

SPIA Activities Update

*Prepared for SPIA 39 and ISPC 3 Meetings
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This progress report provides an update on SPIA activities since the ISPC 2 meeting held at IRRI in Los Banos, Philippines in September, 2010. Activities are described under i) studies nearing completion; and ii) on-going studies, and iii) communication and outreach activities. Conclusions emerging from the SPIA 39 meeting will be reported verbally by the SPIA Chair at ISPC 3 on 3 March.

[Tim to provide a brief description of the rationale for adopting a new business model for SPIA]

I. Studies nearing completion

2.1 Advancing Ex-Post Impact Assessment of Environmental Impacts of CGIAR Research

The CGIAR has done relatively little to document environmental impacts resulting from its R&D initiatives that affect the soil, water, wildlife and biodiversity of the local, downstream and global landscapes and environments. Efforts to document these ‘externalities’ have been impeded by difficulties of attribution of the impacts to research, data constraints, lack of appropriate indicators for tracking environmental impacts, and valuation issues for costs and benefits not priced in the market. To build up an inventory of credible environmental impact assessments (EIA) and develop appropriate methods for measurement and valuation, SPIA launched a multi-phase study that began in late 2008. The various components included:

- Two scoping study reports (Djurfeldt et al 2009; Bennett 2009) providing a conceptual background and exploring various measurement and valuation methodologies for documenting social and environmental impacts from agricultural research.
- Six EIA Center case studies commissioned by SPIA (ICARDA, IWMI, CIP, CIAT, WorldAgroforestry and ICAR) involving a methodology workshop in Rome in July 2009 and a preliminary results workshop in Istanbul in June 2010, with external consultants providing technical assistance and guidance.
- A report by Mitch Renkow reviewing the empirical literature and providing an analytical framework for the assessment of a range of environmental effects (+ and -) that result from agricultural research.
- A review paper by SPIA examining the evidence of the impact of research-led agricultural productivity increases on deforestation (or land saving), incorporating a counterfactual analysis using a global trade model developed by Purdue University which simulates the impact of ‘no crop germplasm improvement’ over the past 30 years.

The study is nearing completion with a final report targeted for the end of April. This report will consolidate the various elements above into a single three-part report and highlight the major findings and implications in a SPIA Foreword. A key outcome of this study is that the dearth of documented *ex-post* evidence of environmental impacts in the CGIAR is as much a consequence of the lack of relevant data and lack of clear incentives at the system level (given the high cost and serious commitment required to get good biophysical data on changes in agricultural systems) as it is lack of appropriate methods. The CGIAR is underinvested in the datasets required for more integrated (economic + environmental + social) *ex-post* impact assessment.

II. On-going Studies

2.1 Tracking Varietal Change and Assessing the Impact of Crop Genetic Improvement Research in Sub-Saharan Africa

The well known Evenson and Gollin (2003) study, using data from the mid to late 1990s, found that in Sub-Saharan Africa, only 10% of the area devoted to the main CGIAR crops was planted with modern varieties. It has often been asked what progress has been made since then. While basic data on adoption and impact of improved crop varieties should be collected on a regular and systematic basis and made widely available through integrated and easily accessible databases, such has not been the case. Indeed, if crop improvement research is considered the major CGIAR success story, even today, it is essential to update the original Evenson and Gollin study. In late 2009, SPIA accepted a request from the Centers and from the BMGF to guide and oversee a major 3-year, \$3.0 million project to update and document information on varietal diffusion and impact of improved varieties of major crops across most countries in SSA. There are three major components to the project: (i) widening understanding of key aspects of genetic improvement; (ii) deepening the understanding of varietal adoption; and (iii) gaining a more comprehensive and deeper understanding of the impact of varietal change. The project commenced in November 2009 and will run until December 2012. Bioversity International is the recipient organisation for the grant on behalf of SPIA/ISPC who chairs the Project Steering Committee.

The PSC meets virtually approximately every two or three months to receive updates from the project coordinator Tom Walker who interacts closely with the seven participating Centers on a regular basis. There have been two face-to-face meetings since the project began, a project initiation meeting in February 2010 in Addis Ababa (reported on in a previous Update), and a mid-term project review in Bamako Mali in January 2011. All seven centers, several consultants, collaborating NARS and ARIs, the project manager from the BMGF, four SPIA members and the project coordinator attended the recent mid-term project review and discussed the progress on each of the three components. The full report is currently being drafted but a summary of the meetings' main recommendations are attached (Annex 1). Component 1 comprises the consolidation of data on varieties, investments and adoption based on expert opinions for 10 crops in 20 countries in Sub-Saharan Africa. This part of the project is well underway and a clear timeframe for completion of this exercise was decided at the meeting in February. Component 2 comprises national adoption surveys in selected countries to validate expert opinion and gather insight on adoption. DNA fingerprinting for varietal identification is a sub-component of the CIMMYT work. At the mid-term meeting each of the Centers presented their detailed plans for conducting the household and community surveys. A statistician and others provided advice and input regarding sampling and analysis matters. Component 3 comprises a set of three impact case studies – the result of a two-tiered external review and selection process (concept note followed by full proposal). The three case studies are: (1) Maize and wheat in Kenya and Ethiopia (by CIMMYT-UC Berkley-VPI); (2) Sweet potato and beans in Uganda and Rwanda (by CIP-CIAT-VPI); and (3) Rice, pearl millet and sorghum in Nigeria and Tanzania (by AfricaRice-ICRISAT-IRRI-UCL). These were also presented and discussed at the mid term meeting. Overall, the project seems to be generally on track. SPIA will continue to monitor and ensure quality control of the project through the PSC.

2.2 Advancing *Ex-Post* Impact Assessment of Social Impacts of CGIAR Research

I'm working on this...

See previous Activities Update and SPIA 37 Meeting minutes for background and rationale

i) Indicators of well being: poverty levels, hunger and food security, and nutrition

The goal of this study is to assess how technical change in agriculture may have differential effects on different indicators of well being, including poverty levels, hunger and food security, and nutrition. There have been a number of advances in empirical economic work over the last ten years that can be brought to

bear on this complex technology-poverty-food security issue. These innovations include a significant growth in the use of experimental and non-experimental methods in development economics; advances in both the amount of household data and the techniques for analyzing these data; new spatial maps of poverty at sub-national levels; and a range of applications of general equilibrium models under different scenarios. A short note describing the rationale and SPIA's intent in moving forward on this high priority impact assessment activity was shared with IFPRI and USAID recently (see Appendix 4).

At the same time SPIA has now hired two consultants (Alain de Janvry and Betty Sadoulet) to take stock of current approaches and outline future options. Their first task is to evaluate the recent advances in data availability and analytical techniques in terms of their application to *ex post* assessment of impacts of agricultural research on poverty as measured by income poverty. Their work (assisted by a graduate student) and report will summarize this assessment, propose a micro-macro framework for assessing impact pathways from agricultural research to poverty and hunger reduction, and suggest a number of options that could be used by the CGIAR and SPIA in identifying *ex-post* the poverty impact of technological change and the pathways involved in these impacts.

Plans are now underway to host (in collaboration with IFPRI) a small brainstorming workshop on 'new approaches to documenting agricultural research – poverty-hunger impact linkages' on 3-4 December at IFPRI HQ in Washington D.C. A number of experts on poverty, food security and nutrition in relation to agricultural research and development will be invited to attend. The objectives of the workshop are to:

- 1) Review work to-date documenting impact of CG Center research on CGIAR goals (poverty, food security) - accomplishments and limitations.
- 2) Evaluate promising new methods and data sources for more comprehensively and more credibly documenting ex-post impacts of CG research on poverty
 - a. Methods for causal identification: experimental and non-experimental approaches, new comprehensive data sets
 - b. Integration across scales: combining micro-level and macro-level methods
 - c. Measurement under real-world constraints: identifying useful (feasible) indicators of poverty and food security (income poverty, nutrition, and related dimensions of gender equality, risk and vulnerability, and empowerment)
- 3) Identify specific activities/studies in 2011-2012 to broaden or deepen evidence of *ex post* impact of the CGIAR on specific indicators of poverty and hunger, with indicative work plan and budget.

ii) Indicators of gender equity

On behalf of SPIA, former panel member Ross Conner is undertaking a preliminary investigation of significant issues related to and good examples of gender equity epIAs. Based on comments and suggestions from people working on gender impact research, several from within CGIAR and several from outside CGIAR (such as the International Center for Research on Women), he will present a written report to SPIA before the end of March. Based on this preliminary work, SPIA will consider whether and how it could support and provide added value to those working on epIA of gender impacts of CGIAR research.

2.3. Impact of Legume Improvement Research in the CGIAR

As part of its new operational model, SPIA will over the next three years commission Systemwide *ex-post* impact assessments in broad thematic areas of CGIAR research which to-date have not been evaluated but for which anecdotal evidence suggests considerable impact, e.g., legume improvement research, livestock management research, irrigation management. SPIA will commission an external team to assess the cumulative impacts of legume improvement research across the system to better understand and document

impacts of CGIAR research on pigeonpea, chickpea, lentil, lathyrus, common bean, soybean and cowpea in terms of their economic, social and environmental impacts in specific regions of the world. Legumes are likely to show especially important impacts on gender equity, nutrition, and sustainable soil management. While the external team will be leading the impact assessment research, analysis and write-up effort, it is anticipated that scientists at ICARDA, ICRISAT, CIAT and IITA will play a key role here interacting closely with the team, in particular, contributing critical adoption, yield and price data and, in some cases, preliminary analyses.

A scoping study with the objective of reviewing the evidence to date on legume impacts in the CGIAR was commissioned in October 2010. The report, by consultant Rob Tripp, is now available on the CGIAR impact website. At the same time, SPIA also commissioned a report by Sitou Akibode on global and regional trends in the production, trade and consumption of food legume crops, which serves as a useful resource for planning the full study. In addition to assembling and evaluating the relevant documented empirical evidence to-date on the impact of legume research in the CGIAR (found to be quite limited) Rob Tripp's scoping study identified the following long-list of potential impact case-studies:

Chickpea:	India, Syria, Turkey, Ethiopia
Cowpea:	Nigeria, Niger
Soybean:	Nigeria
Pigeonpea:	India, Tanzania, Kenya, Malawi, Uganda
Lentil:	Ethiopia, Nepal, Bangladesh
Faba bean:	Egypt, Ethiopia
Groundnut:	Mali, Nigeria, India, Uganda, Malawi
Common Bean:	Rwanda, Uganda, Tanzania, Kenya, Malawi

SPIA is now planning a phased approach to the full study, over a two-year period (2011 and 2012). February to June 2011 will be a preparatory phase in which Rob Tripp (as lead consultant), SPIA members, and some additional consultants (economists and legume specialists) will visit offices or headquarters of the four relevant CGIAR centres, speaking with scientists and management, as well as interviewing partners from the National Agricultural Research Systems and Statistical Bureaus. Brief field visits to carry out interviews / focus groups with a small number of farmers about their perceptions of the benefits of adoption will also add to the team's understanding.

The main objectives of this preparatory phase are to: a) secure the interest and participation of the centres; b) narrow down the list of potential crop x country combinations; c) uncover any unpublished data at CGIAR centres or statistical bureaus that could be of use to the main phase case-studies; d) assemble information about any success stories that would not require extensive collection of new data; e) develop some preliminary ideas about possible methods and data requirements for detailed case-studies in the main phase (July 2011 – Dec 2012).

2.4 Assessing the impact of CGIAR investments in germplasm collection, conservation, characterization and evaluation (GCCCE)

The impact of CGIAR research in crop germplasm improvement and integrated pest management is well documented, widely acknowledged and compelling. There remain, however, critical gaps in the CGIAR portfolio with respect to impact assessment that SPIA and the Centres have been trying to fill over the past several years. An area of CGIAR research and related activities that many recognize as being under-assessed with respect to impacts is 'germplasm collection, conservation, characterization and evaluation' (GCCCE), or "Sustaining Biodiversity for Current and Future Generations" as it was referred to within the five broad

system priorities¹. Roughly 12% of the total CGIAR investment has been allocated to this item over the last ten years.

The aim of this study is to document (measure and value) to the extent possible impacts related to GCCCE related activities by the CGIAR. As past efforts in this sort of assessment have been limited in scope, scale, data and methods, one of the key objectives of this study will be to propose a conceptual framework and set of methods that might be applied in future efforts to estimate these types of impacts. The perspective taken with respect to valuation will be derived from the concept of total economic value, which embraces multiple sources of value.

Initially, SPIA engaged an independent consultant Melinda Smale and Jean Hanson of ILRI, both recognized experts in the field, to lead this study. They have submitted an initial and subsequent final draft report that attempted to address the following objectives:

- (i) assess the extent to which quantitative and qualitative evidence exists on the impacts of crop germplasm collection, conservation, characterization and evaluation (GCCCE) within the CGIAR;
- (ii) identify the limitations of the scope, scale, data and methods used to generate the evidence to-date;
- (iii) explore the extent to which data may be available at the 11 CGIAR genebanks related to the amount of germplasm conserved by a) type of material, b) period of acquisition, c) extent of characterization/evaluation, d) direction and extent of flow e) type of utilization; and,
- (iv) determine whether, in the context of existing data and method constraints, there is value in undertaking a full study to broaden the assessment of impact of the CGIAR on crop GCCCE, briefly indicating the scope of that study.

Subsequently, SPIA engaged a second consultant, Jonathan Robinson to assess the following:

- (i) data availability and the likelihood of access to relevant genetic resources-related information, e.g., pedigree status of widely adopted improved varieties with specific valued traits drawn from the genebanks,
- (ii) counterfactuals, e.g., alternative suppliers of genetic resources (other genebanks -- availability and quality issues, private sector, plant breeders' crossing blocks), implications for chemical use and effect on profitability, health and environment, etc.
- (iii) geneflows -- to the extent we can show, even in simple quantitative (not economic) measures, how much collection and distribution has occurred;
- (iv) a proposal describing the scope/details of a main phase of the project which recommends 3 - 5 case studies of impact for follow-up and more comprehensive documentation.

Both reports were submitted, reviewed by SPIA members, and subsequently revised by the authors. SPIA members will discuss the next steps, if any, to be taken in 2011 especially with respect to commissioning some selected low-budget case studies to build up evidence of GCCCE impact in the CGIAR.

III. Communication and Networking Activities

Publications strategy and outputs

The dissemination model that SPIA uses is typically to initially publish Green Cover reports (an example can be found [here](#)), for which we organize a peer-review process. We then encourage authors to submit versions of these papers (usually edited to be shorter) to peer-reviewed journals in order that SPIA's output retains visibility and credibility with the research community. For some studies that SPIA also then produce Impact Briefs (<http://impact.cgiar.org/impact-briefs>) for disseminating the findings to donors.

Since the re-launching CGIAR impact website (<http://impact.cgiar.org>) in Sept 2010, SPIA has also sought to disseminate outputs early, before embarking on the communication model described above. Green Cover

¹ Until 1996, the broad category of activity now referred to as 'Saving Biodiversity' was called "Germplasm conservation, collection, characterization and evaluation", and most of that activity is now embedded in the SP "Sustaining Biodiversity for Current and Future Generations".

reports will no longer be printed, but we will continue to have them type-set in the same way, before publishing the pdfs on the website.

The following papers (either commissioned or authored by SPIA) have been made available through <http://impact.cgiar.org> in the period since SPIA 38:

- [“Recent advances in impact analysis methods for ex-post impact assessments of agricultural technology: Options for the CGIAR”](#) by Alain de Janvry, Andrew Dustan and Elisabeth Sadoulet
- [“A brief history of poverty impact assessment of agricultural research”](#) SPIA background note for participants in the SPIA-IFPRI workshop “*New approaches to assessing the impact of agricultural research on poverty and undernutrition*”, 3rd / 4th December 2010, IFPRI, Washington DC
- [“The impacts of food legume research in the CGIAR: A scoping study”](#) by Rob Tripp
- [“Assessing the environmental impacts of CGIAR research: Toward an analytical framework”](#) by Mitch Renkow
- [“Global and regional trends in production, trade and consumption of food legume crops”](#) by Sitou Akinbode

Two other papers related to the environmental impact study will also soon be published:

“The impact of improved agricultural technologies on changes in global land-use: A review” by SPIA

“Impacts of agricultural research-led productivity on land-use change” A modelling paper by Nelson Villoria commissioned by SPIA

European Evaluation Society Annual conference, Prague (6-8 October 2010)

SPIA organized a session on CGIAR impact assessment for the European Evaluation Association in October 2010. SPIA member Ross Conner chaired the session and provided an overview of CGIAR’s IA approach, followed by representatives from three centers (Elisabetta Gotor from Bioversity, Roberto La Rovere from CIMMYT, and Aden Aw-Hassan from ICARDA) who described examples of IA. Hugh Waddington from 3ie (the International Initiative for Impact Evaluation) gave his views on the similarities and differences between IA and IE, impact evaluation.

Appendix 1

Recommendations from the Bamako Mid-Term DIIVA Project Meeting DRAFT

General

1. Greg Traxler spoke to the on-going internal review of agricultural projects in the B&MGF. In that regard, he requested that project participants send him preliminary findings as soon as they become available prior to the completion of the review in May.
2. During the course of the meeting, several options for complementary investments were discussed. These included extending Objective 1 data base coverage to sorghum in Sudan and Ethiopia and to banana in Uganda. Consultancies on software for database storage and retrieval system and on a concept note for prospective rate of return assessment across all the PCCCS were also identified as relevance to the Project. The mid-term meeting was unplanned in the proposal and cost about \$50,000; therefore, an initial step in the evaluation of these investment options would focus on a mid-term budget status report for the project so that the PSC can allocate remaining resources efficiently and have a firm foundation for requesting more funds if they are needed.
3. Near-term priorities for the project coordinator are centered on the completion of the preliminary results report on the 1998 data sets and on the making of the project website an operational reality.
4. Several issues were unresolved at the mid-term meeting. Finding an institutional home for the storage and subsequent distribution of the project's data sets particularly the Objective 1 databases is one that requires resolution this year or early in 2012.
5. Project representation at the ASTI-FARA conference in December, 2011 is encouraged as a stimulus to begin cross-cutting analysis on a sub-set of PCCCS and proposal hypotheses.
6. Participants are required to submit Objective 2 and 3 survey questionnaires to the project coordinator for archiving as these questionnaires are finalized.

Objective 1

1. Participants agreed on the following timelines for important milestones:
 - data collection completed by July, 2011
 - center-specific report drafted by November, 2011
 - cross-cutting synthesis report drafted by March, 2012
 - data submitted for storage and distribution by August, 2012
2. The progress made in compiling the Objective 1 databases for 14 of the DIIVA food crops is impressive and in most cases, congruent with timeline expectations from the proposal and plans described at the project implementation workshop. Maize, sorghum, pearl millet, and groundnut are the commodities lagging behind the others in terms of database development. The slow start in convening expert panels to elicit levels of perceived adoption is a concern that could jeopardize the solicitation of reasonable estimates. ICRISAT participants recognize these problems and have pledged to complete initial estimates of the three databases for their 26 PCCCS by July, 2011. It will take an extra effort to meet this important timeline, and members of the PSC and the project coordinator eagerly await the outcome of ICRISAT's effort which should ensure that the Objective 1 databases are completed in time and in a satisfactory manner. Maize in Southern Africa is also a concern as the timeline agreed to at the meeting is considerably sooner than the later timeline stipulated in the LOA. CIMMYT participants should redouble efforts to meet the timeline they agreed to in the mid-term meeting.

3. Participants are advised to make use of their 1998 data sets to evaluate order of magnitude concerns with the recently collected data. About 65 of the 102 (??) PCCCS are the same in the two time periods. Steep declines or hefty increases from the point of reference of the 1998 data sets in overall improved variety adoption warrant further attention to determine the most plausible reason for such significant changes. For example, 5 smaller producing cassava countries, most of which are not PCCCS in the DIVA Project, are characterized by a modern variety profile that went from negligible in 1998 to 25-50% of area planted in 2009-10. Verifying (following up with the expert group or other knowledgeable individuals) the reality of such rapid varietal change is obviously a priority in those countries.
4. Discussions at the meeting underscored the observation that participants need to carefully document the process of collection of their Objective 1 data sets. In particular, methods of collecting the expert-opinion adoption data set were of comparative interest for several of the participants. One lesson was teased out of the different experience of participants: effective elicitation of expert opinion on adoption necessitated a meeting with a face-to-face discussion of the size of estimates and reasons underlying these perceptions. Moreover, institutional diversity in the expert panels seemed to result in better estimates although participation from several institutions was hard to achieve because of incentive problems. In contrast, inviting many experts from the same institution to participate in the expert panels could quickly hit the point of diminishing returns because knowledge of field conditions is not uniformly distributed across NARS scientists.
5. Ground truthing is needed to informally validate estimates for a selected group of PCCCS that seem to be outliers. In the 1998 data set, the adoption of improved groundnut cultivars in Mozambique seemed several orders of magnitude higher than what one found in the field. The potential outlier in the mid-term meeting referred to estimates of adoption of ICRISAT-related groundnut cultivars in Kenya. Those estimates deviate markedly from the adoption experience of comparable cultivars in SSA and in South Asia. Without ground truthing in a systematic rapid rural appraisal format, such estimates are not credible.
6. Adoption data that are the basis for validation of the Objective 2 survey results are still outstanding from two Centers. ICRISAT should send the PCCC adoption database to the project coordinator for the commodity(ies) of Objective 2 survey coverage in Tanzania by IITA needs to elicit and send similar information for the 5 states of Objective 2 survey coverage in Nigeria on cassava by
7. Centers participants are encouraged to share their Objective 1 data sets among themselves. Sharing is especially of mutual interest when two Centers are working on the same crop in different countries. Sharing is essential in the specific case of ICARDA and ICRISAT for chickpea in Ethiopia. In this case, ICARDA should send the assembled Objective 1 databases to ICRISAT for their information and input particularly with regard to the varietal release database.
8. Institutional classification requires a richer description in a few of the Centers crop release databases. That classification should assign full description to the role of the Center and the NARS. The description should be informative enough to characterize the role of the NARS even when the Center did not play a role in the provision or selection of the material.
9. The top priority for extending PCCC coverage centers on sorghum in Sudan and Ethiopia. Banana in Uganda is also priority particularly if there is evidence in the literature supporting varietal change in improved clones.

Objective 2

1. Participants agreed on the following timelines for important milestones:
 - data collection completed by November, 2011
 - center-specific report drafted by July, 2012
 - cross-cutting synthesis report drafted by September, 2012

2. The targeted commodities and countries for the Objective 2 survey did not change with the deliberations at the mid-term workshop with one exception: the ICRISAT Objective 2 survey in Tanzania should focus on fewer commodities to make it manageable and more in consonance with the Objective 2 work of ICRISAT in Mali on groundnut. It is expected that either groundnut or sorghum will be covered perhaps in conjunction with pigeonpea.

3. The meeting afforded participants an opportunity to finalize the planning of survey sampling issues. The joint Center and EIAR commanded the most attention. Results of a survey sampling evening sidebar reconfirmed the way to determine sample size in primary sampling units and identified procedures for dealing with missing data in sampling frames and for resolving issues in rare event sampling, which fits the case of multiple crops in a PSU. Participants should consult this presentation and Abdoulaye Adam's powerpoint on survey design on the project website. Abdoulaye should be contacted for consultation on punctual survey design issues related to the Objective 2 work.

Objective 3

1. Participants agreed on the following timelines for important milestones:

- data collection completed by January, 2012
- center-specific report drafted by July, 2011
- cross-cutting synthesis report drafted by October, 2012

2. The three Objective 3 impact assessments have many strengths, but they are also characterized by a few perceived weaknesses that were discussed in the meeting. The authors of the CIP-CIAT-Virginia Tech proposal need to address methods-related issues in identifying the relative frequency of improved bean cultivars when the crop is broadcast with mixed seed. At harvest, bean output may also not be sorted by variety in Rwanda. Perceived low levels of adoption of improved sorghum hybrids and varieties in Nigeria and the vintage of those modern cultivars was expressed as a concern for researchers in the AfricaRice-ICRISAT-IRRI-University of London collaboration. Institutional and country responsibilities were queried in the CIMMYT-Virginia Tech – Cal Berkeley study. (The main queries have subsequently been addressed).

3. Experimental evidence for estimating k shifts and the need for a cross-cutting rate of return study drawing on information from all the PCCCS was discussed. A concept note needs to be written for a prospective rate of return study. Knowledge about replacement varieties was signaled as an important issue in any prospective cross-cutting rate of return research.