list-style-type: none"> <li>• Understand sources of value and current features of current performance</li> <li>• Identify major drivers for change</li> <li>• Analyse capability needs and availability</li> </ul>
	<b>Forecast:</b> What do we expect of the future environment?	<ul style="list-style-type: none"> <li>• Identify emerging trends and potential outcomes</li> <li>• Identify key risks</li> <li>• Consider alternative scenarios</li> </ul>
DEVELOPMENT AND SELECTION	<b>Search:</b> What options do we have to create value?	<ul style="list-style-type: none"> <li>• Establish possible pathways and options</li> <li>• Assess options based on the scenarios</li> </ul>
	<b>Choose:</b> What package of choices will define our strategy?	<ul style="list-style-type: none"> <li>• Decide where and how they will be implemented</li> <li>• Build a coherent package</li> </ul>
	<b>Commit:</b> How will we deliver the changes required in the strategy?	<ul style="list-style-type: none"> <li>• Develop action plans for all objectives</li> <li>• Develop appropriate resource plans (financial, human and other needs)</li> <li>• Delegate key roles</li> <li>• Develop an appropriate communications plan</li> </ul>
EXECUTION AND REFINEMENT	<b>Evolve:</b> How will the strategy develop and evolve over time? How do we manage the strategic risks?	<ul style="list-style-type: none"> <li>• Execute agreed work plans</li> <li>• Monitor and evaluate progress</li> <li>• Determine and implement any needed revisions</li> </ul>

## **Consideration of CSE 2011/036 objectives as independent project activities**

**Objective 1.** To define current limitations to crop production for food and animal feed, and test whether better management practices and new technologies can improve whole-farm income.

Key to this objective are on farm trials in the Meet Yazid area focussed on the 8 villages that provided inputs the survey

Based on discussions about the scope and scale of potential management interventions it was thought that there could be considerable value in limiting treatments to a focus on raised beds as a technology development that was showing strong promise and adoption based on work in Sharkia. [Dr Atef Swelam gave a presentation on this work following this session of the workshop. It demonstrated clear advantages in production, water use and providing opportunities for local machinery manufacturers]

The rapid adoption potential, with positive impacts on the livelihoods of small farmers, should make a project based on Objective 1 attractive to investors such as IFAD.

**Recommendation:** ICARDA and ARC collaborate to introduce this potential project (raised bed technologies) to investment agencies.

**Objective 2.** To quantify the value of the legume Berseem clover as a key part of crop rotations, as an animal feed, and as a source of income for farmers. (Berseem is about 30% of the winter crop area on the Nile Delta)

This objective had 3 primary components in CSE 2011/036;

1. The quantification and optimum feeding strategies for livestock from Berseem clover
2. The quantification of sales of Berseem clover as part of the household income and use of family labour
3. The quantification of nitrogen fixation and potential contribution to subsequent crops in the rotations

The workshop discussed other elements of the Berseem clover system such as supply of quality seed, seed production and varietal choice.

**Recommendation:** ARC and others consider the development of a project on Berseem clover that acknowledges the advantage of expanding from the CSE 2011/036 objectives to reflect other agronomic needs of this important crop.

**Objective 3.** To assess methods to accelerate the adoption of improved farming practices based on quantitative crop and livestock assessment.

This objective was to improve the basis for discussion and improvement of crops and livestock by researchers, extension workers and farmers.

1. Both animal and plant targets were part of the original design to be implemented by teams in the Meet Yazid area, and with a core of farmers who have crop and livestock production.
2. This objective provides an opportunity to improve the skills of extension workers and build their credibility with farmers and contribute to farmer group formation.
3. An independent project would require a training (some of which could be based on materials from the Australian TopCrop and Ricecheck programs; condition scoring of animals).
4. This is the type of project that could benefit from pilot activity to explore the resource requirements and farmer response before moving it to a more regional or national objective.

**Recommendation:** That the ARC consider this project on crop and livestock monitoring and assessment, and the integration of technical and extension expertise necessary for its implementation.

**Objective 4.** To build capacity for decision makers, researchers and extensionists, farmers and other stakeholders through targeted communications and training.

1. Capacity or capability development is seen as essential but needs to be focussed given the differing requirements of aid and other funding providers.
2. Some capability building will be an essential part of any project to meet the needs of introducing new people into projects, and the continued training, particularly of young scientists.
3. Tertiary course training should be considered independently (undergraduate, postgraduate and post-doctoral)
4. Enhanced extension skills, especially technical knowledge, were highlighted as an area where Egyptian agriculture could benefit. This type of approach needs to take full account of adult learning principles, as were successfully used in the project CSE2011/017.

**Recommendation:** ARC work with appropriate organisations to strengthen the training of extension professionals in Egypt and improve their capacity to work in project design and development with farmers.

### **Thurs 25 June 2014 – afternoon**

This discussion related to the preparation of a report of the meeting, and the use of the meeting discussions as inputs to the final report for ACIAR and its partners.

#### **ACTIONS:**

1. Rural Solutions SA to provide a workshop report to all participants by 28 June 2014.
2. Incorporate elements of this meeting into the Final Report for ACIAR.

#### **Acknowledgments**

This meeting was encouraged and actively facilitated by Prof. Dr. Abd El Moneam El Banna, President, ARC, Dr Marwan Owagen, Regional Coordinator Nile & Sub-Sahara (ICARDA, Cairo) and Dr John Dixon, Research Program Manager/Senior Advisor, Cropping Systems and Economics (ACIAR). Dr Kamel Shideed, Assistant Director General - International Cooperation (ICARDA) has provided continuous support for project activities in Egypt and been key to the strong relationship between ACIAR and Australian partners.

Dr Theib Oweis, Director, Integrated Water and Land Management Program (ICARDA) joined the team for informal discussions during the first day of the workshop.

Sara Jani (ICARDA, Amman) provided excellent and timely support for the logistics management for the workshop.