Income Intervention Quick Scan: Crop Insurance

Farmer Income Lab Intervention Quick Scan

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Wageningen Centre for Development Innovation
Wageningen, September 2018

Report WCDI-18-027

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Monika Sopov, 2018. *Income Intervention Quick Scan: Crop Insurance; Farmer Income Lab Intervention Quick Scan.* Wageningen Centre for Development Innovation, Wageningen University & Research. Report WCDI-18-027. Wageningen.

Abstract UK This quick scan, commissioned by the Farmer Income Lab, is part of a wider research effort looking at, “What are the most effective actions that lead buyers can take to enable smallholder farmers in global supply chains to meaningfully increase their incomes?”. The quick scan provides an overview of the publicly available evidence on the impact of crop insurance have had on raising farmer income. Such subsidies have had little positive effect on farmer income, are not notably beneficial for women nor is this effect long-term. They have been applied at large scale. This quick scan is part of a series of 16, contributing to a synthesis report “What Works to Raise Farmer’s Income: a Landscape Review”.

Keywords: farmers’ income, intervention, agriculture, smallholders, crop insurance, index-based insurance, cocoa, rice

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List of abbreviations and acronyms

ACRE	Agriculture And Climate Risk Enterprise
IBLIP	Index Based Livestock Insurance Project
MFI	Microfinance Institution
NAIS	National Agriculture Insurance Scheme
WCDI	Wageningen Centre for Development Innovation, Wageningen University & Research
WUR	Wageningen University & Research
FARM	Financial Agricultural Risk Management

1 Introduction

Climate change is altering rainfall intensity and patterns. Even when a farmer has taken every measure to ensure a healthy harvest, a bad spell of weather can destroy all her hopes. One way for farmers to deal with these changes is to insure themselves against losses arising from weather shocks.

1.1 Definition

Crop insurance refers to an insurance which insures farmers and crop producers against the their loss of crops due to natural disasters, such as hail drought, and floods.

Crop insurance programs, which provide payouts based on individual (or nearby area) yield, are offered around the world as a formal method for mitigating aggregate risks faced by farmers. Yet, these programs have met with limited success. The cost of sending trained assessors to evaluate damage has proved high. In addition, the presence of insurance coverage reduces farmers' incentives to make profit-maximizing decisions on inputs. Crop insurance programs may also suffer from the problem of adverse selection.

More innovative approach is the index-based insurance, which overcomes some of the challenges faced by crop insurance programs by delinking indemnification from individual production. Instead, the payout is based on an observable index which is unrelated to a farmer's own effort. Because of these contracting innovations, index-based insurance has the potential to be a financially sustainable mechanism to mitigate the risks faced by agricultural households in developing countries.

1.2 Theory of change

Insurance can provide agricultural households with a mechanism to formally mitigate risk, which in turn may allow them to make riskier, more profitable investment decisions, continue to invest in inputs and technology that can increase productivity and income thereby contributing to increasing resilience by helping households smooth income across years, and improvement in livelihoods with increased investment in education and health.

1.3 Geography

Developing countries around the world.

1.4 Role of actors

The tasks to implement crop insurance can be taken up by a variety of stakeholders depending on the context of the country. Crop insurance approaches are most successful when they are accompanies by technical assistance to improve production and business management practices of farmers

2 Summary and justification of assessment

Strength of outcome		
Assessment criterion	**WUR score**	**Rationale for score**
Scale: Size of the population intervention could impact and potential to scale to other contexts (i.e., geographies, value chains)	High	• NAIS (India / 16.7 million smallholders) ACRE (Kenya, Rwanda, Tanzania / 190 000 smallholders); R4 Ethiopia, Senegal / 25 000 smallholders; IBLIP Mongolia /15 000 smallholders • The Sanasa Insurance Company has over 250,000 micro-insurance clients who are producing mainly rice • To realize the “high” score, substantial level of subsidy is needed
Impact: degree of increase in incomes	Medium	• ACRE insured farmers invested 19% more and earned 16% more than neighboring uninsured counterparts Sources of rationale
Sustainability: financial ability of farmer income increase to endure independent of ongoing external support	Low	• The empirical evidence from a wide range of studies indicates that, absent relatively substantial subsidies, small holder farmers will not purchase commercially priced index products or even “all risk” products where payments are tied to the farm's crop losses.
Gender: Potential of intervention to positively impact women	Low	• Both males (25%) and females (75%) found the conditions of the proposed schemes to be complicated. In particular, female farmers struggled the most to comprehend the trigger level and compensation. Most women (75%) implied that since they are not highly active outside the household, and because they lacked higher education, they customarily rely on male household members to make financial decisions.
Strength of evidence		
Assessment criterion	**WUR score**	**Rationale for score**
Breadth: amount of rigorous literature that exists on the impact of the intervention, as defined by the minimum quality of evidence for this paper	Moderate	• Limited literature is available on impact of insurance products on farmers’ income and welfare; most data related to demand and supply of insurance products

Consistency: Degree to which the studies reviewed are in agreement on the direction of impact (i.e., positive or negative)	Moderate	• All reviewed material point to increase in income of smallholders, but precise data is missing in most cases

3 Methodology

A variety of meta studies and individual case studies have been reviewed (please see reference list) and the following key documents have been identified as critical for the for the analysis on crop insurance:

1. Meta studies
    - 57 impact evaluation studies and 2 systematic reviews between and including 1995 and 2015 that examined questions related to financial agricultural risk management (FARM) instruments and their adoption in developing countries. (reference 1)
    - 17 electronic databases, 16 journals and 23 development and policy institution websites published since 1990 in countries classified as low- or middle-income at the time of data collection, focus on low-income households, analyse the impact of index-based insurance products that fall in the broad category of weather insurance and area yield-indexed crop insurance, and assess impact on household investment decisions, household well-being, take-up or consumption smoothing. (reference 2)
    - NAIS (India / 16.7 million smallholders) ACRE (Kenya, Rwanda, Tanzania / 190 000 smallholders); R4 Ethiopia, Senegal / 25 000 smallholders; IBLIP Mongolia /15 000 smallholders (reference 3).

2. Specific review
    - Cocoa: 1,200 households in 109 villages, 19 districts, and five regions throughout Ghana from February 2011 to August 2012. (reference (reference 4)
    - Rice: The SANASA network has about 400,000 of its members engaged in agricultural activities and about 47% of the members live on less than Rs. 5,000 (about 50$ US) a month. The Sanasa Insurance Company has over 250,000 micro-insurance clients who are producing mainly rice. The review focuses on 12,500 farmers in Sri Lanka from September 2009 - March 2013. (reference 5)
    - Gender
        - 433 male and female farmers living on a climate change vulnerable coastal island in Bangladesh, where an increasing number of farmers are adopting maize as a potentially remunerative, but high-risk cash crop. (reference 6)

4 Impact

4.1 Impact – income and access to finance

Despite many studies and reviews of index insurance (e.g., Binswanger-Mkhize 2012; Mirinda and Farrin 2012; Cole et al. 2012; Helmuth et al. 2009; Carter et al. 2014), current information in the academic literature on index insurance programs and particularly evidence of their impacts is quite limited, due in part to their commercial nature.

Increased income of smallholders

- Within four years of its existence in Huye District (123 farmers) in Rwanda the index based scheme made significant changes to farmers' household incomes. The study revealed that participation in insurance schemes increased the incomes of participating households by between US$ 90-105 (data on what this means in terms of % change is not available), which is relatively high considering the produced crops: maize and bean The main determinants of the insurance uptake are wealth category, participation in cooperative communities and years of experience with the insurance scheme. The insurance was found to be dominant in the study area, and farmers used irrigation facilities to protect their crops against weather shocks also participated in crop insurance which is a kind of over insurance.
- ACRE insured farmers invested 19% more and earned 16% more than neighboring uninsured counterparts (2012 impact study).

Increased access to finance for smallholders

- 97%of the farmers insured by ACRE in 2013 received loans linked to the insurance: 177,782 farmers received $8.4 million in financing in part due to ACRE's index insurance products.(2012)

Challenges of measuring impact

- Several challenges, including low take-up, hinder the adoption of FARM technologies, making impact evaluations problematic.
- In addition, there is a lack of focus on long-term (5–8 years) outcomes, in particular welfare impacts and the effect of innovations, among others on bundled products.
- Investigating welfare impacts of FARM products (e.g. health and education) would require costly, longer impact evaluations. This is especially true for insurance contracts that have a low probability of paying out and in cases where welfare impacts are mainly expected through changes in behaviour.
- Few papers study renewal rates. Given the general low renewal rates and the threat this represents for product sustainability, it is an area where more research would be useful.
- Long term-evaluations of supply-side outcomes are also lacking. Almost none of the included studies investigated the cost-efficiency of FARM products or technological innovations, such as the use of digital education.
- Similarly, very few empirical and theoretical studies focused on the impacts of offering bundled products (either bundling several risk classes or bundling products with value-added services). There seem to be two important challenges for the implementation of such products; namely, the complexity of partnerships and the difficulty in communicating to farmers that they are indirectly insured. Index insurance products, grants and direct subsidies have recently received much attention
- The increasing number of studies indicates the promise of index insurance products to overcome supply-side difficulties, such as moral hazard, adverse selection, and high transaction and verification costs that are otherwise included in indemnity insurance products.

4.2 Scaling and sustainability

There have been many pilot index insurance programs over the last 20 years. However, until recently, some have doubted that index insurance could scale to the numbers of farmers needed to meaningfully address poverty (Banerjee and Duflo 2011; Binswanger- Mkhize 2012). Although theoretically promising, take-up of index-insurance products has grown only slowly. Households perceive weather risks as very serious, and existing informal risk sharing mechanisms as inadequate; yet significant barriers to adoption remain.

The empirical evidence from a wide range of studies indicates that, absent relatively substantial subsidies, small holder farmers will not purchase commercially priced index products or even “all risk” products where payments are tied to the farm's crop losses. There are three important reasons why this is the case.

1. First, smallholder farmers already have many ways of managing their risks, including informal community-based initiatives, on-farm production decisions and off-farm work.
2. Second, index insurance schemes are subject to considerable basis risk[1]; families often do not receive an index insurance indemnity when they experience a substantial crop loss on their farms.
3. Third, the fixed costs of delivering crop insurance to smallholders make such coverage expensive.

In addition, studies also mention other reasons:

- liquidity constraints;
- inadequate trust in the insurance provider;
- not sufficiently customised to local risk exposure; most stakeholders are of the opinion that FARM products are only partially successful in improving outcomes, such as income and resilience, attributing this lack of success to the poor quality of the product itself;
- wait and see attitude: farmers take time to “try” by not buying large quantities of an unknown product and waiting to see results of an insurance product with a trial purchase before investing (SANAS);
- too complex product
    - Slow sales initially low because society leaders and members are not convinced that weather index insurance solution could manage the major risks they face. (SANAS)
    - Frequent product modifications and "over-customization" is time consuming and can limit the potential client base (SANAS).
    - Limited financial literacy: most women respondents struggled to comprehend the trigger levels and compensation mechanisms in particular. This implies that, due to their relative lack of experience and exposure to financial matters, women generally failed to understand the formal language commonly used to describe such insurance schemes (Sri Lanka).

It remains unclear whether FARM instruments, when used, improve farmer welfare, provide reasonable social protection or offer a good way to manage on-farm risks. Most FARM instruments are subsidized by either the government or the private sector. Therefore, it is unclear if and how insurers and implementing organizations can achieve their objectives of profit maximization and sustainability in smallholder farming contexts.

The potential market for index-based insurance therefore may be limited to insuring relatively large groups of farmers, either directly or indirectly though providing micro finance and other lending institution with coverage against widespread loan defaults associated with catastrophic events like major droughts.

[1] A weather index by its very definition is not directly insuring a farmer’s loss, and multiple farmers, who will typically have somewhat different losses, must often be covered by the same index formula and data source. Farmers may receive a payout even when their crops survive, or they may experience losses when a payout is not triggered. This phenomenon has been cited frequently as a key barrier in index insurance uptake

4.3 Gender

Studies also lack a specific focus on gender. It is very likely that women and men have a different exposure to risk and think differently about risk, but very few studies at differential effects on women and men.

Female farmers require different products and approach to buy insurance
The first gender study related to the area of agricultural insurance was implemented in 2015 (reference 6). Results of the mentioned study reveal significant insurance aversion among female farmers, irrespective of the attributes of the insurance scheme. The key factors are level of trust of female farmers in insurance institutions and financial literacy.

Men and women typically exhibit different personality traits, particularly in terms of their willingness to take risks and to trust people. In general, women tend to make less risky choices (Eckel and Grossman, 2008), and are also less likely to trust others in financial trust games (Buchan et al., 2008), although women have been shown to be more trustworthy compared to men. These phenomena are attributed to gender differences in emotional experiences of negative outcomes, especially lower utility resulting from bad outcomes experienced by women compared to men (Croson and Gneezy, 2009).

Efforts to fulfil gender equity mandates in climate-smart agricultural development programs that rely on weather-index insurance as a risk-abatement tool are therefore likely to require a strengthening of institutional credibility, while coupling such interventions with financial literacy programs for female farmers.

Also, bundling weather insurance index with other financial products e.g. savings provide a positive payment in both good and bad states of the world, making insurance clients feel that they are receiving some return on their insurance investment, even without calamity (Akter, 2012).

Additionally, savings are commonly used as a form of insurance to cover against idiosyncratic shocks (such as health risks) both in developed and developing countries. Given that women are more vulnerable to health and environmental shocks, bundling weather-index insurance with savings may be more suitable to women's needs as it provides coverage against a wide variety of shocks. However, bundling may also potentially make the product more complicated, which could discourage women clients' participation if they have less financial literacy than men. Both males (25%) and females (75%) found the conditions of the proposed schemes to be complicated. In particular, female farmers struggled the most to comprehend the trigger level and compensation. Most women (75%) implied that since they are not highly active outside the household, and because they lacked higher education, they customarily rely on male household members to make financial decisions.

5 Key success factors

- Insurance must contribute to increasing farmers' income
- Holistic approaches: many of the case studies have integrated index insurance into broader programmes for development and climate risk management, such as risk reduction through better agronomic practices, prudent risk taking by access credit, and improved risk reserves through access to savings.
- Multi-stakeholder approach: the case studies have shown that success requires close collaboration between farmers, businesses, policy makers, scientists and implementers, where all the parties must have a good understanding of all the products, trade-offs, solutions and limitations.
- Farmer-driven design: many of the case studies have reported substantial benefit from involving end-clients in the index design process. In India, a recent impact review (Zevenbergen 2014) reported that becoming more involved in the design process was the most requested improvement by farmers in the NAIS programme.
- Building trust and capacity: partnering with organizations that have already built trust and capacity within the clients was instrumental for successful scale-up of the case studies.
- Wider market chain approach: insurance projects that have scaled have also invested in policy frameworks, supply chain integration and market integration.
- In case of ACRE, the key to success has been offering a holistic solution to mitigate weather risks, not just insurance. ACRE developed customized insurance products using mobile technology and bundled it with agricultural advisory services, weather data, local access to quality inputs, and input credit. The products have allowed credit institutions to enter agricultural lending by mitigating weather-related repayment risk. Mobile phone technology has proven pivotal to the program's success. Safaricom's M-PESA mobile banking system helps keep index insurance premiums affordable for smallholder farmers and actually makes reaching them economically viable for insurance companies. Farmers receive their index insurance policy numbers and premium receipts via SMS, and payouts likewise are sent electronically via M-PESA. In addition, a team of 30 local and international specialists models crop risks, develops crop indices, manages climate data, develops insurance products, educates farmers, and creates distribution channels for the insurance.
- Solid scientific research and good communication allowed many of the case studies to scale, especially when addressing data poverty or reducing the impact of basis risk. In many developing countries there are limited agronomic or meteorological data for index design e.g., limited crop yield data or rain gauge networks. One method of overcoming this is to use remotely sensed data from satellites, an option that is seen in several of the case studies.
- Alongside basis risk reduction, another theme running through the case studies is the importance of basis risk communication. Projects such as R4 have spent significant resources on discussing what a community might do in a basis risk event. They are working towards a situation where farmers will no longer see the event as a failure, rather as a year where they need to take Option B, e.g., use a community savings fund or their savings at the MFI).

The growth in recent years suggests the possibility that the uptake and benefits of index based insurance may be constrained more by the evolving capacity to provide relevant services, than by a fundamental lack of demand among farmers. At a minimum, it calls for reassessment of some of the prior arguments that lack of demand and practical implementation challenges prevent index-based insurance from being a useful tool to reduce rural poverty.

Index insurance is not likely to be appropriate for every farmer, but its appropriateness will depend on the risks they face, their farming system, and what other resources are already available (e.g., technologies, markets, information and advisory services, informal risk sharing mechanisms). The goal

therefore of index-based insurance should be to meaningfully address risk-related bottlenecks to improving farmers' livelihoods, and not necessarily maximize uptake.

6 Barriers addressed

Farmer organizations

As technical assistance key to success, enhancing technical and managerial competencies of farmers' organizations as well as that of individual farmers is usually part of the intervention around crop insurance.

Role of government

Little evidence exists on the interactions between FARM tools and public policy instruments, such as using insurance as part of a social safety net scheme. The role played by public policies is central to reach impact, either through the signals given to farmers when big disasters occur (free compensation systems), through the prevailing regulatory environment, or by relying on public subsidies.

7 Questions for further research

Based on the reviewed literature the following top 3 research gaps have been identified:

1. Rigorous studies of behaviour changes and welfare outcomes: more study is needed for in-depth understanding of behaviour under risk, or more specifically, risk perceptions and the way in which perceived ex-post impacts drive ex-ante changes in behaviour.
2. Improved technology or design (e.g. remote sensing, satellite data, improved seeds or inputs) to drive costs down and basis risk
3. Bundled products:
   a. Investigate the possibilities of bundling products;
   b. Study the demand for bundled products; and
   c. Analyse the effectiveness of different products for different purposes, different risks, or covering multiple risks.

More detailed recommendation:

1. **Impact on farmers**: there is a need for more rigorous evidence on the impact of different products on final beneficiaries.
   - Are there differences in impact between voluntary individual weather insurance and automatic coverage via disaster relief programmes?
   - Does subscription to the product have an impact on ex-ante risk decisions?
   - What are the welfare and productivity impacts of these programmes?
   - How do these programmes affect investment decisions?

2. **Affordability and product quality**: more evidence is needed on product quality; there are still concerns about improving product design (especially the use of new technology to reduce the cost and basis risks of offered products).
   Affordability and good product quality were both the most-mentioned challenge and the most-mentioned key to success (at 40% each), especially there is need for rigorous evidence on basis risk and client value.
   - Can the instrument reduce risk exposure?
   - Can it adequately cover risk?
   - How can basis risk be reduced?
   - What is the perceived value for farmers?

3. **Demand**: there is a research gap around demand for specific products, particularly bundled products and informal FARM instruments. Some of the mentioned potential research questions are the following:
   - What affects demand in the informal sector?
   - What is the demand for bundled products?
   - Can value chain bundled agricultural insurance products improve take-up rates?
   - What (is the) effectiveness of bundling different risk classes or FARM products with value-added services?

4. **Supply**: Some of the following research questions have been suggested in the studies:
   - Can voluntary agricultural insurance sustain itself?
   - What public investments are most effective in promoting commercially viable index insurance products?

References

1. Barooah, B, Kaushish, B and Puri, J, 2017. Understanding financial risks for smallholder farmers in low- and middle-income countries: what do we know and not know? Scoping paper 9. New Delhi: International Initiative for Impact Evaluation, 2017
2. Shawn Cole Gautam, Gustav Bastian, Sangita Vyas, Carina Wendel, Daniel Stein, 2012. The effectiveness of index-based micro-insurance in helping smallholders manage weather-related risks. Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) Social Science Research Unit
3. Greatrex H, Hansen JW, Garvin S, Diro R, Blakeley S, Le Guen M, Rao KN, Osgood, DE. 2015. Scaling up index insurance for smallholder farmers: Recent evidence and insights. CCAFS Report No. 14 Copenhagen: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Available online at: www.ccafs.cgiar.org
4. Justin D. McKinley, Rebecca A. Asare & L. Lanier Nalley, 2015. Assessing the Potential of Climate-Smart Cocoa Insurance: A Pathway to Increase Yields and Reduce Farmers' Risks from Climate-Change in Ghana, Report to the Climate-Smart Cocoa Working Group, University of Arkansas.
5. Project documents of Index-based Crop Insurance Project implemented by the Développement International Desjardins (DID), Sanasa Insurance Company Ltd (SICL) and BASIX with a grant received from the Microinsurance Innovation Facility, Sri Lanka
6. Aktera, S., T J. Krupnikc, F Rossic, F Khanamb, 2016. The influence of gender and product design on farmers' preferences for weather-indexed crop insurance. Lee Kuan Yew School of Public Policy, National University of Singapore; Social Sciences Division, International Rice Research Institute, Philippines; International Maize and Wheat Improvement Center (CIMMYT), Bangladesh.
7. An Economic Analysis Of Impact Of Weather Index-Based Crop Insurance On Household Income In Huye District Of Rwanda, Olive Ashi Mwe, A512/60006/2013; A Thesis Submitted in Partial Fulfilment of the Requirements for the Award of a Master of Science degree in Agricultural and Applied Economics, University of Nairobi.

Additional references

1. Review Agricultural insurances based on meteorological indices: realizations, methods and research challenges A. Lebloisa* and Philippe Quirionb, CIRED, 2011
2. Kilimo Salama (Safe Farming) Weather Index Insurance in Kenya: Early Market Success. IFC, Syngenta Foundation, 2012
3. Learning Journey; Weather Risk Management Services, Comprehensive Agriculture Risk Management Project. Micro Insurance Innovation Facility, 2013
4. Fact sheet: Kilimo Salama ("Safe Agriculture") https://www.syngentafoundation.org/file/2446/download?token=cKF6NSF_
5. How prepared are Cameroon's cocoa farmers for climate insurance? Evidence from the south west region of Cameroon. Jude Ndzifon Kimengsi & Balgah Roland Azibo, Department of Geography and Environmental Studies, Catholic University of Cameroon (CATUC), Department of Agribusiness Technology, College of Technology University of Bamenda, Cameroon, 2015
6. Impact Evaluation of the Agricultural Insurance Program of the PCIC on Agricultural Producers in Central Visayas, Discussion Paper Series NO. 2016-47Corazon G. Anzano and Julian Thomas B. Alvarez, 2016
7. Dynamics of Demand for Index Insurance: Evidence from a Long-Run Field Experiment Shawn Cole, Harvard Business School; Daniel Stein, The World Bank; and Jeremy Tobacman, University of Pennsylvania, 2014
8. Agriculture And Climate Risk Enterprise (Acre), Kilimo Salama—Kenya, Rwanda, Tanzania Global Index Insurance Facility; World Bank Group, 2017
9. Responding to global change: A theory of change approach to making agricultural research for development outcome-based PK Thornton, T Schuetz a, W Förcha,1, L Cramer a,b, D Abreu

b, S Vermeulen c, BMCampbell b,c (a CCAFS, International Livestock Research Institute (ILRI), Kenya; b International Centre for Tropical Agriculture (CIAT), Colombia; c CCAFS Coordinating Unit, University of Copenhagen, Faculty of Science, Department of Plant and Environmental Sciences, Denmark, 2017

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The Centre for Development Innovation works on processes of innovation and change in the areas of food and nutrition security, adaptive agriculture, sustainable markets, ecosystem governance, and conflict, disaster and reconstruction. It is an interdisciplinary and internationally focused unit of Wageningen UR within the Social Sciences Group. Our work fosters collaboration between citizens, governments, businesses, NGOs, and the scientific community. Our worldwide network of partners and clients links with us to help facilitate innovation, create capacities for change and broker knowledge.

The mission of Wageningen UR (University & Research centre) is 'To explore the potential of nature to improve the quality of life'. Within Wageningen UR, nine specialised research institutes of the DLO Foundation have joined forces with Wageningen University to help answer the most important questions in the domain of healthy food and living environment. With approximately 30 locations, 6,000 members of staff and 9,000 students, Wageningen UR is one of the leading organisations in its domain worldwide. The integral approach to problems and the cooperation between the various disciplines are at the heart of the unique Wageningen Approach.