

Capturing on-farm realities with IMPACTLite

An upgraded survey tool helps researchers compare and model farms and families across diverse regions.

To see the big picture of how farmers can tackle climate change, we often have to dive deep into the details. For instance, if a research group wants to model the potential to increase resilience with interventions like agroforestry or insurance, they must feed their simulations with hundreds of facts about farms and farmers. From the size of their families to their cropping calendar to whether they raise livestock alongside crops, farmers' present situation must be known before the impacts of new practices can be forecast.

Another group might want to learn about how gender roles influence adaptation responses. To pursue their research questions, they also need some of the same basic information. Many other studies of agricultural development have a similar starting point.

If each group separately creates a survey to get this type of data, they duplicate efforts and end up with nonstandardized results that are hard to compare and synthesize. Standard survey tools exist, but most zoom in on a single element — perhaps cropping choices or household food security — instead of taking in the whole system of crops, livestock, socioeconomics and environmental influences.

In the early 2000s, the International Livestock Research Institute (ILRI) started developing a tool to capture key factors of farming systems in standardized, quantitative data sets, ready to feed into models. Their product, the Integrated Modelling Platform for Mixed Animal-Crop Systems (IMPACT), included a comprehensive survey and a data collection software package.

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) recently backed an effort to streamline and update this tool, making it much quicker to implement and more useful for modelling and agricultural development studies. The new version, IMPACTLite, has now been rolled out at 13 CCAFS research sites in 12 countries, and other research programs are also starting to use IMPACTLite as a foundation for their own studies. “This sort of data is extremely hard to come by, so it’s high value and there are many areas where it can be used,” says Mariana Rufino, who led the project at ILRI.

Fast facts

- ▶ IMPACTLite is an in-depth household survey tool. It collects key information for analysing farming systems, in a standardized format that easily plugs into models.
- ▶ CCAFS and partners have gathered IMPACTLite data from over 2,500 households at 13 sites in South Asia and East and West Africa.
- ▶ The results lay a foundation for understanding the potential impacts of global climate policy. Other research groups are starting to build on this base with studies of gender differences and soil quality, among others.

From IMPACT to IMPACTLite

IMPACT aimed to collect all the information needed to build basic agricultural and economic models, down to the level of month-by-month farming activities and how many calories each child in a household was eating. The downside of its thoroughness was that the survey proved very cumbersome in the field. With 30 pages of questions, an interview might last 1 or 2 whole days.

CCAFS wanted to use IMPACT to characterize and compare farming communities around the globe. Could the approach be simplified for better results, while also putting less strain on households who agree to interviews?

ILRI was therefore commissioned in 2011 to update their tool. They switched from monthly to seasonal reporting, removed or broadened many questions, and added new features such as gender-specific questions about men's and women's resources and activities. An IMPACTLite interview now takes only around 2 hours. That lowers the cost of research, and the information may even be more accurate because farmers are less drained by the process.

A database to build on

Next, CCAFS and ILRI engaged local partners to carry out the IMPACTLite survey across South Asia and East and West Africa. Data from over 2,500 households were released in 2014. These diverse regions can now be modelled or analysed in terms of household composition, agricultural production systems, land and labour allocation, income from on-farm and off-farm activities, or food consumption, to name a few.

"This is useful at the global level of policy making, to understand what may be the impacts on different regions," says Silvia Silvestri, who took over ILRI's IMPACTLite research in 2013. "You have a way to compare them, because the data have been collected in exactly the same way."

In this way, IMPACTLite complements other comparative studies that CCAFS is conducting at the same sites. CCAFS partners have surveyed household heads, communities and organizations to establish baselines for measuring change over the next 10 years. To this broad picture, IMPACTLite adds more in-depth and quantitative information about what is happening within households.

Other research projects are building upon this base of information. A team from the International Center for Tropical Agriculture (CIAT) plans to test soil health at the IMPACTLite survey sites, adding a biophysical dimension to the existing data. In 2012, CCAFS

To find out more about IMPACTLite please visit:
<http://ccafs.cgiar.org/ImpactLite>

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Silvia Silvestri, ILRI

and partners returned to sites in Bangladesh, Kenya, Senegal and Uganda to gather more data on gender differences. Jumping off from the earlier surveys, they explored how women and men are experiencing climate change and adopting climate-smart agriculture practices.

The new studies sprouting from IMPACTLite show what the project has achieved. The IMPACTLite results are a rarity: a standardized survey spanning thousands of farming households in multiple regions. As such, they can serve as a cornerstone for building knowledge about agriculture in a changing world.

Case study:

Projecting the future for Kenyan farmers

Like much of Africa, Kenya is facing an uncertain climatic and socioeconomic future. In a 2014 study, experts from ILRI, CCAFS, and their research partners, investigated how farmers in the Kenyan highlands might respond to a range of future scenarios. The researchers modelled land use patterns as well as decision-making at the household level — would smallholders likely intensify or diversify their production, and in what ways? Simulations were based on field data collected from nearly 3,000 households using the original version of IMPACT along with IMPACTLite and other survey tools.

The results point to context-specific adaptation strategies. Farmers can expand dairy production only if there is plenty of land to plant fodder, for example. If farms are shrinking, they need to diversify into cash crops.

Not many other studies have connected decisions on individual farms to the larger-scale forces that are shaping agriculture nationally and regionally. IMPACT and IMPACTLite surveys provide a strong underpinning for such multi-level assessments.



Photo: S. Kilungu (CCAFS)

About CCAFS

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together the world's best researchers in agricultural science, development research, climate science and earth system science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security. www.ccafs.cgiar.org

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