

# SPIA Activities Update

*Prepared for SPIA 40 and ISPC 2 Meetings  
in Puebla and at CIMMYT HQ in El Baton, Mexico*

In the period since the last meeting, SPIA has published a strategy document and 3-year rolling operational plan available at the impact website (<http://impact.cgiar.org/sites/default/files/images/SPIAstrategy2011-13.pdf>).

This progress report provides a brief background and update on SPIA activities since the SPIA 39 and ISPC 1 meetings held at FAO in Rome, Italy in February/March, 2011. Activities are described under i) studies recently completed; ii) on-going studies, and iii) communication and outreach activities. Conclusions emerging from the SPIA 40 meeting will be reported verbally by the SPIA Chair at ISPC 2 on 15 September 2011.

## I. Studies recently completed

### 1.1 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, 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. Four EIA case studies have been completed and written up (ICARDA, IWMI, CIP and ICAR) and have been synthesized into a final report by Bennett (2011)
- 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.

It is expected that the final green cover report (a compendium covering the last three bullets above) and selected impact briefs will be published by October 2011.

## 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 the CGIAR System. SPIA chairs the Project Steering Committee (PSC). The PSC meets virtually 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.

In the PSC meeting held on 15 June, several issues were identified as requiring attention:

- (i) Significant delays in collection of Obj 1 databases by ICRISAT and CIMMYT;
- (ii) Strategy (proposal) for collection of data on banana in Uganda to fill what would become a major gap in the DIVA database;
- (iii) Strategy (proposal) doing an economic rate of return analysis based on DIVA adoption data; and
- (iv) Agreement on database storage and user friendly retrieval system for Obj 1, 2, and 3 databases.
- (v) Analysis of the 1998 IARC database on varietal adoption (Evenson and Gollin study).

A preliminary analysis of the 1990s IARC Commodity by Country Databases has just been completed by Tom Walker and circulated. It is expected that soon these databases will be uploaded to the project website for public access. We will follow-up on all these issues and assess progress in developing the next technical and financial report to the BMGF (due 30 September) at the next PSC meeting on 8 September.

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

As a driver of broad-based technological change in agriculture, research to improve agricultural productivity can help contribute to reducing poverty in several ways. It can help reduce poverty directly by raising the income or home consumption of poor farm households who adopt the resulting technological innovation. Adoption of technologies can also help reduce poverty indirectly as a result of: a) the effect on the real incomes of others, via lower food prices for consumers; b) increased employment and wage effects in agriculture; and c) the stimulus agriculture has on other sectors of economic activity through production, consumption, and savings linkages. While some work has been done in the past attempting to document these impacts (see recent SPIA report reviewing the empirical literature on the impact of agricultural research on poverty at [http://impact.cgiar.org/sites/default/files/images/SPIApovertynoteNov2010\\_0.pdf](http://impact.cgiar.org/sites/default/files/images/SPIApovertynoteNov2010_0.pdf)), the net effect of these alternative impact pathways for different groups of households with different technology-environment combinations is a complex question and in need of further study and greater fundamental understanding.

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 (see recent SPIA-commissioned review at [http://impact.cgiar.org/sites/default/files/images/deJanvryetal2010\\_0.pdf](http://impact.cgiar.org/sites/default/files/images/deJanvryetal2010_0.pdf)); 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. It is important that impact assessment in the CGIAR uses the best available methods to achieve high standards for rigour, and SPIA is keen to explore the potential to draw on and use these new innovations to that end.

In the period since SPIA 39, five full proposals (from 12 original submissions) were invited based on concept notes submitted to SPIA. From this short-list, three Center studies were then awarded funding following a process of external review:

- WorldFish: “Moving along the impact pathway: Improved methods for estimating technology adoption and impact: case of integrated aquaculture-agriculture in Bangladesh” \$150,000
- CIMMYT: “Measuring the poverty and food security impacts of improved maize in Africa: A combined econometric and micro – economy-wide modelling approach” \$250,000
- IRRI: “Assessing the poverty and food security impacts of IRRI contributions to modern varietal replacement in Bangladesh, India, Indonesia, and the Philippines during 1990-2010” \$200,000

A second component of this study, with a budget of US\$300,000 is led by IFPRI working with CIAT, CIMMYT, CIP, ICARDA and ILRI, has been commissioned by SPIA:

- Assessing the impacts of food staples research on income growth, poverty reduction and household nutrition in Ethiopia

Despite being commissioned, rather than based on a competitive call, the latter proposal was externally peer-reviewed by two referees (similar to competitive grants proposals), and a number of clarifications and amendments requested. A workshop for all the centres involved in the latter study is planned for October 2011. All four case-studies will run to June 2013.

### 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.

Following a scoping study (Oct 2010 – Jan 2011), the period since SPIA 39 has been dominated by a number of visits to potential field sites carried out by the lead consultant on this project (Rob Tripp) accompanied by SPIA secretariat staff. The main objectives of this preparatory phase of field visits were to: a) secure the interest and participation of the centres for this study; b) narrow down the list of potential crop x country combinations for impact case studies; 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; and, e) develop some preliminary ideas about possible methods and data requirements for detailed case-studies in the main phase (July 2011 – Dec 2012).

The itinerary for visits carried out in the preparatory phase was:

March 2011	Turkey and Syria (ICARDA) to examine chickpea modern variety adoption
April 2011	India (ICRISAT) and Nepal (ICARDA) to examine pigeonpea and chickpea (India) and lentil (Nepal) adoption
May 2011	Kenya and Tanzania (ICRISAT) to examine pigeonpea and groundnut adoption
June 2011	Nigeria (IITA) to examine cowpea adoption

Rob Tripp’s preparatory phase report to SPIA submitted in July recommended options for pursuing some specific cases further. A meeting between Rob Tripp, Bhavani Shankar, Tim Kelley and James Stevenson, in London in July, helped in clarifying some issues and narrowing the focus a bit more.

A SPIA skype meeting in late July clarified the priority objectives of this study and helped narrow the cases down to three or four. In this study, SPIA is seeking the broadest possible impact of legumes across the CGIAR system. Unfortunately, we are not in a position (with this study and its resources) to invest too much attention in rigorously estimating the impact on poverty or nutrition. At the same time, we should look for rigour wherever possible, be it in employing nationally representative estimates of adoption or in the methods

or secondary sources used in generating estimates of yield effects. It is also essential that we draw as much as possible from existing data collection efforts such as the DIIVA and TRIVSA studies. One crucial contribution of this study will be to distinguish between cases where we believe there has been no impact, and those cases where there may well be impact but it has not been, or cannot be, documented.

SPIA agreed that there are three or four priority cases for investment in this study, each of which may require a slightly different orientation and emphasis depending on how comprehensive and reliable adoption data is at this point (adoption data is highest priority), and hence budgets (for discussion at SPIA 40). These are:

*1) Cowpea in Nigeria*

Requires a nationwide adoption estimate i.e., survey over a significant area of the country – perhaps the 10 states outlined in the concept note developed. May be scope for using LSMS data, recently published, alongside data from an adoption survey using sample matching techniques to characterise the adopters' poverty and consumption profile with known probability. IITA has been contacted and they have expressed interest but details need to be worked out now and survey planned.

*2) Chickpea and/or Pigeonpea in India*

If possible combine into a single study for both crops in India. We will need to wait for results from the TRIVSA study (adoption data) from ICRISAT – they should have the Objective 1 data in the next couple of months, and the Objective 2 data for Maharashtra by the end of 2011 or early 2012. It is envisioned that we might carry out a survey in one or two states (Karnataka, MH or AP) – to also validate the TRIVSA data. Will continue to interact with ICRISAT about TRIVSA and the possibility of co-financing field work.

*3) Pigeonpea in East Africa*

Given the small area under the crop in any given country in the region, it would be better looking for an overview at the regional level (i.e., E Africa as a whole, potentially covering Tanzania, Kenya, Malawi, Mozambique etc). Here too is the possibility of using the LSMS data to characterise the situation in both Tanzania and Malawi. We can also draw on DIIVA, and we need to clarify the status of pigeonpeas in Objective 2 in Tanzania.

Three other cases were discussed that merit further attention for including in the final report:

*4) Chickpea in Turkey and Syria:* Aden Aw-Hassan is going to respond to our request that they look into financing a study on these issues, potentially with some involvement from us.

*5) Beans in Rwanda and Uganda:* Need to follow-up with CIAT (Robert Andrade) about the DIIVA Objective 3 beans case, how it is progressing, and their timeline for results etc. We also have the study from 2009 by Kalyebara et al with fairly rough and ready adoption estimates, and also a large HH survey from 2004-05 across a number of countries with up to 2000 HHs included.

*6) Beans in Latin America* Probably another major story of CGIAR impact here; need to follow-up with Robert Andrade.

SPIA members will review the proposed budget for this study in 2012.

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

The aim of this study is to 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 attempts 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.

In the period since SPIA 39, Robinson undertook visits to the three relevant centres in Latin America (CIP, CIMMYT and CIAT) to discuss the potential for developing some impact case-studies further during the course of the rest of 2011. Further visits to centres in Asia (especially ICRISAT and IRRI) are being considered for September / October, also involving the recruitment of an economist to work alongside Robinson. Robinson LA field trip report was very positive about the prospects for successfully undertaking some specific identified case studies and Centers are quite keen to participate. SPIA was pleased with this outcome and has provided some feedback on the report, mainly focused on clarifying the specific objectives and data requirements of the second visit to Latin America. Robinson will meet with Secretariat staff in Rome prior to the SPIA meeting and they will provide an update based on those discussions.

### III. Communication and Networking Activities

#### 3.1 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. In most cases, SPIA then produces shorter, easier to digest Impact Briefs (<http://impact.cgiar.org/impact-briefs>) for disseminating the findings to donors.

Since the re-launching of the 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 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 39:

- “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 modeling paper by Nelson Villoria commissioned by SPIA

SPIA is also in the process of synthesizing into a short background note an earlier, more detailed review of the feasibility of using randomized controlled trials in *ex post* IA in the CGIAR to enhance rigour. This shorter SPIA note will be published and posted on the CGIAR Impact website in September 2011

In the period since SPIA 39, a complete overhaul has been carried out of the impact assessment database on the website, which is now a much more focused and easy-to-use collection of approx 400 of the most important papers on the impact assessment of agricultural research. Consultants Natalia Morazzo and Tony Murray have greatly assisted SPIA in this process.

### **3.2 Conferences**

SPIA is organizing a special session at the IAAE conference in Brazil in August 2012, and is considering working with the journal editors of *Food Policy* on a special issue, based on a call for proposals in advance of the meeting. IAFPs have already been contacted and invited. A number have already expressed their interest and intention to participate. A steering committee needs to be formed for further planning and organizing.

SPIA is also involved in two sessions at the forthcoming CGIAR Science Forum, one of which is based around the findings from the environmental impact assessment study.

In addition, James Stevenson has been invited to present at a conference organized by the Swedish Academy of Agricultural Sciences, in Stockholm in November 2011, on the topic of agricultural technologies and land-use change.