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Farmers' Knowledge and Opinions towards Bollgard II® Implementation in Cotton Production in Western Burkina Faso

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PhD FRAMEWORK "ERAFRICA GROUP"

SOCBIOAfri: "Addressing Societal Challenges of Biotechnology in Africa. Towards Balanced Innovation"

Consortium Composition

- University of Groningen: Innovation perspectives
- National Biosafety Authority, Kenya: Communication issues
- North West University, South Africa: Regulation issues
- University of Ouagadougou, Burkina Faso: Societal issues
- Universite Libre de Bruxelles, Belgium: Kick off Meeting
- Gent University, Belgium : Socio-economic issues

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WP2: Integrated Analysis of Relationship between Farming Systems and Socio-economic Impact and Conditions of Agricultural Biotechnology Applications: Burkina Faso and Kenya

Goals

- Make a comparative assessment of the potential socio-economic impacts of biotechnology based agricultural applications on farming systems and local stakeholders (farmers).

- Identify acceptable forms of biotechnology with respect to social conditions and the kind of applications.

Targeted objectives

- Identify critical mass (issues/requirements/stakeholders) towards biotechnology based agriculture (Private and/or Public initiatives).

- Identify farmers' preferences and the influencing factors determining the technology uptake.

- Assess the socio-economic impact of biotechnology based agriculture towards Food and Non-food crops.

Expected Methods

- Develop structured surveys among farmers to capture their knowledge and understanding towards biotech event and its use .

- Develop choices experiments among farmers to analyze their preferences and the influencing factors.

- Develop an adoption model incorporating the information gathered in step 1 and 2 to predict the technology uptake.

Case study of Burkina Faso

- *First paper*: "Farmers' Knowledge and Opinions towards Bollgard II® Implementation in Cotton Production in Western Burkina Faso".
- *Second paper*: "Which kind of biotechnology do farmers prefer? A Discrete Choice Experiment considering cotton cultivation in Burkina Faso".
- *Third paper*: "Heterogeneous Demand for Insect-Resistant (Bollgard II®) Cotton: Evidence from Western Burkina Faso".

First paper: **Background: Bt cotton in Burkina Faso**

- Lead motifs:
  - Pest damage (Lepidopteran insect groups)
  - Weakness of IPM strategy

- Introduction and spread:
  - 2002: collaboration with Monsanto led to 2 regional varieties
  - 2008-2009: first commercial release (3rd in Africa)
  - 2011: fast adoption (74% of cultivated surface)

- Advantages:
  - Yield improvement (15%) due to control of Lepidopteran insects
  - Lower pesticides use led to health and environmental benefits

- Disagreement Points: Economic benefit and cotton lint quality

- Current status: decision to suspend Bt cotton (2016-17)

First paper: **Objectives of the study**

- to gauge their understanding and knowledge on the concept of biotechnology and more specifically Bt-technology

- to assess the attitudes of farmers towards Bollgard II®

- to look at their experience with the Bollgard II® crop and their view on the decision to impose suspension of Bollgard II®

First paper: **Approach and Methodology**

Table 1: Structure of the questionnaire			
Clusters	Description	Method/tools	Target group
Farmers' knowledge and understanding	Knowledge about Biotechnology and Bt technology	Yes/No (6 statements)	All farmers
	Understanding on the use of Bt technology	Yes/No/Not sure (4 statements)	Type of farmers, Education level and Position in the GPC
Farmers' perception towards Bt technology effectiveness	Agricultural practices, pest control, labor times, etc.	True/False/Don't know (15 statements)	all farmers
Farmers' opinions about Bt technology advantages	yield performance, income gain, farmers wellbeing, etc.	7 points likert-type scale (from 1=Strongly disagree,….	Type of farmers
		4= Neutral, …to 7= Strongly agree): 7 statements	(Small, medium and large)
Farmers' opinions regarding health and environmental effects of growing Bt cotton	Health benefit, environmental risk, etc.	True/False/Don't know (6 statements)	all farmers
Farmers' opinions about Bt seed cost?	Did farmers know how the Bt seed price was fixed?	Yes/No (3 statements)	all farmers
	Is this price affordable for them?		
Farmers' attitudes to pest management	How many times have farmers sprayed their cotton fields this year?	Based on the declaration of farmers (1 statement)	Bt and Non Bt growers
		Yes/No (2 statements)	all farmers
Farmers's opinions and preferences regarding the decision to abandon Bt cotton	Do farmers know why this decision was undertaken? Do they agree with that?	3 point likert-type scale (Agree/Neutral/Disagree)	Bt and non Bt growers

First paper: **Data Collection and Analysis**

- Stratified sampling (Bt vs Non Bt, farm size)

- 3 districts from western Burkina Faso: agro-ecological characteristics

- 32 villages and 108 GPC (Groupement de Producteurs de coton): Individual interview among 324 farmers

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- SPSS: One-way ANOVA, Chi-square, Descriptive Analysis

First paper: **Main findings 1/2**

- Knowledge of farmers concerning biotechnology and Bt-technology is limited and depends on their education level and their role within the GPC.

- The regulatory oversight in the implementation of Bt-technology is insufficient. The risk of the non-implementation of refuge strategy was ignored by both farmers and extension officers.

First paper: **Main findings 2/2**

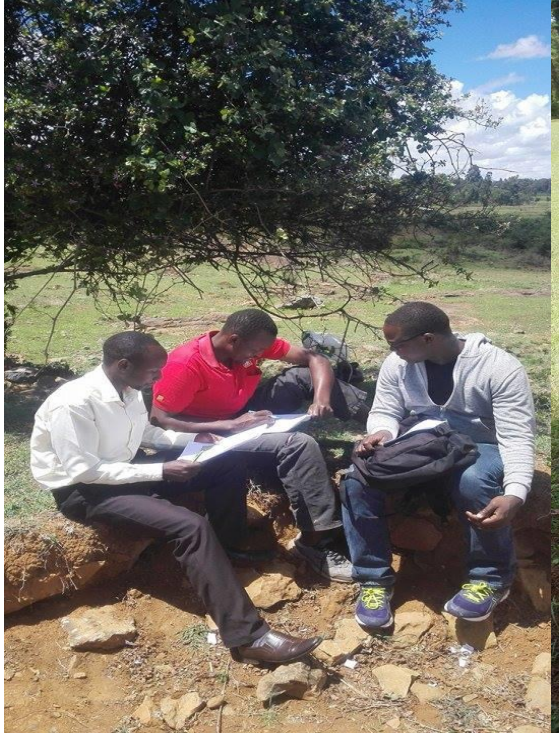
- Farmers knowledge of suitable pest management strategies is low. Two late insecticides applications was not implemented.

- The income gain generated by Bollgard II® cotton adoption was getting different appreciation levels according to farmers groups due to the Bt seed cost.

- Finally the decision to forsake Bollgard II® cotton in Burkina Faso was badly perceived by the majority of the farmers.

First paper: **Main Recommendation**

*T*o guarantee the success of Bt cotton in the farming system of Burkina Faso after having fixed the fiber length issue, adoption of a new approach based on the multidisciplinary assessment will be highly required taking into account parameters such as farmers' behavior.



Thanks for your attention