

Evidences

Study #3276

Contributing Projects:

- P661 - 1.2.4 Comparative Science, Technology, and Innovation Systems in Developing-Country Agriculture

Part I: Public communications

Type: OICR: Outcome Impact Case Report

Status: New

Year: 2019

Title: Commercial release of genetically engineered insect resistant cowpea in Nigeria informed by ex ante modelling and capacity building conducted by IFPRI's Program for Biosafety Systems

Short outcome/impact statement:

The Nigerian authorities approved for general release the genetically engineered pod borer resistant cowpea in 2019. Support from the Program for Biosafety Systems included over a decade of institutional and individual capacity building on regulatory issues and more recently led to a credible and robust ex ante economic assessment of insect resistant cowpea.

Outcome story for communications use:

Cowpea is the most important grain legume crop in Nigeria and in West Africa as a whole. Its per capita consumption is one of the largest in the world and is increasing over time. Among the key challenges to cowpea production is damage by the pod borer insect. To address this problem, international and African researchers have been collaborating for over two decades to develop an insect resistant variety.

In December 2019, Nigerian authorities approved a new pod borer resistant (PBR) variety, developed using the tools of modern biotechnology, for release to farmers [1]. This is the first time a biotech staple crop is approved in Nigeria.

The approval was granted following science-based testing and a safety evaluation led by Nigerian experts with support and capacity building on regulatory issues provided by the International Food Policy Research Institute's Program for Biosafety Systems and other partners. Support included assistance to develop biosafety protocols, guidelines and administrative structures and harmonize decision-making processes across relevant agencies.

In addition, decision makers were keen to understand the potential economic benefits of the new variety. In 2017, the Program for Biosafety Systems' team partnered with the Agricultural Research Council of Nigeria to conduct an ex ante economic assessment. Led by a Nigerian economist, Professor Dayo Phillip, with input from local experts including Professor Ishiyaku (principal investigator of the PBR Cowpea project in Nigeria), the team used DREAMpy [2], a software developed by IFPRI researchers, to estimate the economic gains from the adoption of the new variety as well as the cost of delaying this adoption [3]. Results showed that the estimated benefits for producers and consumers would average USD 350 million in net present value, 70 percent of which would be accrued by producers, and that a five-year regulatory delay would decrease the estimated benefits by 35 percent.

Professor Phillip presented preliminary results at the May 2019 annual PBR Cowpea Review and Planning Meeting convened at the International Institute of Tropical Agriculture, where he received feedback from Nigerian and international experts. In December 2019, Professor Phillip and the Agricultural Research Council of Nigeria presented the final estimations to the National Variety Release Committee's technical team. Together with the safety assessment, evidence of the estimated benefits of PBR cowpea contributed to the path-breaking release of this new variety.

Links to any communications materials relating to this outcome:**Part II: CGIAR system level reporting**

Link to Common Results Reporting Indicator of Policies : Yes

Policies contribution:

- 440 - The first genetically-engineered crop in Nigeria (insect-resistant cowpea) was approved for general release following an ex ante assessment and capacity building on regulatory issues by the Program for Biosafety Systems. (<https://tinyurl.com/2owovx5q>)

Stage of maturity of change reported: Stage 2

Links to the Strategic Results Framework:

Sub-IDs:

- Adoption of CGIAR materials with enhanced genetic gains

Is this OICR linked to some SRF 2022/2030 target?: Yes

SRF 2022/2030 targets:

- Increased rate of yield for major food staples from current 1%/year

Description of activity / study: <Not Defined>

Geographic scope:

- National

Country(ies):

- Nigeria

Comments: <Not Defined>

Key Contributors:

Contributing CRPs/Platforms:

- PIM - Policies, Institutions, and Markets

Contributing Flagships:

- F1: Technological Innovation and Sustainable Intensification

Contributing Regional programs: <Not Defined>

Contributing external partners:

- ARCN - Agricultural Research Council of Nigeria
- Federal Government of Nigeria

CGIAR innovation(s) or findings that have resulted in this outcome or impact:

Phillip, D., Nin-Pratt, A., Zambrano, P., Wood-Sichra, U., Kato, E., Komen, J., Hanson, H., Falck-Zepeda, J., Chambers, J. A. 2019. Insect-resistant cowpea in Nigeria: An ex ante economic assessment of a crop improvement initiative. IFPRI Discussion Paper 1896. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/p15738coll2.133541>

Innovations:

- 713 - Dynamic Research EvaluAtion for Management, Python version (DREAMpy): open source software for evaluating the economic impacts of agricultural research and development projects (<https://tinyurl.com/2zrz8ofw>)

Elaboration of Outcome/Impact Statement:

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References cited:

- [1] International Service for the Acquisition of Agri-biotech Applications blog post "Nigeria Commercializes Pod Borer Resistant Cowpea, its First GM Food Crop". 2019.
<http://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=17899>
- [2] DREAMpy: Open source, user-friendly software for evaluating the economic impacts of agricultural research and development projects <http://www.dreampy.org>
- [3] Phillip, D., Nin-Pratt, A., Zambrano, P., Wood-Sichra, U., Kato, E., Komen, J., Hanson, H., Falck-Zepeda, J., Chambers, J. A. 2019. Insect-resistant cowpea in Nigeria: An ex ante economic assessment of a crop improvement initiative. IFPRI Discussion Paper 1896. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/p15738coll2.133541>

Quantification: <Not Defined>

Gender, Youth, Capacity Development and Climate Change:

Gender relevance: 0 - Not Targeted

Youth relevance: 0 - Not Targeted

CapDev relevance: 2 - Principal

Main achievements with specific **CapDev** relevance: Capacity building on regulatory issues was provided by IFPRI for the Nigerian authorities. Capacity building is the main focus of IFPRI's Program for Biosafety Systems.

Climate Change relevance: 0 - Not Targeted

Other cross-cutting dimensions: Yes

Other cross-cutting dimensions description: The adoption of pod borer resistant cowpea will likely result in the reduction of insecticide spraying, with potential health and environmental benefits [3].

Outcome Impact Case Report link: [Study #3276](#)

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