



IMPROVING SOYBEAN PRODUCTION IN KENYA USING DIGITAL AND EXTENSION APPROACHES

Locations Kenya

Dates 01/07/2020 - 31/03/2022

Summary

In Kenya, soybean is a key crop in helping to improve livelihoods and nutrition. However, production only meets 10% of the market needs due to the effects of poor agricultural practices and pests and diseases. To address these issues, this project will provide a frontier system that integrates Earth Observation technology, pest modelling and best-practice approaches in agricultural extension to increase soybean productivity and quality. The project aims to reach 30,000 farmers, of which support will be given particularly to women farmers in helping them to engage with this high-value commodity, access local markets and improve their livelihoods.

The problem

Soybean is a key crop for improved livelihoods and nutrition in Kenya, but stakeholders within the soybean supply chain face many constraints.

In production, 30% of soybeans are rejected by off-takers because of poor quality, to which poor agricultural practices and pest and diseases contribute.

Pests are a significant problem. They undermine yields and can cause crop losses of 40-100% if they are not detected or treated. The bean fly, *Ophiomyia phaseoli*, for example, commonly referred to as Bean Stem Maggot, attacks newly-germinated soybean plants and develops rapidly during the early planting season, causing reduced growth and sometimes plant death.

The unavailability of seed, as well as the limited credit facilities and financial safety nets available to farmers, also contribute to low productivity since these are all essential if soybean farmers want to buy inputs, including seed and safer pesticides, to help increase outputs. When combined with the lack of access to market, farmers' potential household incomes are curbed.

Farmers are also faced with a lack of early warning of imminent pest attacks, few advisors, and an absence of practical pest management information. Farmers, therefore, spray insecticides indiscriminately, leaving unsafe chemical residues (MRLs).

Insurance would help farmers secure their livelihoods, and while a number of weather-indexed services are available to help predict upcoming weather extremes, there is a general lack of evidence-based pest and disease insurance, should the worst happen and the farmer loses their crop. As a result, only 2-3% of Kenyan farmers are insured. Conversely, insurance providers lack data on pest risks which would enable them to develop fair and attractive, sustainable products.

In this project, we seek to overcome these constraints by providing a frontier system that integrates Earth Observation (EO) technology, modelling and best-practice approaches in agricultural extension to increase soybean productivity and quality.

What we are doing

The goal of this project is to help at least 30,000 farmers, particularly women, successfully access a neglected food market so they can improve their livelihoods.

With partners, Agriculture and Climate Risk Enterprise Ltd (ACRE Africa) and International Food Policy Research Institute (IFPRI), CABI will develop an integrated suite of services, that includes new digital surveillance systems, to help them increase soybean yields and sales through improved production and access to high-value markets.

EO and ground sensor data along with pest models will be developed to inform farmers when and where the soybean crop is most at risk of attack. This will be combined with actionable advice on how to control pests using IPM-based approaches. Methods and tools will be tested for accuracy and effectiveness and will be used to inform and validate financial sustainability criteria of service providers (advisors, off-takers, insurers, lenders).

A comprehensive social support system will enable women farmers to engage with this high-value commodity in their local markets through entrepreneurship training, whilst detailed information on good agricultural practices and financial support (including direct access to micro-credit and novel pest insurance products) appropriate to climate-smart approaches, and risk management advice will be given.

Project activities:

- Train ~300 of ACRE Africa's VESPs (Village Extension Service Providers) basic plant doctor processes, focussing on soybean pest management, with the purpose of scaling production and supply from female farmers

- Extend and test an innovative 'Picture-Based Insurance' tool as a means of accelerating uptake of pest insurance products in Kenya
- Validate pest models across rural and peri-urban locations
- Determine if models provide insurance providers with valuable data to inform 'basis risk' calculations, alerting them to the validity of forthcoming claims
- Determine value-add to insurers, examining the probability of longer-term B2B sustainability funding.

Donors Innovate UK

Partners Agriculture and Climate Risk Enterprise Ltd (ACRE Africa), International Food Policy Research Institute (IFPRI)

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