



RESEARCH
PROGRAM ON
Dryland Systems



Photo 1: Community Meeting in Nampoosela, Koutilia District, Mali/D. Merrey

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CRP-Commissioned External Evaluation of Dryland Systems INTERIM REPORT

By Douglas Merrey, Judit Szonyi, Ross McLeod

*Food security and better livelihoods
for rural dryland communities*

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas. Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centres and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Centre for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

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List of Acronyms

CA	Central Asia
CAZRI	Central Arid Zone Research Institute
CCEE	CRP-Commissioned External Evaluation
CIAT	International Center for Tropical Agriculture
CIP	International Potato Center
CRP	CGIAR Research Program
ESA	East and Southern Africa
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRAF	International Centre for Research in Agroforestry (World Agroforestry Center)
ICRISAT	International Crops Research Institute for the Semi-Arid-Tropics
IDCC	Inter-departmental Coordinating Committee
IDO	Intermediate Development Outcome
ILRI	International Livestock Research Institute
IPG	International Public Good
IWMI	International Water Management Institute
KKM	Kano-Katsina-Maradi
NARS	National Agricultural Research Systems
NGOs	Non-Governmental Organizations
NRM	Natural Resource Management
NUE	Nitrogen use efficiency
POWB	Plan of Work and Budget
PMU	Program Management Unit
R4D	Research for Development
R&D	Research and Development
SA	South Asia
USAID	United States Agency for International Development
WAS&DS	West African Sahel and Dry Savannas
WBS	Wa-Bobo-Sikasso
WUE	Water use efficiency

Introduction

The CCEE Team had agreed with the Program Management Unit (PMU) of the CGIAR Research Program on Dryland Systems (hereinafter referred to as Dryland Systems) that it would submit a short interim report this month. This report follows the design and launch of on-line surveys of Dryland Systems partners, and the completion of the planned field visits in Asia and Africa.

As stated in the Inception Report, one member of the team (McLeod) was to visit action sites in both South Asia and Central Asia. The Team Leader (Merrey) was to visit action sites in eastern and southern Africa, West Africa and the Dry Savannahs, and North Africa as well as CGIAR offices in Nairobi, Kenya. However, after the announcement of the new CRP landscape to be launched in 2017, the Dryland Systems Director asked that the field visits be reduced. Therefore, McLeod visited South Asia (Rajasthan) but dropped the planned visit to Central Asia. Merrey visited action sites in Ethiopia and Mali and visited Nairobi; but he dropped the planned visit to Tunisia (North Africa Flagship).

Dropping the visits to two of the Flagships is unfortunate even if understandable in view of the outcomes of the Windsor meetings on the future CRP landscape. It means the team will not have visited a site in each of the five regional Flagships as planned, and therefore will have that much less data as a basis for the report. On the other hand, the overall observations emerging from the three action sites visited are broadly consistent with each other.

This report is therefore based on the field visits completed; reviews to date of documents and reports – a process that is still on-going; and the experience with designing and launching the on-line surveys, including an analysis of some results. The observations and comments are preliminary, and subject to further correction and refinement. The report does not follow a consistent format – the two team members who made the field visits formatted their reports differently. Comments and corrections are welcome as part of the process of carrying out the CCEE. According to the Inception Report, a draft final report is to be completed by the end of July 2015. It has been confirmed that the CCEE Team Leader will spend the last week of July in the ICARDA offices in Jordan, finalizing the report. Therefore, as of this writing, the timetable remains as agreed in the Inception Report. The next section discusses the field visits and meetings at CGIAR centers in Nairobi. This is followed by a progress report on the survey of Dryland Systems partners. The final section offers some preliminary broad observations. At the end there are some photos taken on the field visits in Africa.

Visits to Field Sites and CGIAR Centers

Visit to South Asia Flagship: Jodhpur, Rajasthan (Ross McLeod)

The flagship is comprised of action sites in India - Rajasthan (Barmer, Jodhpur, and Jaisalmer Districts), Andhra Pradesh (Anantapur, Kurnool Districts) and in Karnataka (Bijapur District). A site is also operating in the Chakwal district in Pakistan. Rajasthan was selected for fieldwork due to the value of operations. Key objectives of research across the flagship include understanding system structure - through baseline characterization, identification and implementation of resilience building and intensification options; development of innovation platforms, gender mainstreaming and creation of knowledge products including data sharing. Documents were reviewed and a series of semi-structured interviews conducted as part of the fieldwork. Results of these analyses are summarized by evaluation criteria in these notes, commencing with relevance.

Relevance

Coherence: A number of views were provided about the considered uniqueness of the Dryland Systems. They included a view that before its establishment agencies such as NGOs and CAZRI¹ worked separately and now they are working in a more integrated manner. Others thought R&D is addressing key farmer problems (e.g. as farmers didn't think there were soil problems in the past) and practical management information is being developed which will make a difference to livelihoods. The focus on livelihoods was thought to be a result of greater stakeholder consultation. The key point of relevance for the NARS (CAZRI) is the linkage to international scientists, a view also expressed by national partners in Ethiopia and Mali.

There was a mixed understanding of “dryland systems research”. Some scientists noted that the CRP was not conducting new R&D, but the approach is different in that a new set of processes have been established. As part of the approach, the “CRP team discusses options with farmers, and comes up with a combination of strategies to tackle key problems”. The notion of integration, farmer-led and flexibility rather than supply-side R&D seemed to be the key features of systems thinking that have been embedded in CRP activities. It appears that participatory methods – such as innovation platforms user groups, rapid appraisal and community-led integrated demonstration trials are well underway.

Comparative Advantage: Principal investigators were asked whether scientists participating in Dryland Systems understand systems versus component-disciplinary research. A move back to component research was feared as a big risk in the CRP architecture following the Windsor DG meeting, as an integrated approach will be lost within commodity-focussed CRPs. It was highlighted that farmers in drylands integrate multiple cropping and livestock production systems to manage risk. For example, if rains do not come - crops fail - then farmers rely on livestock products. In such a dynamic environment, research needs to consider multiple systems to package appropriate farmer recommendations. Focusing on research within single product-focussed CRPs will lose this dimension.

Program Design: The inception report outlines that a three-day workshop for program design in South Asia was held in Dubai, 25–27 June 2012. It involved 50 participants from India, Pakistan, and Afghanistan from organisations such as ICARDA, ILRI, IWMI, CIP, and Bioversity International and scientists from national programs and the private sector. A survey was also conducted to support site selection and research priority setting. Feedback during fieldwork interviews was positive about research activities in program design. NARS noted that key priorities are being addressed and the systems approach has led to R&D being farmer-driven. From the NARS standpoint, the research is generally addressing key problems of farmers. It was indicated that a key problem is illiteracy of farmers, and there is a need to develop adoption strategies that reflect this constraint. Some thought more livestock work is needed. It was felt there were not enough intensification sites. The number of sites in resilience and intensification sites should reflect the numbers of farmers in each agro-ecosystem, which is not the case. Respondents were asked what role they had in the design of the research/extension. Farmers are happy with progress and stated all sections of the community are involved.

Effectiveness

The key objective of the flagship is addressing farm yields that are less than half of the potential and have high variation. In order to address this issue, research is being conducted to determine niches and potential for technology adoption for sustainable intensification and systems resilience and its targeting. The extent to which planned outputs are meeting these objectives are detailed for each action site activity.

¹ Central Arid Zone Research Institute.

Climate variability risk analysis (WUE & NUE) for cropping systems based on historical as well as future climate change scenarios will use an already developed model based on AP-SIM. The activity will be undertaken from May to August 2015. The model is calibrated for millet and sorghum. It will be used for crop risk and planting times once the monsoon outlook is provided. The investigators noted they should get 1 PhD and a couple of masters for this work. The output timing milestones in the 2015 POWB appear to be reasonable. Now that sites have been established this type of modelling work can go ahead.

Quantifying present and potential land and water productivity for different conventional and best-bet cropping systems in the Indira Gandhi Canal Command Area is an ICARDA bilateral project. The investigators understand a master's thesis has been developed through interaction on Skype. This is a 2-3 year bilateral project and not an activity for the site. A model like AP-SIM is being used. The 12 month outcomes would be useful applications of systems research outputs that integrate modelling and participatory farmer research (field trials and farmer field days).

The evaluation of high yielding and dual purpose crops/ varieties, integrated crop management (pearl millet, cluster bean, moth bean, mung bean, chick pea, mustard, cumin, lentil, etc.) will be a simple demonstration of germplasm close to homesteads. The activity is linked to the Dryland Cereals CRP. Progress was hindered by drought during last year's growing season, as it was too dry for June sowing. Farmers are focussed on developing new pearl millet varieties. This research appears to be more traditional on-farm trialling of new varieties, rather than innovative integration of multi-production systems and modelling approaches.

Improving land and water productivity in arid regions for sustainable livelihoods through farm typology-specific intensification and diversification options including agro-silviculture with traditional rainwater harvesting systems (*tanka & khadin*) has been a key activity since 2014. Over the next 18 months the site will be further developed, but really needs 3-4 years to see impact. For example, trees take time to develop and produce outputs. 450 composite soil samples, disaggregated by land use type land landscape position, and 30 from each of the 15 action villages were collected and analysed for macro and micronutrients. Analysis showed widespread soil fertility-related degradation as a major stumbling block in the action sites. Farmers were very positive during group meetings about the benefits of this research.

NRM and institutional options for sustainable management of silvipasture systems on community and private lands for enhanced eco-system services is another major activity. The visited fenced areas have been established, with a community platform formed to manage the site. A large number of trees have been planted which has been very labour intensive. Grasses are now growing despite a very dry season last year. Biomass assessment for woody and non-woody species was carried out.

At the recent innovation platform meeting in May 2015, group work identified the following constraints on this work as being: targets were unrealistic for government departments (thinly spread efforts), physical and financial target discrepancy, lack of labour and technical manpower, lack of financial resources, limited inter-departmental coordination and communication lacking. Poor identification of scheme-farmers, lack of timely fund transfer, limited technical know-how, ego of individual officers, monitoring and quality control, and responsibility not being defined objectively were also issues. Suggested remedies included rational distribution of responsibility, allotment of works to the appropriate/ competent agency, mechanization to reduce labour costs, establish an inter-departmental coordinating committee (IDCC), cultural activities to encourage participation of communities, agencies to monitor natural resource status, participation of village level institutions, monitoring and evaluation from independent agencies and develop exit protocol. Despite these issues, progress was apparent at the field site.

Demonstration of promising barley and Kabuli chickpea varieties/technologies to enhance coping mechanism and achieving food security is an ICARDA and dryland cereals CRP project in

one of the villages. Not much background about this activity was provided during the field visit. ICARDA has evaluated varieties on 20ha. The analysis showed a significantly higher yield compared to farmer practices. Productivity was increased by 18% to >100% for different crops. Introducing potatoes in the farming system is the CIP activity being conducted in one village. A large percentage of funds is being used for this activity for varietal testing under irrigation. CIP are also conducting women-linked capacity building on potato production technologies and post-harvest management activities. CIP has completed a survey; however, the report is yet to come. Eight clones/hybrids for drought tolerance were field evaluated in Jodhpur. CIP-397006.18 was found promising based upon its overall yield performance, drought tolerance and acceptability of texture and taste. The work appears to have limited integration with other flagship activities.

Biodiversity are involved in the identification of new and traditional crop genetic diversity. During the fieldwork, coordinators thought limited on-ground activity has been conducted, with mostly survey work being undertaken. Home gardens and some vegetables are being targeted, with the agro-biodiversity assessment noted as completed in the 2014 Annual Report, along with 80 focus group discussions and survey of 1200 households in 40 villages across three districts of Rajasthan. The survey includes information on dietary diversity of mothers and children in vulnerable households. Again, the work appears to have limited integration with other flagship activities. Value chain development for medicinal plant Sankhpushpi (*Convolvulus pluricaulis*) in Barmer was established in 2014 in 15 on-farm trials across one district and three villages. The market is currently being established with a commercial partner and the crop was harvested last year. An MOU was signed with Dabur India Ltd to buy the crop from farmers. The introduction of Sankhpushpi was calculated to generate an additional US\$ 500 per ha. The timing of outputs below appears to be reasonable. Gender inclusive capacity strengthening is outlined in the POWB 2015. The third initiative “Women linked innovations for strengthening small ruminants and agro-forestry value chains” was discussed during the fieldwork and is positively supported by the participating women.

Impacts and Likely Sustainability

In terms of what impacts have, or are likely to be evident, the principal researchers thought a CRP review should not be conducted after 18 months, and that 3-4 years is needed before impact will be shown. It was noted that now research is more demand-driven, therefore achieving impacts is more likely. NARS thought the most significant impact of Dryland Systems in the next two years will be greater awareness. It was stated that before the CRP farmers were not interested in soil or water testing. Now they are open to suggestions of what to do, so a changed attitude is evident. It was noted the target area is a desert with no water; therefore dam development approaches will have an impact on water management along with moisture conservation approaches.

NARS also noted there are no impacts in the first year, as impacts take time. They estimate it will be 4-5 years before impacts are seen, but agree on a need to focus on smaller farmers. A constraint on smallholder impact is that usually big farmers get involved with community led development. A need to select more marginal producers was stated. The NGO, GRAVIS, is linked to distribution of planting material, and has a role in capacity development. They also note that impact cannot be measured at the moment. There have been no substantial outcomes to date, therefore efforts to document outcomes is limited. The investigators note they need funds for policy briefs and to get people to sites for scale up.

Farmers listed the key outputs from the field trials as major impacts or benefits. They included: ground water benefit, fencing (fodder grasses benefit livestock), plantation of multipurpose trees, water harvesting in sloping areas, cropping management has improved, use of perennial fruit and water harvesting are key benefits and the formation of the farmer groups has facilitated access to bank credit. Most often it was stated that improved varieties will increase farmer profitability.

An overall comment was made at the beginning of the group discussion that “benefits are obvious, no need to ask the question. They are evident any time you do this type of work (referring to water harvesting etc.)”. The benefits of having the NGO was commented as being very positive by NARS, and that GRAVIS have a good background. Water harvesting was nominated as having a potential big impact by NARS leaders, but there is a need to link it to government programs - such as subsidisation. Rain fed should be the system of focus.

Cross Cutting Issues

Gender and Youth: Coordinators indicated gender and youth issues have been adequately considered in research design. For example, women livestock units and baseline surveys considered gender. Youth were considered through agri-horti kitchen garden and diversification to vegetables by around 140 farmers. Women self-help groups have been formed. A women-focused agriculture and livestock value chain study has been completed for western Rajasthan action site (draft report available), with information on household dietary diversity being used to design strategies for improving women’s access to food and their nutritional security.

Capacity Strengthening: The coordinators note more can be done as limited numbers of PhDs, or graduate students are currently engaged due to the limited by availability of funds. Capacity development of farmers is being addressed through activities of GRAVIS, the NGO. These organisations will continue after the life of the CRP, so the development is sustainable. The 2014 Annual Report noted that at district level there have been 65 training courses with 6,532 participants across the flagship (1000 in Rajasthan), 198 trainings at taluk level to train 17,090 trainees and 6123 village level trainings. Nearly 1500 field days were organized during the 2014-15 crop seasons and around 95,000 farmers benefited from these field days including 26961 women farmers in 30 districts.

Partnerships: The number of CGIAR centers was noted as being too many. The number could be reduced to key CGIAR partners who have specific roles. It was stated that it is “not clear of why so many centers are needed”. Partnership with the local NGO and CAZRI are appropriate, along with the involved industry partners. There is strong and effective collaboration among Dryland Systems and NARS/NGO.

Visit to Eastern and Southern Africa: Ethiopia (Doug Merrey)

Overall Program

Dryland Systems works in [Marsabit-Yabello-East Shewa Transect](#) in northern Kenya and southern Ethiopia and the Chinyanja Triangle in southern Africa. The first combines agro-pastoral and rainfed system interventions; the second is focused on rainfed systems with significant livestock. We chose to visit the sites in Ethiopia, specifically in the rift valley, East Shewa Zone, Oromiya Regional State, Ethiopia, as this seemed to be where there is significant Window 1&2 investment. The work in East Shewa is focused on intensifying rainfed agriculture in a mixed cropping and livestock system (the North Africa visit was intended to focus on agro-pastoralism).

The visit took place from 17 May when the reviewer arrived in Addis Ababa to 24 May 2015. On the first day, the CGIAR partner institutions made Powerpoint presentations on their respective activities, and responded to questions; then we drove to Ziway where we remained for two nights. In Ziway the itinerary included presentations by various local partners (Board of Agriculture, research institutions and NGOs), visits to farmers’ fields to observe activities being conducted by farmers in collaboration with researchers, and to discuss the work with farmers and implementers. We also visited the collaborating sub-regional national research institution and a “Rural Resource Center”, established by ICRAF under a mapped bilateral project. The Rural

Resource Center consists of modest office and training facilities and a nursery for propagating and distributing a variety of agroforestry products and new varieties of fruit trees. The field trip also offered opportunities for informal discussions with the ICRISAT and ICARDA leaders. After returning to Addis (20 May), there were follow-up discussions and interviews with CGIAR scientists working in the Dryland Systems and with its leadership. The reviewer was also able to read a fair amount of documentation and was given copies of the presentations and various research reports and papers. The visit was very well-organized and offered ample opportunity to gain a good insight into the overall research program.

Summary of Main Observations

It was observed that there is a very close partnership between ICARDA and ICRISAT in this site, which is clearly a result of the two key scientists having worked together for many years. ICRAF is somewhat of a latecomer but seems also to be moving closer to the other two centers, using a bilateral project being implemented in the same zone. ILRI is invisible in this Action Site, likely because it has no budget for working here (and a possible project for collaboration is not mapped to this or any other CRP, which the reviewer understands reflects the wishes of the donor).

The reviewer also observed very close working relations with national partners and both local NGOs and an international NGO (iDE). Government institutions seem highly committed, and seem to have fully internalized the ‘systems’ approach, i.e. the need to integrate multiple components and seek positive synergies while avoiding negative effects. There is a clear strong demand for CGIAR partners to work with the national institutions. They also consider that the presence of CGIAR institutions helped in bringing together and getting the buy in of various stakeholders. A major incentive for the national scientists is the opportunity to work with international scientists.

The partners agreed to focus most of their efforts on two kebeles² in late 2014; previously there had apparently been little cooperation or integration. The arrival of a new ICRISAT coordinator was the key factor leading to this integration. In essence there apparently had been little integration and therefore very little in the way of real “systems” work previously. The two kebeles are Haleku and Dodicha in Adamitulu Woreda, East Shewa Zone, Oromia Regional State.



Photo 2: Pond for irrigation, Ethiopia/D. Merrey

The “system” is primarily conceived by the researchers in terms of the farm or farm household: how to improve the livelihoods of farm households. Their focus is on three major areas/dimensions: 1) stability/ productivity; 2) sustainability over the long term; and 3) ability to provide economic benefits (i.e. profitability). The premise is that by integrating new food and forage crops and new varieties of food and forage crops, including trees, with improved genetics and better management of livestock (mainly goats), better management of soil and water, and strengthening of value chains, it will be

² *Kebeles* are the lowest administrative unit in the Ethiopian system; it includes one or more village communities. The next higher unit is the *woreda*.

possible to achieve progress on the three dimensions—productivity, sustainability, profitability. There is a large potential for synergies among the various components, and for enhancing overall system productivity and resilience, for example through the introduction of new crops. Examples of the latter are improved mango and avocado varieties, new multi-use nitrogen-fixing legumes and their integration with maize, and growing more vegetables using water stored in small ponds to get through the dry season.



Photo 2: Pigeonpea intercropped with maize/D. Merrey

The two kebeles are for ‘proof of concept’/ piloting; there are separate sites (Boset woreda) where ICRAF in collaboration with World Vision is implementing a big development project and Meki woreda where iDE is starting another major developmental project intended to for scaling out, but we did not visit these woredas.

Critical to implementing the ‘systems’ approach is the Innovation Platform (IP). This was formed in 2014 and has met three times (four if the meeting with the reviewer is counted). It is organized at woreda level and includes key institutions: research, government, NGOs, a micro-finance institute, and a private pesticide company as well as farmer representatives and the CGIAR centers. It is through this mechanism that interventions are being planned, coordinated, and integrated. The reviewer has the minutes of all the meetings and they seem quite concrete. This is facilitated by ICRISAT but the project scientists hope the Board of Agriculture (BoA) will take this function over as part of its routine.

It appears that a higher scale definition of “system” is not currently being considered. In response to this observation, the Action Site Coordinator stated that ‘we did consider catchment/watershed as the scale for integration but have not yet started any interventions or measurements at that scale’. Broadly, the ICARDA and ICRISAT scientists noted and agreed that in their view, there is no clear CRP-wide shared understanding of “system”. As observed in West Africa (see below), there is no overall vision of the “dryland system” or “dryland system research” and no effort to identify and test integrated game-changing interventions.

There is potential within the existing research program to take a small watershed/ community system perspective. In this area, Ziway Lake is the only fresh water lake; and there are several perennial, near-perennial, and non-perennial rivers. It is clear there is growing competition for scarce water: a large flower export firm and two large wineries as well as smaller-scale vegetable producers are pumping from the lake and presumably the rivers. At the Adamitulu Research Center, we saw pipes being delivered to construct a domestic water supply scheme to bring water from hills some 35 km away, because the lake water is seen as too polluted. Apparently away from the lake, groundwater is very deep. In the communities we visited, women and children bring domestic water from long distances by donkey cart; and because the *belg* (“short”) rains had failed, they are doing the same to feed their drip irrigation as the storage ponds are all empty (see Photo 1).

A major type of activity is experimenting with intercropping multiple use legumes with grain crops, for example pigeon pea and maize. Pigeon pea is a new crop; it fixes nitrogen and is consumed both by humans and livestock. Because the short rains had failed and the long rains had not yet begun, there was little to see. We did visit pigeon pea that was still producing long after the maize had been harvested. Improving the genetics and management of goats is another major research activity (see Photo 2).



Photo 3: Drip irrigation kit, Ethiopia/D.Merrey

iDE has its own funding for its collaboration with the program, which means the CRP is ‘leveraging’ its funds. The BoA has provided fifteen 400 m² drip kits (Netafim) and iDE is providing technical backstopping and monitoring services (see Photo 3). The two drip kits visited had ponds that were empty—they bring water by donkey. They were under-irrigating the vegetables – the farmers see the drip kits as keeping the crops alive until the rains, not as a technology to maximize productivity and quality of the crop. Indeed, the farmer at one drip kit site said the vegetables were largely for home consumption. When asked, the farmers acknowledged problems with the technology, for example clogging. To this reviewer, it is doubtful whether farmers would continue to use these without iDE and other support. The reviewer understands the Crp-Ds program was planning to monitor their sustainability and performance by reducing iDE’s role and transferring the support responsibility to local BoA officers.

At another site visited, Dodicha, which is in the foothills, iDE had helped 28 farmers to build



Photo 4: Fanya jy'u trench-bund, Ethiopia/D.Merrey

check dams and *fanya ju'u* trench-bunds to reduce damage from flooding (see Photo 4). The farmer we spoke to claimed he saw a big increase in the production of maize as a result of this intervention. Notably, the reviewer did not see evidence of combining this water management intervention with, for example intercropping maize and legumes.

Regarding their impact pathway and theory of change, the reviewer was told that they are basically using the CRP level impact pathway, and are operating at relatively low levels in this model. Although there was not a lot of discussion on this topic, the reviewer came away with the impression that they do

not have a clear coherent theory of change which can be used as a tool for designing and monitoring their interventions. They have an implicit set of ideas on how change will be achieved, reflected in the Innovation Platform along with participatory variety selection and co-learning from experiments.

Regarding gender, they described women’s as well as men’s groups that are being facilitated to work together on productive activities; we saw an example at the ICRAF-initiated tree nursery we visited. They are collecting dis-aggregated data. They have about 10 women’s self-help/thrift

groups in the two woredas that are said to be working extremely well. The lady who was present during the review meeting is the coordinator of one of the groups. In one kebele the reviewer was told that they have reached the stage where then can avoid borrowing from the micro-finance company from whom they had been accessing short-term loans. Recently a capacity building program in book keeping was organized for these women by iDE.

Overall, the team clearly does not have sufficient social science expertise, and has no real gender expertise; therefore this will lead to gaps in their outputs and possibly impacts. It is also notable they currently have no strong links to policy makers at either Regional State or Federal levels. In response to this observation, the reviewer was told they plan to form a higher level IP with zonal and regional level stakeholders later this year. One of the reasons for delaying this is to have some clear outputs before bringing them to policy makers. They claimed their experience is that the policy makers have little time so they must to make best use of it.

The severe budget cuts have forced reductions in activities, interventions, and data collection. In fact it appears data collection has suffered in the sense there will be less quantitative data than planned. The cuts have also affected the national partners who need operating funds. The CGIAR centers have been somewhat creative in using other sources or even personal time to keep some of the work on track. Regarding Adamitulu Research Center, the reviewer's understanding is they need modest operational funds from the CGIAR centers but contribute their salaries—leveraging that again is not quantified.

The combination of the delays in initiating the CRP implementation; the lack of effective coordination and integration initially in this site which only this year has been rectified, the reductions in budget; and the decision not to continue the CRP beyond 2016 will limit the possibility of achieving the full potential of the work underway. It seems to the reviewer that about two more years would be needed (i.e. until 2018) to “prove the concept” convincingly. Perhaps because they realize this, the ICARDA-ICRISAT team hopes it will be able to find bilateral funding to continue the work in these two sites.

The reviewer believes that if the work ends in 2016, there will be some good journal articles and some capacity will have been developed, but there will be no firm proof of the efficacy of an integrated “systems” approach.

Visit to West Africa and Dryland Savannahs: Mali (Doug Merrey)

Overall Program

As in Eastern and Southern Africa, in this Flagship region there are two transects: Wa-Bobo-Sikasso (WBS) in Ghana, Burkina Faso and Mali; and Kano-Katsina-Maradi (KKM) in Nigeria and Niger. These transects were chosen based on two gradients: aridity and population density. The reviewer visited the Sikasso region, Mali Action Sites of the WBS transect. This was chosen because it appeared to have a substantial investment and represented a significant agro-ecological system (in Mali, intensification of rainfed systems with significant livestock).



Photo 5: Countour Bund with agroforestry (ICRAF), Mali/D.Merrey

The visit took place from 27 May when the reviewer arrived in Bamako to 3 June 2015. On 28 May, there were formal Powerpoint presentations by the CGIAR center scientists, after which we departed for Koutiala where we stayed two nights. In Koutiala we met with NGO partners and with several different groups of farmers in three different communities. We were able to have in-depth discussions with farmers as well as researchers and the NGO representatives³, and visited fields where various interventions were being implemented in collaboration with farmers. There were also good opportunities for more informal discussions with the researchers from the CGIAR centers. We returned to Bamako on 30 May; and on 1 June we had a long one-day field visit to Boungouni and vicinity. Here we met with the major NGO partner (MoBioM) and again were able to visit field sites and meet farmers. This is an Africa RISING site, a project that in West Africa is mapped to

Dryland Systems. On 2 June, the reviewer met with a number of the CGIAR researchers and a representative of the government's institution for agricultural research (Institut d'Economie Rurale [EIR]). On the last day, the reviewer met the DG of AVDRC and had detailed discussions with the key leaders of the work in Mali. The reviewer was provided with copies of all the presentations and a lot of other documentation. This visit was also very well organized – indeed very ambitious and therefore very productive for the reviewer to gain a good insight into the program. As in Ethiopia, there was little to see because it was very dry and the rains had not started.

Summary of Main Observations

This Flagship has adopted a more sophisticated approach to site selection than other Flagships, with two transects, one based on a gradient of aridity and the other a gradient of population density. Considerable work went into establishing these gradients. That said, it was not clear to what extent there is integration and comparative analysis combining the two transects.

During the field visits and meetings with farmers, the reviewer noted the high degree of farmer motivation to work with



Photo 6: Contour bund,(ICRISAT), Mail/D.Merrey

³ Especially AMEDD – Association Malienne d'Eveil au Développement Durable, which is a major partner.

researchers; and their willingness to engage and challenge researchers. This was especially remarkable because it seemed to the reviewer that the crop experiments observed are mostly having mixed and not spectacular results. The reviewer was also impressed by the very strong, capable, and committed national partner in AMEDD, a rather unique NGO.

There seems to be very active Innovation Platforms at the District level in both districts visited and at more local levels. They seem to be effective and attract considerable interest. There is an intention to continue them after the CRP and projects end, but there is no clear plan yet for this. The researchers seem confident they will be sustained because of the strength and interest of the NGOs, especially AMEDD. As in Ethiopia, the Innovation Platforms seem to operate largely as knowledge sharing mechanisms to date and have not moved to collaborating to test and implement solutions to shared problems. The “Technology Parks,” an idea that emerged from the USAID mid-term evaluation of Africa RISING⁴ as a way of achieving better integration, is a promising idea but their sustainability is not clear.

Some limited “integration” of the research and among the CGIAR partners was observed, but there is no ‘comprehensive’ integration. Both national partners and farmers expressed concern about this lack of integration. The fragmentation seems to be a function of several factors: insufficient CRP W 1&2 budget; dependence on bilateral projects which are dispersed to some extent and often focused more on implementation and not research; centers’ reluctance to share budgets; and budget holders are in Centers, not at Flagship or Action Site Coordination level. Perhaps more important, there is no overall vision and no clear intellectual leadership -- which is not unique to this Flagship. There is no overall senior person with a broad “systems” perspective who could help create this vision. There is no sense of trying to do “transformative” research—game-changing research that would lead to new levels of sustainable productivity and improved livelihoods. The program is in fact fragmented because of its dependence on a variety of bilaterally funded projects, some of which do not even include “research” as an activity.

There is no shared conceptual understanding of what is meant by “dryland systems” or systems research. Most researchers at least implicitly have a farming systems mental model. Two crop modelers the reviewer met both viewed themselves as “systems” researchers but are focused explicitly on crop modeling, not larger scale systems. Most examples of “integration” involves intercropping of two crops such as a grain and a legume; others are also two-components for example bunds and agroforestry, and crops for human and animal feed. This is fine as far as it goes, but is not really a comprehensive “systems” approach. These observations are not unique to this flagship and apply to ESA (and indeed South Asia) as well. A more complete “systems” conceptual model would be based on a recognition of multiple levels [nested systems], from genome to field to farm to landscape or watershed, including value chains and therefore multiple actors in the economic system, and livelihood systems (going beyond farming and herding to include other ways of earning livelihoods).

Inclusion of AVDRC is a positive aspect: it is part of Africa RISING, but not part of the CRP per se. It seemed clear there is strong demand for assistance in growing vegetables and in improving nutrition. According to the DG of AVDRC, there is considerable CGIAR resistance to inclusion of the non-CGIAR international agricultural research centers. This is unfortunate as the CGIAR by itself does not cover the full range of crops of interest to farmers. Another example is cotton—this is not a CGIAR crop, and there seems to be little effort to better integrate cotton and the various CGIAR crops. The reviewer did not see any evidence of collaboration with the parastatal cooperative that deals with cotton though he was told there is some collaboration.

⁴ This is a large multi-country USAID funded project managed by IITA. The Mali sub-project is mapped to Dryland Systems.

A significant gap observed is there are no skilled social scientists working as part of the team. This is especially important given the high degree of ethnic variation among communities. Hints from the Nampossella community meeting suggest that the IP may be leading to changes in the division of labor between men and women, and women may be gaining more opportunities; but this is not being documented. On gender, there is some evidence that important work is being done, as emerged from the farmer meetings, an interview, and some documents shared with the reviewer after his departure. Nevertheless, the scientists when challenged on this point did not agree: some claimed there is a strong emphasis on gender and gender is well-integrated into the research program while others stated there is no conscious effort to integrate gender into crop experiments. A gender survey has been designed and should begin shortly in three countries (Mali, Niger, Burkina Faso) on a limited budget. This is a potentially useful study, but notably quite separate from the main thrust of research activities. A major problem in addition to budget limitations is the lack of senior social scientist and gender expertise. This is not unique to this flagship.

Although the Flagship now has what it considers a unified impact pathway, there is no clear sense of an explicit theory of change and no apparent use of impact pathways as a planning and management tool. Scientists do not seem to understand them or find them useful. In essence there is no credible explicit set of impact targets and no strategy to achieve them. This is not unique to this Flagship. Nevertheless, there is potential for achieving important impacts, especially through the mapped bilateral projects such as Africa RISING.

As is the case at the Ethiopia Action Sites, there are no explicit linkages to the policy level in government. Scientists suggested this linkage is achieved through the collaboration of IER. However, there were no representatives of IER at the field site meetings; and the representative of IER who was interviewed, while saying positive things about the Dryland Systems, also complained that all meetings are in English which limits the communication effectiveness.

Regarding water management, the team is placing its bets on contour ridge bunds. These have demonstrable impacts on yields by increasing infiltration, but some farmers say because labor to build and maintain them competes with land preparation and sowing at the first rains, they are not widely disseminated. The bunds can be combined with new crops and crop integration, but there seems to be a need for more work on stabilizing bunds with grasses and trees. We saw the latter at an ICRAF experiment outside Bougouni, and farmers seemed overall happy. We visited two cases of contour bunds. In one case it was implemented entirely by ICRAF, and was accompanied by experiments with growing various combinations of grasses and legumes on or near the bunds (but no interventions in the field crops; see Photo 5). In the other, ICRISAT was implementing the bund but with no associated agro-forestry to stabilize the bund (see Photo 6). This seemed to be clear examples of the lack of inter-center integration. The reviewer suggested the possibility of testing contour plowing, and testing alternative water and land management technologies.

While there may be some useful reasonable quality scientific outputs either produced or likely to be produced, this is not clear. As is the case elsewhere, the Annual Report lists publications mapped to the CRP but these are mainly legacy products and are mostly single-disciplinary. There seems to be no specific plan to produce excellent scientific outputs that are attributable to the CRP *per se* rather than to projects. This is not unique to this flagship.

Meetings at CGIAR Centers: Nairobi, Kenya (Doug Merrey)

The reviewer arrived in Nairobi on 24 May and departed on 27 May for Bamako, Mali. On the 25th he met with a number of scientists and research leaders, including the Director General, at ILRI. On the 26th he met with scientists and research leaders at ICRAF, including the DG of ICRAF, the Associate Director of the CGIAR Internal Audit office for Africa, and a representative of Bioversity. On the evening of the 25th he had dinner with the leader of the CIAT group. These meetings provided important opportunities to gain greater insights into the work being done, and the perceptions of Dryland Systems held by various people.

Summary of Main Observations

Among the managers and scientists interviewed, there seems to be a broad though not universal consensus on the following points:

1. Dryland Systems got off to a late start, and therefore has faced more scrutiny than those whose proposals were submitted early. This additional scrutiny combined with problems in the conceptualization and management of the program at its initial stages have had a very significant negative impact on the performance of the CRP and led to its having a negative reputation.
2. The limited Windows 1&2 budgets, and the drastic reductions for 2015 were frequently brought up as having had serious impacts on the performance of the CRP. This emerged constantly during the field visits to Ethiopia and Mali as well. These limited resources are spread too thinly, reflecting in part a lack of priority-setting. A related point made by some of those interviewed was a perceived imbalance among centers with regard to budget allocations.
3. There has never been a shared and internalized vision of what is meant by “dryland systems” research; indeed many scientists involved do not have a clear understanding. This has been further exacerbated by the lack of real inter-center collaboration and integration. Centers have generally strived to preserve their own sites and work, which is reflected for example in the number and location of action sites. Rather than focusing on a limited number of sites and concentrating resources to demonstrate the potential, the limited human and financial resources were scattered among multiple sites. This is further compounded by the heavy dependence on bilateral projects with their own agendas.
4. In addition to the lack of a shared understanding of “systems” research, several of those interviewed referred to the limited capacity of CGIAR scientists in systems research and the failure to draw in sufficient external expertise.
5. There are mixed views on the quality of scientific outputs. Some scientists point to specific examples of journal articles that reflect excellence “systems” science in their view, but others expressed less positive views. One idea discussed with several scientists is to use the limited resources available in 2016 to focus efforts on producing a few outstanding research products, using writeshops and where appropriate bringing in outside expertise.
6. There is wide agreement that Dryland Systems has not used impact pathways and theory of change concepts effectively.
7. All those interviewed agreed on the critical global importance of “dryland agricultural systems” and the need for research to identify how to improve livelihoods and productivity in a sustainable way. However, there was no agreement on whether the future CRP model will be effective in addressing dryland systems. On the one hand, some argued the real work will be at “flagship” level and there will be a “systems flagship” associated with the commodity and livestock CRPs. There will therefore be opportunities to continue the work of Dryland

Systems. Others argued that by linking “systems” work to specific crops, the work will be too narrowly focused on those crops and their companion crops. The conceptualization of the “system” will be dictated by the commodity interest and will not be sufficiently comprehensive to consider alternative livelihood strategies and value chains.

8. Several senior managers discussed the problems associated with the structure of the CRPs, with the Centers having the dominant power and control over budgets, and the CRP Directors being in a weak position. This has limited the potential for full integration of Centers’ comparative advantages within CRPs. One senior manager hinted there may be a change in funding flows in future, such that there will be a sub-window for CRPs to receive funding directly from donors. In the discussion with the Internal Audit associate director as well, reference was made to various flaws in the structure of the funding flows and their impacts on performance. Some of these issues are being addressed in a review that the unit is currently implementing.
9. Both in Nairobi and in West Africa, scientists who work in both Dryland Systems and in CCAFS noted that CCAFS is more effectively managed than Dryland Systems has been, with strong intellectual leadership and clarity on priorities. Some scientists, especially at ILRI, hold fairly negative views of the added value of Dryland Systems, claiming that ILRI is already good at systems research and also that this CRP has added considerable transaction costs with few benefits.
10. Overall, there is a perception that because of the problems in the early phases of the CRP and with hindsight because of the way it was organized, the CRP represents a “lost opportunity”. Nevertheless, a number of the scientists interviewed pointed out that there remains a great potential to produce very important and useful outputs during the time remaining, if resources are concentrated and there is strong leadership. The idea mentioned above of using writeshops and bringing in outside expertise to work with the CRP scientists to produce an excellent state-of-the-art publication on dryland systems is an example.

Interim Report on the Partner's Survey

Progress

The CCEE team is conducting an evaluation of the CRP Dryland Systems contribution to research and development results, in order to demonstrate accountability to stakeholders and ensure learning from its interventions. Through an online survey of partners we have received feedback on experience with the Dryland Systems program supported or managed projects from all flagship regions. The Partner’s Survey received responses between June 1st and June 12th, 2015. We contacted 107 partners⁵ in 5 flagship regions (NAWA: 27, WAS: 15, ESA: 14, CA: 34, and SA: 17). The overall response rate was 25%. Requests for submitting the survey were sent three times to the partners. The regional response rate varies (NAWA: 14.8%, WAS&ESA: 17.2%, CA: 20.6%, and SA: 47.0%). The survey early draft had received preliminary reviews from a number of colleagues, including: Tana Lala-Pritchard (communication), Karin Reiprecht (gender), Chandra (IT), Rosana (CD), and Enrico Bonaiuti for their feedback. The survey was designed following the guidelines of the IEA and used some questions from previous CRP evaluations (AAS, Maize, Wheat, PIM) in order to provide data across CRPs. The majority of the survey is specifically designed to target the unique issues of the CRP Dryland Systems.

⁵ The full list of partners contacted for the survey will be listed in the final report along with the results.

The survey was translated into French and Russian by Dryland Systems colleagues in order to enhance the response rate in North and West Africa and Central Asia. We would like to acknowledge the support of Hishem Ben Salem, Mohammed Karrou, Jozef Turok, Botir Dosov, Muhabbat Turdieva and Shakhodat Bobokulova for their respective contributions to the French and Russian translation of the CCEE Partners' Survey. 63% of the survey responses were received in English, 26% in Russian, and 11% in French (Q1).

Outcomes

40% of partners who responded are NARS in developing countries, and 32% are local or national NGOs. Other partners represent governments, national agricultural extension institutions, and universities in developing countries (Q2). The type of interactions described by partners were mostly technology transfer, joint research, implementation, capacity strengthening and funding (Q3). The geographic distribution and region of origin of survey respondents are: SA: 32%, CA: 28%, SSA (WAS&ESA): 24%, NAWA: 16% (Q4 and Q5). Over a quarter of respondents were female (26%), but in CA female partners outnumbered their male counterparts (Q6).

The majority of survey respondents has academic background in agricultural and life sciences (58%) or in economics and other social sciences (25%) (Q7). The highest number of responses were received from senior professionals with over 25 years of experience, closely followed by experts with 6-10 years of experience. Most partners (43%) have only two years or less experience in interaction with CGIAR; this also triggered several comments pointing at the fact that they are unable to comment on aspects of impacts or results. Partners described how well they know the CRP Dryland Systems Program in Q10. Scales were designed to have two positive categories ('very well' and 'well') and two negative categories ('not quite' and 'not at all'). In presenting the results, we report the percentage of positive respondents that is followed by the percentage of negative respondents (in bracket, indicated as a negative number). In our assessment we discount the negative numbers from the positive in order to arrive at conclusions and recommendations.

The Program's vision, objectives and scientific work is generally well understood by 70% (vs. -5%) of respondents. Other components of the program e.g. Theory of Change 48% (vs. -5%) and Project Portfolio 44% (vs. -8%) requires better communication and Capacity Development 54% (vs. -13%) and gender strategy 40% (vs. -8%) needs better dissemination. The Governance and Management is well known by only 32% (vs. -16%) of respondents. All surveyed partners, as expected, know ICARDA and ICRISAT and about 80% of them had a lot or moderate interaction with the two centers (Q11) About 50% of partners have interactions with ILRI, IWMI, and Biodiversity, and lower interaction levels are reported with ICRAF (30%), CIAT (25%) and CIP (18%).

Partners reported involvements in various activities (Q12). The highest involvement is reported in project planning and design, research implementation, and outreach activities such as workshops. Over 30% of the partners reported no involvement in co-publishing, providing or receiving training, or mentoring and participation on capacity development activities. In terms of capacity development, partners reported high (10-20%), substantial (20-40%), modest (20-30, or no involvement (10-35%).

Answers on the usefulness or value added of scientific research activities of the Dryland Systems reveal that knowledge ranks top as an international public good (Q13). In the mid-range listed technologies, tools and methods, strategies, gender empowerment, scientific capacity, system research and knowledge management generate high value added according to 50% of participants. Over 20% of partners give a low value added to geo-informatics, gender empowerment, improved plants and knowledge management followed by system research (18%). The value added of policy options is also lagging behind. The listed negatively rated research

activities should be analyzed to consider how Dryland Systems could enhance its visibility and value added or usefulness towards stakeholders (e.g. impact of geo-informatics could be enhanced with capacity building activities).

The research projects were rated mostly positive (good or very good) on all aspects by the majority, 85-95%, of partners (Q14): respondents say the research findings are being adopted to address development challenges (81%), are useful for decision making (81%), provide strong quality evidence to support research findings (88%), the findings make sense and are easily understood (94%), do not duplicate research that was underway in other research institutions (88%), and conducted research that addresses the most important issues relating to agricultural and rural development (89%). 25% of partners considered the understanding of the policy making processes in the countries in which the research is taking place as being 'poor'. It highlights an opportunity for improvements.

Q15 analyses the extent to which partners enhanced the relevance and effectiveness of Dryland Systems projects. All partners (100%) agreed on the increased relevance of research activities from the point of view of users and beneficiaries and from the point of view of scientific progress and filling gaps in scientific knowledge. The majority of partners (90% or more) helped to collect and analyze data for research activities and helped in outreach and communication of the research results.

The gender performance of the Dryland Systems team received positive rating of 70% (vs. -30%) on promoting diversity and gender equality in all its partnership (Q16). Poor ratings were received from 15 - 30% of partners on different aspects of gender performance. These aspects requires further attention.

The majority of partners (70 to 80%) are satisfied with the research results in terms of relevance, effectiveness, timeliness, delivery, and the scientific quality of the results (Q17). The highest dissatisfaction (30% of partners) appears in terms of the delivery, referring to the communication channels; and to the timeliness of the results.

Research results are brought to partners through various communication channels (Q18). On the top ranks that 'staff has received training or other capacity development support'⁶. Over 75% of partners reported useful or significant impact of research results on their organization (Q19). 40% of partners reported that without these research findings their institutes would act and think differently. 9% reported no impact and 23% said their cooperation is too recent to see any visible influence. Partners propose increasing collaboration in research, increasing capacity development activities, improving dissemination of the results and improving communication to further increase the relevance and usefulness of the research activities and collaboration (Q20).

Q21 reports the perception of partners on generated impacts related to the CGIAR strategic research themes (reduced rural poverty, increased food security, improved nutrition and health and sustainable natural resources management): the results point at - no impacts (15-18% of partners), some local impacts (40-50%), significant local impacts (35-40%), and out-scaled or up-scaled impacts (5-9%). The majority of the partners perceive impacts locally, with few (5 -20%) reporting up scaled impacts or no impact at all (AQ22).

Capacity development activities were rated positively though 10-25% of the partners' poor rating suggests that there is opportunity for improvement (Q23). The performance rating of research activities received mostly positive results apart from the appropriate budget given the scale of needs. However, attention must be placed on enhancing dissemination of research results, communication and monitoring and evaluation; these received poor ratings by 30% of partners.

⁶ One respondent commented that they were not aware about the option of downloading publications in the DS website.

Probably the same stakeholder group (30%) commented that the benefit of working with Dryland Systems and its research organization outweigh the costs of doing so.

The main strength or assets of the Dryland System Program quoted by partners are the following: 1) major knowledge research center (with special focus on system research), 2) scientific manpower and multidisciplinary team work, 3) partnership, 4) provision of funding for development activities, 5) capacity development, 6) transfer of advanced technology, 7) up-scaled results along impact pathway, 8) targeting the poorest, vulnerable, resource poor community, 9) well planned and designed interventions, 10) implementation, 11) good strategies in practices for need assessment and testing solutions (Q25).

The main weaknesses or priority areas of improvement for the Dryland Systems program are: 1) capacity development of implementing organizations, 2) more recognition to people working in the field, 3) improved communication, 4) reliable and timely flow of funding and budget, 5) more funding for research equipment, 6) more involvement of farmers or local research system in research prioritization and pushing for technologies that are relevant to farmers, 7) more proper integration of income generating activities, 8) target organic carbon level in soils, 9) improved link with private sector to sustain business-oriented development goals, 9) more gender equality in project design and implementation, 10) clearer strategic plans, and 11) eliminate mid-level corruption.

Other pros and cons identified by the partners and specific issues, comments, and suggestions that were reported will be detailed in the report on the survey results.

Next Steps

In the coming weeks another survey will be launched surveying the CRP Dryland Systems staff. A similar assessment will be prepared and will be used as input to the final report. Results of the surveys, focal groups, and site visits will be consolidated into one single report and the cross cutting thematic areas, gender and youth, communication, capacity development and partnership will be assessed based on the available documents and collected data. The results will be used to prepare recommendations for the program as it enters its next program cycle.

Conclusions

It is premature to arrive at firm conclusions and therefore premature to offer even preliminary recommendations. In this section, we highlight some emerging observations, which are subject to revision.

1. In the field sites, “systems” research is largely understood as “farming systems” research; a more comprehensive conceptualization has not emerged as of yet. Stated differently, there is no shared vision of what is meant by dryland systems or systems research driving the program. In addition, there is limited capacity within the CGIAR centers for “systems” as opposed to disciplinary research. It seems that none of the field research sites are engaging in transformative game-changing research; rather, the research is largely focused on identifying potential incremental improvements in agronomy, livestock, or soil and water management. We offer this as an observation, not necessarily as a criticism. The field research is also limited by the absence of senior social scientists and gender specialists.
2. In all the field sites the actual research is largely focused on: experiments with either new crops, new varieties, and/ or integrating cereal and multiple use legume crops; improved management of livestock; cultivation of vegetables and/ or tree crops; or improved soil and water management. There is minimal integration among these initiatives in the field research, though in some cases modeling of interactions is planned. There is little attention being paid to other levels of the value chains or other livelihoods.

3. In general, there is strong demand from farmers and national partners for collaboration with the international centers. This is common to all the sites visited and is a positive sign for the future.
4. In all the field sites “Innovation Platforms” are a key mechanism for promoting stakeholders’ involvement and partnerships. All of them seem very active and effective. However, in general, their functioning to date has been largely for sharing knowledge and information and agreeing on work plans proposed by scientists; they are yet to operate as means to identify shared problems and test potential solutions.
5. None of the field sites has a clear contextualized impact pathway or theory of change that is actually used to design and monitor the program. Impact pathways are prepared simply to satisfy the requirements to have one. This observation has also been confirmed in most interviews with CGIAR scientists and research leaders.
6. In all the field sites, there is clearly potential for achieving important, even substantial impacts. However, to achieve measurable and sustainable impacts requires several more years of work. Where the work is supported by bilateral funds, such impacts may be achieved. Where the work is dependent on continuation of Windows 1&2 funds, achieving the potential impacts is doubtful at this time.
7. Gender issues are addressed in all of the sites, but are not central to any of the work. There are specific activities aimed at enabling women to improve their livelihoods, but none of the action sites has a strong gender specialist to lead the work. We found little evidence of research specifically aimed at youth, though we suspect there are a few cases.
8. In the two African flagship regions visited, the CGIAR centers have struggled to integrate their work in common sites, based on common work plans. In the South Asian site visited, one center dominates the work, leaving little opportunity for inter-center integration. All the sites have been seriously affected by budget cuts. In the African sites there are bilateral projects mapped to Dryland Systems but these are not well integrated programmatically. This lack of full integration reflects the incentive structures including budgeting mechanisms inherent in the CGIAR itself and does not necessarily reflect a lack of interest among CGIAR scientists.
9. Dryland Systems is definitely implementing a lot of useful and important work in the action sites. However, much of it reflects the specific mandates of Centers and would probably be implemented in the same way in the absence of the CRP. The challenge remains, how to integrate in a meaningful way that leads to systemically transformative innovation.
10. The evidence so far on the quality of science is mixed. While a large number of peer-reviewed journal articles in addition to other types of publications are mapped to Dryland Systems in the Annual Reports, these largely reflect legacy work and in most cases are not specific products of the program itself. In most cases, they are single-discipline papers, not “system” analyses. This reflects the short period of time the program has been operating. When we asked scientists for examples of “good science”, we were given excellent outputs in some cases. There seems to be a lot of data available that could be used in the final year of the CRP to produce excellent and innovative scientific outputs.
11. Building on the last point, the Dryland Systems could be seen as a “lost opportunity”. This is because the problems in the early stages delayed implementation, and issues such as inter-center integration are still being worked out. On the other hand, because a lot of good work has been done with a lot of good data generated, and because there are now effective working relationships among some of the CRP partners, the reviewers perceive a great potential to produce excellent research outputs during the remaining period of the program. This work could contribute significantly to providing a foundation for future systems research.



RESEARCH
PROGRAM ON
Dryland Systems

The CGIAR Research Program on Dryland Systems aims to improve the lives of 1.6 billion people and mitigate land and resource degradation in 3 billion hectares covering the world's dry areas.

Dryland Systems engages in integrated agricultural systems research to address key socioeconomic and biophysical constraints that affect food security, equitable and sustainable land and natural resource management, and the livelihoods of poor and marginalized dryland communities. The program unifies eight CGIAR Centers and uses unique partnership platforms to bind together scientific research results with the skills and capacities of national agricultural research systems (NARS), advanced research institutes (ARIs), non-governmental and civil society organizations, the private sector, and other actors to test and develop practical innovative solutions for rural dryland communities.

The program is led by the International Center for Agricultural Research in the Dry Areas (ICARDA), a member of the CGIAR Consortium. CGIAR is a global agriculture research partnership for a food secure future.

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