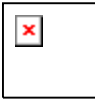


**Performance Measurement**  
**For The International Center for Agricultural**  
**Research in the Dry Areas (ICARDA)**  
**For 2006**

**March 2007**



Consultative Group on International Agricultural Research Performance  
Measurement System

**Full Reports for the CGIAR Performance Measurement**

**ICARDA Outputs – 2006**

Percent of output targets achieved: 91.07 %

**Project 01**

**MP1: Management of Scarce Water Resources and Mitigation of Drought in Dry Areas**

Output 01.01

Assessment of available water resources, including precipitation, surface water, ground water and marginal water, and the productivity, benefits and costs at different scales (plant, field, farm, and basin) of their use in agriculture in the dry areas

Target 01.01.01

Practices

Achieved

Potential areas for the adoption of water harvesting and supplemental irrigation practices in West Asia and North Africa (WANA), and the consequences for productivity and environment, assessed in Tunisia and Syria.  
Assessment methodologies provided to NARS in WANA

Output 01.02

Options and strategies for improved water productivity of rain, irrigation and marginal-quality waters in rainfed and irrigated systems through water harvesting, supplemental irrigation, agro management, and improved germplasm and cropping systems

Target 01.02.01

Practices

Achieved

Water use efficient packages for improved rainfed, irrigated and marginal agricultural systems developed in project benchmark sites in Morocco, Egypt, Jordan and Iran (*CP Water and Food*)

Output 01.03

Methods, options and strategies for drought characterization, preparedness and mitigation in the dry areas

Target 01.03.01

Other kinds of knowledge

Achieved

GIS-based methodology for mapping drought and dry spells developed

Target 01.03.02

Materials

Achieved

Ten drought tolerant barley, bread and durum wheat and legumes lines identified and crop management options evaluated with NARS

Target 01.03.03

Practices

Achieved

Options for drought mitigation and preparedness in selected countries developed

Output 01.04

Policy and institutional options for improved water use and irrigation demand management

Target 01.04.01 Policy strategies  Achieved  
Policy and institutional constraints to the adoption of improved supplemental irrigation, water harvesting and full irrigation identified (CP Water and Food).

**Note:** Partially achieved (60%): review of the policy and institutions in Egypt was completed and constraints to improved adoption identified and discussed by NARS. Due to administrative changes in Iran the work was not completed and is now planned for 2007.

Output 01.05  
Enhanced human capacity to improve water use in agriculture in dry areas

Target 01.05.01 Capacity strengthening  Achieved  
25 NARS specialists trained in improving water use efficacy in rainfed areas

Target 01.05.02 Capacity strengthening  Achieved  
20 NARS specialists acquire skills in drought management and developing national strategies to cope with drought

## **Project 02**

### **MP2: Integrated Gene Management: Conservation, Enhancement and Sustainable Use of Agrobiodiversity in Dry Areas**

Output 02.01  
Genetic resources of barley, wheat, lentil, chickpea, faba bean and feed legumes and their wild relatives conserved *ex situ* with their genetic diversity characterized and documented for relevant traits; Options for *in situ* conservation of agrobiodiversity available for users

Target 02.01.01 Materials  Achieved  
Collection mission conducted in Kyrgyzstan

Target 02.01.02 Materials  Achieved  
Sub-sets of wheat and barley accessions collected from drought-stressed sites identified using GIS

Target 02.01.03 Other kinds of knowledge  Achieved  
On-farm phenotypic characterization of at least 30 small ruminant breeds in CWANA documented

Output 02.02  
Improved genetic stocks of barley, wheat, and cool season food and feed legumes developed through conventional, biotechnological (molecular markers) and participatory breeding distributed to NARS through international nurseries

Target 02.02.01 Materials  Achieved  
30-50 drought tolerant barley, bread wheat, and food and feed legume lines and associated crop management options evaluated with NARS

Target 02.02.02 Materials  Achieved  
50 new barley lines with Fusarium Head Blight resistance and malting quality distributed in Latin America

Output 02.03  
Foundation seed of improved varieties and advanced lines of barley, wheat, and food and feed legumes available to NARS

Target 02.03.01 Materials  Achieved  
30 tonnes of seed of 20 varieties of cereals and legumes produced, treated and supplied to NARS

#### Output 02.04

Enhanced capacity of human resources in NARS to improve integrated gene management

Target 02.04.01                      Capacity strengthening                       Achieved

20 NARS scientists trained in specific aspects of integrated gene management (genetic conservation and documentation, breeding for biotic and abiotic stresses, participatory plant breeding, advanced statistical techniques and data management, molecular techniques and double haploid breeding and biosafety)

Target 02.04.02                      Capacity strengthening                       Achieved

5 M.Sc. and Ph.D. students complete their research under joint supervision by ICARDA scientists

Target 02.04.03                      Capacity strengthening                       Achieved

One international/regional meeting on aspects of integrated gene management organized in CWANA

### **Project 03**

MP3: Improved land management to combat desertification and increase productivity in dry areas

#### Output 03.01

A holistic Integrated Natural Resources Management (INRM) approach for combating desertification developed and delivered to partners.

Target 03.01.01                      Practices                       Achieved

An INRM framework and toolbox for use by NARS and other partners in 3 countries (Syria, Morocco, Iran)

#### Output 03.02

Assessment of land degradation and development of multi-scale tools & methods to assess land degradation, (location, extent, driving forces, causes, impacts and consequences of desertification in dry areas)

Target 03.02.01                      Practices                       Achieved

Five multi-scale tools and methods for assessing causes and extent of land degradation developed, tested and available to users.

#### Output 03.03

'Best-bet' technologies and practices developed for the sustainable management of land, vegetation and rangeland resources

Target 03.03.01                      Practices                       Achieved

Identification of local innovations and improved technologies in an additional two degraded areas

Target 03.03.02                      Practices                       Achieved

An additional three 'best bet' technologies identified and used via the participation of end users.

#### Output 03.04

Community-based land management practices

Target 03.04.01                      Practices                       Achieved

Model of rangeland management options in one agro-pastoral community

Note: This was not achieved due to resignation of rangeland scientist.

#### Output 03.05

Improved policy and institutional options for developing enabling environments to enhance private and public investment in dryland development and to combat desertification

Target 03.05.01                      Policy strategies                       Achieved

Collaborative linkages with partners through national action programmes, regional action programme, and country pilot programmes established. Role of property rights and communal management policies in land degradation analysed for two CWANA countries.

<u>Target 03.05.02</u>	<u>Policy strategies</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Role of property rights and communal management policies in land degradation analyzed for two CWANA countries.		

Output 03.06  
Training and human capacity building to manage natural resources in areas affected/prone to land degradation

<u>Target 03.06.01</u>	<u>Capacity strengthening</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Demand-led training guidelines, materials and courses to combat desertification and manage land degradation developed with the NARS of CWANA		

**Project 04**  
**MP4: Diversification and Sustainable Improvement of Crop and Livestock Production Systems in the Dry Areas**

Output 04.01  
Analysis of market constraints and opportunities for value-added crop and livestock products in the dry areas

<u>Target 04.01.01</u>	<u>Other kinds of knowledge</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Market constraints and opportunities for milk derivatives, value added crop products and forages identified in at least two countries in CWANA and Latin America		

<u>Target 04.01.02</u>	<u>Other kinds of knowledge</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Small ruminant health constraints and animal health delivery issues affecting market access identified in West Asia, North Africa and Sudan ( <i>in collaboration with ILR</i> )		

Output 04.02  
Options to increase the productivity of agricultural systems and to diversify income generating opportunities available to rural households, by diversifying cropping systems and increasing the quality and end-use value of crop products

<u>Target 04.02.01</u>	<u>Other kinds of knowledge</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Guidelines for and evaluation of integrated production and protection management (IPPM) practices for major cash crops under protected agriculture in the Arabian Peninsula and Afghanistan		

<u>Target 04.02.02</u>	<u>Other kinds of knowledge</u>	<input type="checkbox"/> <u>Achieved</u>
Land suitability methodology and maps for crops in Central Asia		

Note: Methodology + 1 map (olive) completed.  
Maps for other crops have not yet been prepared due to time, staff and funding constraints

Output 04.03  
Crop-livestock technologies to increase the productivity of livestock and to diversify and increase the quality and value of their products, through improved feed supply, feeding, health and breeding practices tested with NARS and farmers in CWANA

<u>Target 04.03.01</u>	<u>Materials</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Improved cultivars of forage legumes and food/feed crops to diversify and enhance the feed base of CWANA smallholder crop-livestock producers		

Output 04.04

Integrated pest management (IPM) options for cereal and legume based cropping systems in different agro-ecological zones developed and tested with NARS. The options include host resistance, crop rotation and other agronomic practices, chemicals, biological control and healthy seed

Target 04.04.01 Other kinds of knowledge  Achieved  
Incidence, spread and severity of selected pests and diseases in CWANA assessed in partnership with NARS

#### Output 04.05

Options for adding value to crop and livestock products through improved post-harvest handling and processing accessible to NARS and farmers

Target 04.05.01 Other kinds of knowledge  Achieved  
Impact of post-harvest handling on quality of conserved fodder assessed in at least two countries

#### Output 04.06

Knowledge and information to enhance the diversification of income generation options and reduce risk through training, networking and access to information accessible to NARS and other stakeholders (producers, handlers, marketers, policy makers)

Target 04.06.01 Capacity strengthening  Achieved  
Eight workshops on protected agriculture production practices conducted in Afghanistan and Yemen

Target 04.06.02 Capacity strengthening  Achieved  
Four farmer field days on livestock and forage technologies organized in two countries

### **Project 05**

#### **MP5: Poverty and Livelihood Analysis and Impact Assessment in Dry Areas**

#### Output 05.01

Causes of poverty and determinants of livelihood strategies in the dry areas are quantified, documented and accessible to stakeholders

Target 05.01.01 Other kinds of knowledge  Achieved  
Potential pathways out of poverty in integrated research site in Syria identified, documented and accessible to users

Target 05.01.02 Other kinds of knowledge  Achieved  
The dynamics of poverty in integrated research sites in Iran and Kazakhstan analyzed (*CP on Water and Food*)

#### Output 05.02

Impacts of agricultural research on productivity, income, and rural welfare in the dry areas quantified and accessible to stakeholders

Target 05.02.01 Other kinds of knowledge  Achieved  
Socio-economic and institutional factors affecting the adoption of crop technologies in Egypt, Sudan, Ethiopia analyzed

Target 05.02.02 Other kinds of knowledge  Achieved  
*Ex post* assessment of the impact of crop technological options on household income and its distribution in project sites in Syria and Iran completed (*CP Water and Food*)

#### Output 05.03

Impacts of natural resource management (NRM) research on economic, social and environmental sustainability quantified and results made available to stakeholders

Target 05.03.01 Other kinds of knowledge  Achieved



<u>Target 06.04.01</u>	<u>Other kinds of knowledge</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Expert system for faba bean accessible to users		
<u>Target 06.04.02</u>	<u>Other kinds of knowledge</u>	<input type="checkbox"/> <u>Achieved</u>
International Crop Information System (ICIS) for lentil operational and accessible to users		
<u>Target 06.04.03</u>	<u>Other kinds of knowledge</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Web-based Laboratory Information Management Systems (LIMS) and Genome Management System (GEMS) for molecular data integration available to all users within CP Generation ( <i>CP Generation</i> )		
<u>Target 06.04.04</u>	<u>Policy strategies</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Integrated Library Management Systems (ILMS) used as means of networking with NARS libraries in CWANA		
<u>Target 06.04.05</u>	<u>Other kinds of knowledge</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
On-line bio-computing modules accessible to users		

#### Output 06.05

Enhanced capacity of national research and technology transfer programs to better manage and disseminate knowledge

<u>Target 06.05.01</u>	<u>Capacity strengthening</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
National information professionals trained in management of electronic documents and databases		
<u>Target 06.05.02</u>	<u>Other kinds of knowledge</u>	<input type="checkbox"/> <u>Achieved</u>
E-learning and web-based training resources developed in collaboration with other IARCs and advanced research and training institutions, each year.		
<u>Target 06.05.03</u>	<u>Capacity strengthening</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Training course in use of agricultural and expert systems each year.		
<u>Target 06.05.04</u>	<u>Capacity strengthening</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Training manual on seed production published		
<u>Target 06.05.05</u>	<u>Capacity strengthening</u>	<input checked="" type="checkbox"/> <u>Achieved</u>
Enhanced capacity of national research, seed systems and technology transfer programs		

### **ICARDA Outcomes - 2006**

#### **Outcome 1**

##### **Pilot Village-based Seed Enterprises Developed in Afghanistan**

*Under an ICARDA-led research project on seed delivery systems, smallholder farmers in Afghanistan are now producing and marketing seed of improved crop varieties for the first time – and making healthy profits. Diffusion of modern varieties has accelerated, improving yields, nutrition and incomes in a poor, food-insecure region.*

Development of village-based seed enterprises (VBSEs) is a key research output from the USAID-funded Rehabilitation of Agricultural Markets Program (MTP 2003-05, Project 5.1, Output 5). ICARDA focused on five Afghan provinces with high levels of poverty and food insecurity. Crop productivity was low largely because seed of improved varieties was not available.

Participatory Rural Appraisal research was first used to identify target communities and preferred crops/varieties, and estimate seed demand and availability. VBSEs were then formed through community meetings involving ICARDA and broad range of stakeholders

including government ministries, local administration, NGOs and other partners.

Seventeen pilot VBSEs were established; 254 farmers in all. ICARDA worked with other CGIAR Centers to identify locally adapted varieties of the preferred crops. ICARDA also provided source seed and other inputs, advice and training on seed production and enterprise management, provision of appropriate cleaning and treatment machinery and regular monitoring for quality control.

A joint NARS-ICARDA-USAID survey in 2006 documented the outcomes. The VBSEs had produced 3,916 tons of quality seed of four strategic food crops – wheat, rice, mungbean, potato – which was sold to communities and government/NGO programs within and beyond the target districts. With high-quality seed now available locally at affordable prices, adoption of modern varieties is growing. Even more important, these pilot results are sustainable. Inputs were provided on credit, not free. Seed was sold at reasonable prices, and demand is high. Farmers now have the necessary skills, access to market information, and links with buyers.

Evidence: RAMP\_Brief-HO11.2005.pdf

## **Outcome 2**

### **NARS take up Innovative Research Approaches to Livestock Development**

*National programs in six countries in Latin America and Central Asia have adopted the project methodology addressing market opportunities to guide livestock research proposed by ICARDA to promote livestock technologies identified through community-based participatory and adaptive research.*

These outcomes resulted from small-ruminant research (MTPs 2003-05, Project 2.5, Output 1) in Brazil, Mexico, Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan, highly commended by donor-commissioned reviews. ICARDA in collaboration with NARS implemented a framework to simultaneously assess market problems and opportunities, and conduct participatory, community-based, adaptive research to test market-oriented technologies to improve livestock productivity for small-scale producers. In this process ICARDA successfully transferred to NARS the methods involved.

NARS in all six countries are now using the same approach in their development programs: bringing research directly to the producers' environment, interacting with other stakeholders (especially development projects) in the production context, and designing their research agenda according to market opportunities. The Mexican National Research Institute of Agricultural Research (INIFAP) in Zacatecas and the Brazilian Centre for Agricultural Research (EMBRAPA) in Sobral and Petrolina, have internalized this approach in their research agenda. IFAD development projects and associated NGOs in Brazil, after close interaction with project scientists, are now also using some of the technologies delivered in the process.

Because the approach was implemented in farmers' communities, farmers benefited directly from the options tested, and accessed technologies for better market targeting, and production diversification, offering alternative income sources, for example: production and sale of sheep cheese in Uzbekistan and Turkmenistan. By working together with scientists, farmers have found better ways to solve local problems.

Evidence: Evidence Material for Innovative Approaches to Livestock Development.doc

### **Outcome 3**

#### **Integrated Resource Management Approaches Used in Syria, Central Asia**

*Integrated Natural Resource Management (INRM) is widely recognized as a sound strategy, but implementation has often been limited. In contrast, ICARDA's INRM research ( MTP 2003-05, Project 3.2, Outputs 1, 2 and 4 ) has led to significant policy and environmental outcomes in Syria and Central Asia.*

Khanasser Valley is a drought-prone, poorly developed part of the Syrian steppe. A multi-disciplinary team worked closely with the communities to test and adapt appropriate technologies, strengthen local institutions, and identify policy options to improve livelihoods. Hydrology, agronomy, economic and other studies of the Jabul salt lake helped identify problems and potential solutions. The local communities around the lake now have a steering committee comprising local leaders and government and NGO staff. An action plan was developed for protecting the lake while maximizing sustainable benefits; and Syria's Ministry of Economic Planning has sought ICARDA's help to replicate the approach across the country.

Another study focused on olive trees. The number of trees in Western Khanasser had quadrupled in 7 years, encroaching into hill slopes. But farmers still used traditional flatland cultivation methods, resulting in rapid erosion and land degradation. ICARDA research documented the long-term impact of such changes (e.g. soil depth and organic matter content fell by 31% and 62% respectively) led to large-scale ICARDA/NARS efforts to arrest the decline. Farmers are now using simple soil and water conservation technologies (water harvesting, stone mulch...) to improve tree growth and productivity without causing degradation; and replacing traditional varieties with drought-tolerant ones.

The INRM framework has now been extended into Central Asia. NARS in five countries – Kazakhstan , Kyrgyzstan, Turkmenistan, Uzbekistan – have submitted to donors a joint prospectus (with ICARDA) for sustainable land management research.

Evidence: Evidence material for INRM.doc

### **Outcome 4**

#### **Thirty New Crop Varieties Released**

*National authorities in 15 countries released 30 improved varieties of wheat, barley, chickpea and lentil in 2006, all developed from improved populations or advanced lines provided by ICARDA (barley, legumes) or the ICARDA/CIMMYT Wheat Program.*

Wheat : 21 varieties of durum, bread and winter wheat released. Durum wheat: four in Syria (Cham-7, Bohouth-9, Bohouth-11, Douma-1); one each in Algeria (Bousalem), Jordan (Um Qais), Lebanon (Lahuacan), Morocco (Irden) and Tunisia (Naser). Spring wheat: two each in Azerbaijan (Nurlu-99, Azamelty-95), Sudan (Tagana, Khalifa) and Syria (Cham-10, Douma-2); one in Jordan (Ammoon). Winter wheat: four in Kyrgyzstan (Jamin, Zubkov, Azibrosk, Djamin), one in Turkmenistan (Botrap).

Barley : Two varieties released in Mexico (INIA-411 San Cristobal, Moronera INIA), one in Kyrgyzstan (Adel). Trials in CAC region have identified several more lines with valuable traits.

Chickpea : Two varieties released in Ethiopia (Teji, Ejere).

Lentil : Two in Turkey (Altin-Torak, Cagil), one each in India (VL-507) and Pakistan (Masoor-2006)

These releases, confirmed by the respective national authorities, are outcomes from joint ICARDA/NARS and ICARDA/CIMMYT/NARS crop improvement research (MTP 2003-05, Projects 1.1, 1.2, 1.3, 1.4 Output 1; Project 1.5 Outputs 3 and 5). ICARDA provided germplasm targeted at specific environments, and access to its genebank, training courses, workshops, and internships.

For smallholder farmers, the new varieties offer better yields, income, and nutrition. For example, the barley variety Adel yielded 25% more than the standard 'check'. Chickpea varieties Ejere and Teji have large white seeds that fetch premium prices; and yield 30-40% more than the 'checks'. Lentil variety VL-507 is resistant to wilt disease, the major constraint in many production areas, and yields 37% more than the check. The two Turkish lentil varieties are wilt-resistant, have bright red cotyledons (high prices), and are suitable for machine-harvesting.

Evidence: Evidence for Varietal Releases 2006.doc

## **Outcome 5**

### **NARS Use New Approach to Measure Water-Use Efficiency**

*National research programs in ten West Asian countries adopted a new methodology – developed by ICARDA and ESCWA (The UN Economic and Social Commission for Western Asia) – to measure on-farm water-use efficiency (WUE).*

Many of the world's dry areas suffer acute (and growing) water scarcity, impacting on food production, poverty, and environmental degradation. Low-income, agriculture-based countries are particularly at risk. One solution is to improve WUE in agriculture; and the first step is to quantify current WUE levels in order to identify water-inefficient areas or cropping systems.

However, WUE is hard to measure accurately, particularly in water-scarce areas. Key outputs from ICARDA's research in West Asia (MTP 2003-05, Project 3.1, Output 3) provide a solution. Earlier WUE studies in West Asia were mostly based on experimental trials on monocrops, which do not reflect the complex production decisions farmers make, in response to different technological, socioeconomic and biophysical conditions. The new research approach better reflects real-life situations by measuring on-farm WUE as the ratio of required-to-actual water use for a target production level. It also identifies indicators for WUE, and potential ways to improve irrigation efficiency.

In partnership with NARS and ESCWA, ICARDA tested and verified the methodology in six case studies in four countries (Egypt, Iraq, Jordan, Syria), and proved to be a robust tool for evaluating WUE in different crops, or as a basis for policy-making.

At a UN-sponsored meeting on WUE, ten West Asia NARS personnel were trained in the use of this methodology and it has become an important component of regional effort to use water more efficiently – highlighting the role of science in catalyzing change and is being utilized by other regional projects in WANA region.

Evidence: Evidence for WUE 2006.doc

## **ICARDA Impacts - 2006**

### **3A: I. Criterion 1: epIA studies/Advancement of epIA methods (70%)**

A) Please provide the full citation of all epIA studies<sup>1</sup> published in 2006 that attempt to assess major impacts attributed to your Center's work and provide summary information describing the main results/indicator(s) of impact.

1. Shideed, K., V. Alary, A. Lammari, A. Nefzaoui, and M. El Mourid (2006). Ex post Impact Assessment of Natural Resources Management Technologies in Crop-Livestock Systems in Dry Areas of Morocco and Tunisia. CGIAR, SC-SPIA. Natural Resources Management Research Impacts: Evidence from the CGIAR. Science Council Secretariat.

Main result/indicators of impact reported by the study (i.e., adoption, estimates of income effect, other effects, poverty impacts, environmental impacts, IRR, etc.)

- This study assesses the ex-post impact of NRM research, and involves assessing the impacts of *Atriplex* and *cactus* alley cropping using bio-economic community modeling, mathematical programming, simulation models, econometric analysis, and stochastic simulation.
- *Atriplex* alley cropping is adopted by 33% of farmers in Morocco. Its adoption increases barley grain yield by 17% compared to barley/fallow system and reduces feeding cost by 33%. IRR is 29% for Morocco and 16% for Tunisia, taking into account research and extension costs, and all other costs.

Environmental benefits of *Atriplex* alley cropping was estimated at \$245 per hectare.

B) For each completed ex-post IA study listed in I.A above, please provide the relevant information under each component (check the appropriate item)

**1. Publication venue:**

- Refereed journal
- Book chapter
- Conference paper (includes proceedings)
- In-house publication (reviewed externally)
- In-house publication (not reviewed externally)
- Unpublished report
- Other

**2. (Co-) Authorship:**

- With other CG Center scientists
- With NARS scientists
- With ARI scientists
- Center only scientists
- Other

**3. EpIA coverage:**

- Commodity improvement
- NRM related
- Policy related
- Biodiversity related
- Training/Capacity building related
- Other

**4. Distance down the impact pathway covered by the study:**

- Uptake/adoption (field surveys)
- Influence (bibliometric/citation analysis, key informant surveys, etc.)
- Intermediate impacts (improved yield/quality, lower risk, higher income, conserve resources,

increase market access/efficiency, develop human capacity)

Ultimate impact (poverty, food security, environment)

Other

**5. Geographical breadth of impacts assessed by the study:**

Single location within single country assessment

Multi-locations (regions) within single country assessment

Multiple countries (~ 2-5) assessment

Global assessment (i.e., spread over several continents)

Other

**6. Advances in new methods/models for epIA embodied in the study:**

Addresses non-economic impacts

Addresses differential effects (different target groups)

Addresses positive and negative effects

Addresses multiplier effects (other sectors)

Employs novel methods (combines quantitative & qualitative, participatory approaches, etc.)

Other methodological advances ...:

2. Mustafa, Y., S. Ceccarelli, and S. Grando (2006). Cost-Benefits Analysis of Participatory Breeding Program in Syria. in N. Lilja, J. Dixon, et al. (eds.). *New Avenues in Impact Assessment of Participatory Research and Gender Analysis*. Proceedings of Impact Assessment Workshop, CIMMYT, Mexico.

Main result/indicators of impact reported by the study (i.e., adoption, estimates of income effect, other effects, poverty impacts, environmental impacts, IRR, etc.)

- To assess the benefits and costs of conventional and participatory plant breeding programs, data were collected from ICARDA projects in barley breeding program, farm surveys, and national agricultural research program in Syria.
- Results show that gross economic benefits for barley participatory breeding program was US\$ 110.7 million, and for conventional barley breeding program US\$ 77.6 million for 1996–2015. The research expenditures of the CPB were twice as much as PPB research expenditures. The (IRR) for participatory barley breeding in Syria projected for 1993–2015 was 46%, and for conventional breeding 19% for the period 1985–2015.

B) For each completed ex-post IA study listed in I.A above, please provide the relevant information under each component (check the appropriate item)

**1. Publication venue:**

Refereed journal

Book chapter

Conference paper (includes proceedings)

In-house publication (reviewed externally)

In-house publication (not reviewed externally)

Unpublished report

Other

**2. (Co-) Authorship:**

With other CG Center scientists

With NARS scientists

With ARI scientists

Center only scientists

Other

**3. EpIA coverage:**

Commodity improvement

NRM related

Policy related

Biodiversity related

Training/Capacity building related

Other: Participatory plant breeding versus conventional plant breeding

**4. Distance down the impact pathway covered by the study:**

Uptake/adoption (field surveys)

Influence (bibliometric/citation analysis, key informant surveys, etc.)

Intermediate impacts (improved yield/quality, lower risk, higher income, conserve resources, increase market access/efficiency, develop human capacity)

Ultimate impact (poverty, food security, environment)

Other

**5. Geographical breadth of impacts assessed by the study:**

Single location within single country assessment

Multi-locations (regions) within single country assessment

Multiple countries (~ 2-5) assessment

Global assessment (i.e., spread over several continents)

Other

**6. Advances in new methods/models for epIA embodied in the study:**

Addresses non-economic impacts

Addresses differential effects (different target groups)

Addresses positive and negative effects

Addresses multiplier effects (other sectors)

Employs novel methods (combines quantitative & qualitative, participatory approaches, etc.)

Other methodological advances ...: Linking ecological modeling to economics, endogenizing adoption within mathematical programming and stochastic simulation

3. Mazid, A., K. Shideed, and K. Amegbeto (2006). Adoption and Impact of Technology Generation and Dissemination for Sustainable Production of Cereals and Cool-Season Food Legumes in the Nile Valley and Red Sea Region (Egypt, Ethiopia, Sudan, and Yemen). in Enhancing Food Security in the Nile Valley and Red Sea Region. ICARDA, Final Report, September 2006, 72pp.

Main result/indicators of impact reported by the study (i.e., adoption, estimates of income effect, other effects, poverty impacts, environmental impacts, IRR, etc.)

- The project on "Technology Generation and Dissemination for Sustainable Production of Cereals and Cool-Season Food Legumes" is to improve food security and farm household income by developing and transferring the improved technologies to farmers.
- Several indicators were used to measure the economic and social impact, including productivity of each crop under the recommended technology, farm income level and its distribution, household food security, poverty, and employment. The households who adopted the technology increased their food security from faba bean production by 8% in Sudan, 13% in Egypt, and 39% in Ethiopia.

B) For each completed ex-post IA study listed in I.A above, please provide the relevant information under each component (check the appropriate item)

**1. Publication venue:**

- Refereed journal
- Book chapter
- Conference paper (includes proceedings)
- In-house publication (reviewed externally)
- In-house publication (not reviewed externally)
- Unpublished report
- Other

**2. (Co-) Authorship:**

- With other CG Center scientists
- With NARS scientists
- With ARI scientists
- Center only scientists
- Other

**3. EpIA coverage:**

- Commodity improvement
- NRM related
- Policy related
- Biodiversity related
- Training/Capacity building related
- Other

**4. Distance down the impact pathway covered by the study:**

- Uptake/adoption (field surveys)
- Influence (bibliometric/citation analysis, key informant surveys, etc.)
- Intermediate impacts (improved yield/quality, lower risk, higher income, conserve resources, increase market access/efficiency, develop human capacity)
- Ultimate impact (poverty, food security, environment)
- Other

**5. Geographical breadth of impacts assessed by the study:**

- Single location within single country assessment
- Multi-locations (regions) within single country assessment
- Multiple countries (~ 2-5) assessment
- Global assessment (i.e., spread over several continents)
- Other

**6. Advances in new methods/models for epIA embodied in the study:**

- Addresses non-economic impacts
- Addresses differential effects (different target groups)
- Addresses positive and negative effects
- Addresses multiplier effects (other sectors)
- Employs novel methods (combines quantitative & qualitative, participatory approaches, etc.)
- Other methodological advances ...

4. Amegbeto, K.N., A.G. van Gastel, and S. Shamsuddin (2006). Impacts of Emergency Seed and Fertilizer Aid in Afghanistan. Policy Brief, ICARDA, Aleppo, Syria.

Main result/indicators of impact reported by the study (i.e., adoption, estimates of income effect, other

effects, poverty impacts, environmental impacts, IRR, etc.)

- Social/gender and institutional impacts and income effects
- Distribution of improved seeds through active institutional setups did not appear to significantly strengthening the social capital
- Women farmers were not specifically targeted because of the socio-cultural construct and integrated protection as safety net.

The one time seed and fertilizer aids had positive economic impact evaluated between \$95 and \$287 wealth injection per household. However, experienced crop failures at individual household level translated into \$60 loss per household amid positive gains through wheat consumption at lower price (as reflected by consumer surplus and producer surplus estimates).

B) For each completed ex-post IA study listed in I.A above, please provide the relevant information under each component (check the appropriate item)

**1. Publication venue:**

- Refereed journal
- Book chapter
- Conference paper (includes proceedings)
- In-house publication (reviewed externally)
- In-house publication (not reviewed externally)
- Unpublished report
- Other

**2. (Co-) Authorship:**

- With other CG Center scientists
- With NARS scientists
- With ARI scientists
- Center only scientists
- Other

**3. EpIA coverage:**

- Commodity improvement
- NRM related
- Policy related
- Biodiversity related
- Training/Capacity building related
- Other

**4. Distance down the impact pathway covered by the study:**

- Uptake/adoption (field surveys)
- Influence (bibliometric/citation analysis, key informant surveys, etc.)
- Intermediate impacts (improved yield/quality, lower risk, higher income, conserve resources, increase market access/efficiency, develop human capacity)
- Ultimate impact (poverty, food security, environment)
- Other

**5. Geographical breadth of impacts assessed by the study:**

- Single location within single country assessment
- Multi-locations (regions) within single country assessment
- Multiple countries (~ 2-5) assessment

- Global assessment (i.e., spread over several continents)
- Other

**6. Advances in new methods/models for epIA embodied in the study:**

- Addresses non-economic impacts
- Addresses differential effects (different target groups)
- Addresses positive and negative effects
- Addresses multiplier effects (other sectors)
- Employs novel methods (combines quantitative & qualitative, participatory approaches, etc.)
- Other methodological advances ...

C) Please provide an estimate of the following:

1. Annual budget/expenditures devoted to epIA work in your Center in 2006: US\$ 0.00

OR

2. Number of full time equivalent staff devoted to epIA work in your Center in 2006: 2.00

**3A: II. Criterion 2: Building an IA culture at the Center (Indicate "Not applicable" if there is nothing to report under a particular heading) (20%)**

A) Please provide a list of internal workshops convened by the Center's impact assessment unit/specialists within the past year to help assess the expected impacts of planned and ongoing research of the Center (for each, describe the theme and number of Center participants)

Workshops List: List of Internal Workshops 2006.doc

B) Please provide 2 examples of systematic evaluation of user relevance of Center research outputs produced within the past year such as early adoption/influence studies (max of 100 words for describing data collection, analysis, and major finding for each example)

**Adoption of winter chickpeas:** Traditionally sown during spring in CWANA on conserved soil moisture chickpea productivity is constrained by drought and vascular wilt. ICARDA and NARS have developed improved package for winter planting; including new winter varieties, pesticides for Ascochyta blight, seed treatment, and planting date. Data were collected from 470 farmers in four provinces and two rainfall zones using stratified sampling. Improved winter varieties are adopted by 66% of producers. Nearly 23% of adopters used recommended seeding rate, and 45% recommended planting date, 45% adopted the recommended insecticide dosage. As a result net revenue increased by 34% per hectare.

**Water Harvesting in Jordan:** A total of 143 households were randomly selected and interviewed from two communities. In general, water harvesting can capture and retain water in the soil in dry areas where other sources are not feasible. However water harvesting techniques are not implemented at a large scale due to capital shortage as indicated by 40% of respondents, and considered as a non efficient technique by 30% of farmers. The constraints for wider adoption of water harvesting techniques are lack of knowledge (26%), low income of farmers (20%), and shortage of capital (19%).

C) Please provide specific examples of how empirical ex-post impact assessment findings have been applied as a basis for quantitative ex-ante impact projections that contribute to the Center's priority-setting procedures, or have been used to validate earlier ex-ante work.

- Successful implementation and presentation of ex-post impact assessment studies has motivated increased demand from biophysical scientists for more IA studies

on their research. As a result, selection criteria were developed based on potential impact, among others, to decide on prioritization of future epIA studies.

- New ICARDA Strategy includes a section on impact and lessons learned, which has helped in identifying priority research themes of main focus for the next ten years, 2007-2016.

D) Please provide specific examples of establishment of baseline studies to provide counterfactuals for future epIA

1. Mohammed, A., K. Shideed, and F. Shomo. Socioeconomic and livelihood characterization, and baseline information of integrated research sites in Balochistan. International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria. x + 80pp. ISBN: 92-9127-184-6.
2. Akroush, S. and K. Shideed. "Baseline Information and Livelihood Characterization of Badia Benchmark Water Harvesting in Jordan".
3. Baseline information for a sample of 260 farmers in 4 rainfall zones developed for an ACIAR Project on Better Crop Germplasm and Management for Improved Production of Wheat, Barley, and Pulse and Forage Legumes in Iraq.

### **3A: III. Criterion 3: Communication/dissemination and capacity enhancement (10%)**

A) Please specify how the findings of epIAs have been disseminated in 2006 (Indicate "Not applicable" if there is nothing to report under a particular heading):

1. Number of epIA briefs published(not general M&E briefs): **3**
2. Dissemination of epIA findings in popular media (number of stories published): **4**
3. Dissemination of major IA findings through the Center website/IA webpage (indicate number of hits/visits/downloads of IA related reports/articles ): **2721**
4. Any other method of dissemination of epIA findings used in 2006:

Impact related presentation at planning and technical and coordination meetings of different projects implemented by ICARDA and NARS. This has provide excellent opportunities for disseminating impact results to wide audiences and enhancing the impact culture at project and NARS levels as well as at program and center levels.

B) Please specify your Center's efforts in building capacity in IA in 2006 (Indicate "Not applicable" if there is nothing to report under a particular heading):

1. Number of IA related conferences/workshops conducted for external audiences in 2006 (e.g., NARS scientists): **4**

List of events: List of IA Related Conferences 2006.doc

2. Number of IA related training materials developed: **1**

List: List of IA Related Training Materials 2006.doc

3. Number of IA visiting specialist from a NARS hosted: **15**

4. Any other IA related capacity building efforts in 2006:

Degree Training for NARS, as follows:

- Abeer Munla Hassan, Ph.D. student, Damascus University on "Assessing the economic, social & environmental impacts of mechanized micro-catchments water harvesting on Syrian rangelands communities"
- Samia Akroush, Ph.D. student, Aleppo University on "Assessing the Adoption and

### Impact of Water Harvesting Techniques in the Low Rainfall Areas of Jordan”

- Amjad Bader, PhD student, Aleppo University on “the impact of new supplemental irrigation technologies on wheat production systems in Syria”.
- Wael Habib, Msc student, Damascus University on “Analysis of the impact of income diversification on rural poverty in Al-Bab region near Aleppo”

#### **3A: IV. Other**

Please list/describe any other impact-related activity or outcome of 2006 that you believe warrants consideration in this exercise but is not covered in any previous criteria/questions..... (Modifier to overall score)

- Strengthening collaboration with ARI on IA research. Dr. Cheryl Doss, Yale University, on assessing child nutrition and measuring the impact of the agricultural research on rural poverty; Dr. Peter Midmore, University of Wales, visited to develop collaborative research on IA of NRM research and the development of related social, economic and environmental indicators.
- Expanded collaborative arrangements with other CGIAR centers: with CIMMYT on joint workshop on impact assessment for Turkey, and joint IA presentation, in Alexandria workshop, and research on Global Rust Initiative, with CIAT on joint workshop on outcome mapping for Iran.

#### **3B: SC/SPIA rating of two Center impact studies carried out in the period 2003-05 for rigor**

Impact Study 1: Q3b1\_aw-hassan5.pdf

Impact Study 2: Q3b2\_aw-hassan7.pdf

### **Results for the CGIAR Performance Measurement**

#### **ICARDA Quality and Relevance of Current Research - 2006**

4A: Number of peer-reviewed publications per scientist in 2006 (excluding articles published in journals listed in the Thomson Scientific/ ISI): **1.63** papers per scientist

List of publications: No of Publications Non-ISI 2006.rtf

List of scientists: List of scientists 2006-4A.xls

4B: Number of peer-reviewed publications per scientist in 2006 that are published in journals listed in Thomson Scientific/ISI: **0.63** papers per scientist

List of publications: No of Publications ISI 2006.rtf

List of scientists: List of scientists 2006-4B.xls

4C: Percentage of scientific papers per scientist that are published with developing country partners in refereed journals, conference and workshop proceedings in 2006: **51.60** % of scientific papers

List of publications: No Publications with Developing Country Partners 2006.rtf

## ICARDA Institutional Health - 2006

### 5A: Governance

#### Board Composition and Structure (as of December 31, 2006)

5A.1) What is the percent of Board leadership (Chair, Vice Chair and Standing Committee Chairs) with developing country origin?

- 0%     1-20%     21-40%     41-60%     Over 60%

5A.2) What percent of Board membership positions are occupied by women?

- 0%     1-20%     21-40%     41-60%     Over 60%

5A.3) What percent of Board membership positions are occupied by individuals whose organizations are either direct recipients of Center funds OR whose organization are contributors to the CGIAR (and the Board member is in direct line responsibility of CGIAR funds)?

- 0-10%     11-20%     21-30%     31-40%     Over 51%

5A.4) How many Board members have professional qualification in financial management?

- 0     1     2     3 or more

5A.5) How many Board members have professional expertise in corporate, non-profit or public governance?

- 0-1     2-3     4-5     6 or more

5A.6) Is the Center Director General a member of the Nominating Committee?

- Yes     No

#### Board Practice

5A.7) Have all new Board members (who started their terms in 2005 or 2006)

attended a CGIAR Board Orientation Program?

- Yes     No

attended a comprehensive center-specific orientation program?

- Yes     No

5A.8) Has the Board conducted a self-assessment in 2006?

- Yes     No

5A.9) Was the full Board engaged in the annual performance assessment of the Board Chair?

- Yes, the full Board     Yes, less than the full Board     No

5A.10) Is there a formal process in place for evaluating Board members before reappointment?

- Yes     No

5A.11) How often did the full Board and the Executive Committee meet in 2006 (including virtual meetings)?

No. of meetings of full board: 2

No. of meetings of Executive Committee: 0

5A.12) Has the Center completed a Board commissioned CCER on Center governance and management during 2004-2006?

- Yes     No

5A.13) Does the Board have a clear strategy for communicating with stakeholders (including CGIAR

Members, other Centers, Partners)?

Yes  No

#### Determining the Center's mission and strategy

5A.14) In 2006, has the entire Board been engaged in reviewing, approving and guiding major institute-wide plans (i.e., MTP)?

Yes - Fully  Yes - Partially  No

#### Program Oversight

5A.15) In 2006, did the Board discuss and act on any significant deviations from previously announced targets and strategic goals for 2005 as defined in the MTP?

Yes - Fully  Yes - Partially  No

5A.16) Does the Board have an approved schedule for CCERs on program matters?

Yes  No

5A.17) In 2006, did the Board monitor actions taken in response to CCERs and EPMRs?

Yes - Fully  Yes - Partially  No

#### Financial Oversight

5A.18) Is there, in Board-approved documents, a clear policy on the delegations of authority from the Board to the director General which indicates those financial transactions for which the approval of the Board is necessary, and those for which decision is delegated to the Director General?

Yes  No

5A.19) Is there a Board approved investment policy in place?

Yes  No

5A.20) Has the Board rotated external auditors in line with the CGIAR policy?

Yes  No

5A.21) Does the full Board receive information on key financial indicators on a quarterly or more frequent basis?

Yes  No

5A.22) In 2006, did the Board discuss and act on any significant deviations (more than 10 percent) from the budget planned for 2005?

Yes  No  No deviations

#### Setting and reinforcing ethical standards, values and policies

5A.23) Is it Board practice to have each Board member declare potential conflicts of interest ahead of each meeting?

Yes  No

5A.24) Has the Board discussed/ reviewed the Centers human resource policies during 2005-2006?

Yes  No

5A.25) In 2006, has the Board received and reviewed Center staffing numbers and trends (including consultants and gender and diversity information)?

Yes  No

5A.26) Has the Board reviewed the adequacy of the Center's risk management and internal control

mechanisms as an explicit Board meeting agenda item during 2005-2006?

Yes       No

5A.27) Is there a board approved grievance policy?

Yes       No

5A.28) Is there a board approved "whistle blowing" policy?

Yes       No

#### **Ensuring strong and continuous leadership of Centers**

5A.29) Do Board members other than the Board Chair participate in the annual performance appraisal of the DG, including decisions on compensation?

Yes, fully       Yes, partially       No

5A.30) Is there a current succession plan for senior management?

Yes       No

#### **Disclosure, Transparency and Accountability**

5A.31) Is the following Center information publicly available (e.g. on the Center website)?

- the Centers current Medium-Term-Plan

Yes       No

- Financial performance of the Center (i.e. as disclosed in the Center Annual Report)

Yes       No

- Staff compensation structure (i.e. salary scales for different grades of staff)

Yes       No

- the latest Center External Programme and Management Review (including Center response)

Yes       No

- Minutes of the Center Board Meetings (concerning non-confidential agenda items)

Yes       No

5A.32) Does the Center have a formal code of conduct / ethical principles (including conflict of interest rules) for staff, managers and board members?

Yes, fully enforced       Yes, partially enforced       Yes, but not enforced       No

5A.33) Are your procurement policies and their implementation fully consistent with the CGIAR Guidelines on Procurement of Goods, Works and Services (FG 6)?

Yes, fully enforced       Yes, partially enforced       Yes, but not enforced       No

#### **5B: Board Statements**

During 2006 ICARDA went through a transition of leadership with both a new DG and a new Board Chair taking office. A major activity of the new Board was to consider the outcome of the EPMR and the development of a response to its recommendations. In addition, the Board decided to move to two full board meetings each year in lieu of only one. Clearly this will improve the Board's total oversight to the research program and to management and administration. This measure allows for two meetings of the Programme Committee giving more time for discussing programme related matters and better interaction with programme leaders and staff. The Board also improved the processes used by the Programme Committee to ensure effective programme oversight.

In order to revitalize ICARDA's corporate services, the Board commissioned in 2006 an external review of the Center's Human Resources, Finance and Corporate Services. This review was completed in January 2007 and is expected to result in a major overhaul of especially human resources management. The 31 recommendations of this review were accepted by the Board and this will have a considerable impact on the well being of staff as well as on on science quality and financial management.

Evidence material: Evidence Material for Board Statement.doc

### **5C: Culture of learning and change**

#### 5C.1) Staff surveys

a. Has the Center conducted a staff satisfaction and/or attitude survey of ALL staff in 2005 or 2006, where the results were shared with staff?

Yes  No

b. If yes, did the survey result in specific action plans to improve staff satisfaction and /or attitudes?

Yes  No

#### 5C.2) Leadership development program

a. Does the Center have an active leadership development program covering current and prospective staff in managerial positions?

Yes, for current AND prospective staff  Yes, for current staff  Yes, for prospective staff  No

#### 5C.3) Individual learning plans

a. Does the staff appraisal system include the development and follow-up of annual individual learning plans?

Yes  No

b. Does the Center have a mentoring program for young scientists?

Yes  No

#### 5C.4) Staff development activities

a. What percentage of the overall 2006 budget was spent for attendance at international conferences or professional society meetings, or for a short sabbatical at a university, etc?

0- 0.5%  0.51-1.0%  1.1%-2.0%  2.1%-3%  More than 3%

b. What percentage of the overall 2006 budget was spent on staff training (e.g. computer, language, project management, leadership training etc.)?

0-0.5%  0.51-1.0%  1.1%-2.0%  2.1%-3%  More than 3%

c. Considering staff training only (question 5C-4b), what is the total number of training days in 2006 for all IRS staff, divided by the total number of IRS staff?

Less than 1  1-2.5  2.6-4.5  4.6-6.5  6.6-8  More than 8

d. Considering staff training only, what is the total number of training days in 2006 for all NRS staff, divided by the total number of NRS staff?

Less than 1  1-2.5  2.6-4.5  4.6-6.5  6.6-8  More than 8

#### 5C.5) On average, how many days did an IRS staff spend in 2006 on program planning and review?

0-2.0  2.1-3.0  3.1-4.0  4.1-5.0  More than 5

#### 5C.6) Completed CCERs in 2004-2006

a. How many Board commissioned CCERs on program-related matters were completed in 2004-06?

0     1     2     3     4 or more

b. What is the percentage of your program budget (average for 2004-2006) that has been covered by CCERs completed in 2004-06?

0%-30%     31%-50%     51%-70%     71%-90%     Over 90%

#### 5C.7) Partnerships

a. How many SWPs/CPs was the Center actively engaged in as a partner during 2006?

Less than 3     3-6     7-10     More than 11

b. How many new and substantive partnerships did the Center establish with external partners (e.g. National Agricultural Research Institutes, Civil Society Organizations) in 2006? **13** (No. of NEW partnerships)

Please list names of up to 3 new partner organizations

**The Chinese Academy of Agricultural Sciences (CAAS)**

**The Mosul University, Iraq**

**Fund for Integrated Rural Development of Syria (FIRDOS)**

5C.8) Do you systematically preserve research project data (primary and secondary data sets), including documentation on the data and project?

Yes, we have a comprehensive (meta) database for primary and secondary research data that is fully available for internal use

Yes, we have some, but not all, of the research project data preserved and these are internally available

No, we do not have at all a (meta) database preserving research data systematically

### **5D, 5E, 5F, 5G: Diversity**

5D) Gender diversity goals: Does your Center have Boardapproved gender diversity goals?

Yes     No

5E) Percentage of women in management(Percent of management positions, either research or non-research, occupied by women as of 31. December 2006). **9.00 %**

List of staff members: ICARDA (Mgmt Committee-Heads).xls

5F) IRS Nationality concentration:

Percentage of internationally-recruited staff that come from the top two countries represented in the IRS staff nationality list for the Center(as of December 31, 2006). Please also indicate the Nationality.

First nationality: **13.10 %** - Nationality: **Syrian**

Second nationality: **8.40 %** - Nationality: **Indian**

List of IRS staff: IRS Nationality Concentration 2006.xls

5G) Diversity in recency of PhDs:

Percentage of scientists receiving their Ph.D. during the last five years (2002-2006). **18.80 %**

List of scientists: Per Indicator 2006 (7D) PhD 12.03.07.xls

### **ICARDA Financial Health – 2006**

**(These will be submitted to the CGIAR Financial Information System and transferred later to the Performance Measurement System)**

6A) Short term solvency (liquidity): **0**

6B) Long-term financial stability (adequacy of reserves): **0**

6C) Efficiency of Operations (indirect cost ratio): **0.00**

6D) Cash Management on Restricted Operations: 0.00

6E) Audit Opinion: No answer

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