



Supplemental irrigation from farm ponds to mitigate rainfall variability in the Sahel: Farmers' preferences and Institutions' goals in Burkina Faso

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**Thesis: Role of Psychosocial Factors in the
adoption of innovation in rural Africa:
Case of supplemental irrigation in
Burkina Faso**

Implementation of the technique

- Digging a farm pond
- Collecting rain water
- Irrigating rainfed crops



Supplemental irrigation using farm ponds, to cope with rainfall variability

Rainwater harvesting in ponds

- an old practice in Burkina Faso
- irrigating rainfed crops during rainy season = a taboo?

Since 2012, financial and technical supports

- the government of Burkina Faso
- and some local and international organizations

RESEARCH QUESTION

What is the weight of psychosocial factors in the adoption of supplemental irrigation in Burkina Faso?

Theoretical context

Preferences for the innovation characteristics

(Lancaster 1966, Adesina & Baidu-Forson 1995)

Theory of Planned Behavior (Ajzen, 1991)

Social representation of farmers and institutional actors (Moscovici 1961, Abric 2001)

Perceptions of the innovation characteristics

(Rogers 1983)

Objective

Determine the weight of psychosocial factors in the adoption of supplemental irrigation in Burkina Faso.

O1: Determine the preferences of farmers for the characteristics of the innovation.

O2: Measure the risk aversion of farmers.

O3: Determine the risk perception of farmers in the adoption of the innovation.

O4: Analyze the compatibility between this innovation and the social norms of farmers.

O5: Determine the perception of farmers about the complexity of the innovation.

O6: Analyze the impact of observability in the decision of farmers to adopt the innovation.

O7: Analyze the impact of trialability in the decision of farmers to adopt the innovation.

Methods

- ❖ **Surveys:**
 - Semi - structured Interviews : 33 farmers & 18 institutional actors
 - Quantitative survey: 315 farmers (128 adopters)
- ❖ **Social representation of farmers & institutional actors**
- ❖ **Declarative method (measure of the risk aversion of farmers)**
- ❖ **Econometric analysis (Probit)**

Farmers' preferences and Institutions' goals ?

Objective

To analyze and understand the change of farmers' behavior.

- The role played by institutional actors
&
- Farmers preferences

Methods

Semi-structured interviews:

- 33 adopters / 16 villages
- 18 institutional actors

Social representation (Moscovici 1961, Abric 2001)



Social representation

3 words associated with “supplemental irrigation”

Farmers - Survey 1

Words	Citation frequency	Average citation rank	Average word scale(- 3/+3)
Core of the representation			
Beneficial	18%	1.5	1.06
Leakage	12%	1.92	-1
First periphery			
Difficult	14%	2.21	-0.93

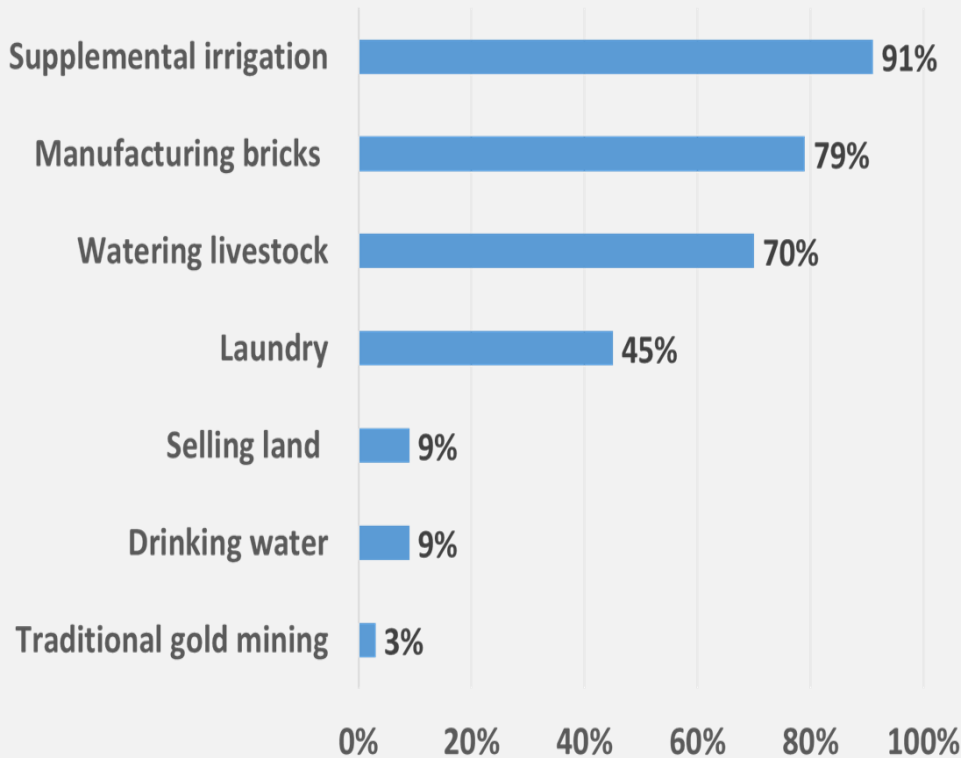
Farmers – Survey 2

Words	Citation frequency	Average citation rank	Average word scale(- 3/+3)
Core of the representation			
Beneficial	20%	1.6	3
vegetable growing	17%	1.7	2
Food security	12%	1.7	3
Difficult	12%	1.8	-3
First periphery			
Leakage	12%	2.6	-3

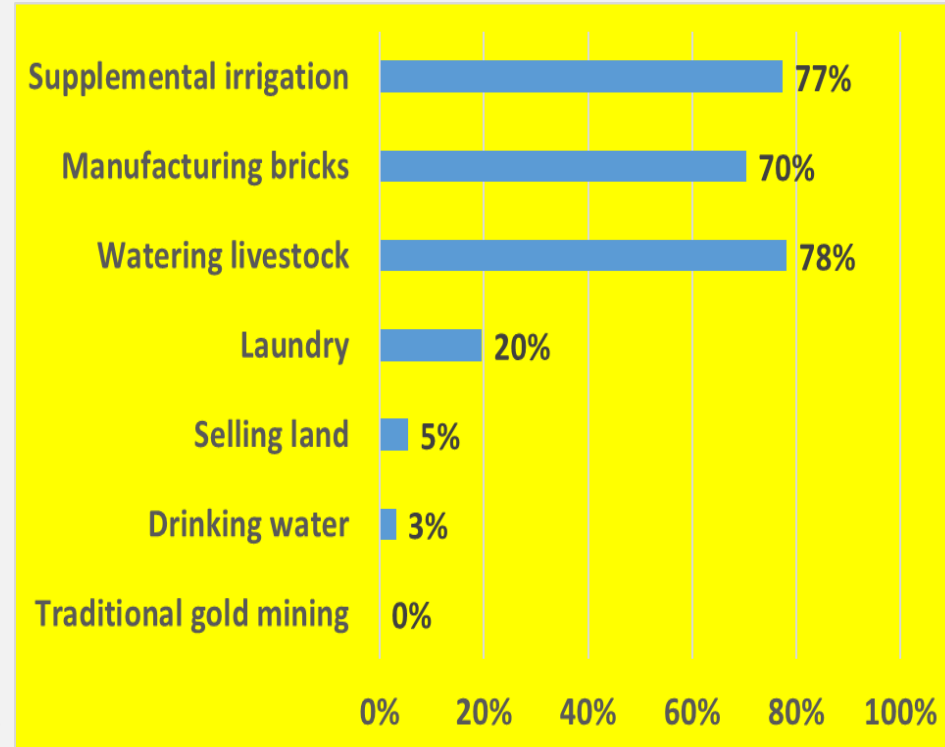
Institutional actors

Words	Citation frequency	Average citation rank	Average word scale(- 3/+3)
Core of the representation			
Water supply	17%	1.7	1.1
Food security	15%	1.8	1.3
Support for production	11%	1.8	1
First periphery			
Dry spells	17%	2.1	-1

Farmers' preferences - Survey 1



Farmers' preferences – Survey 2



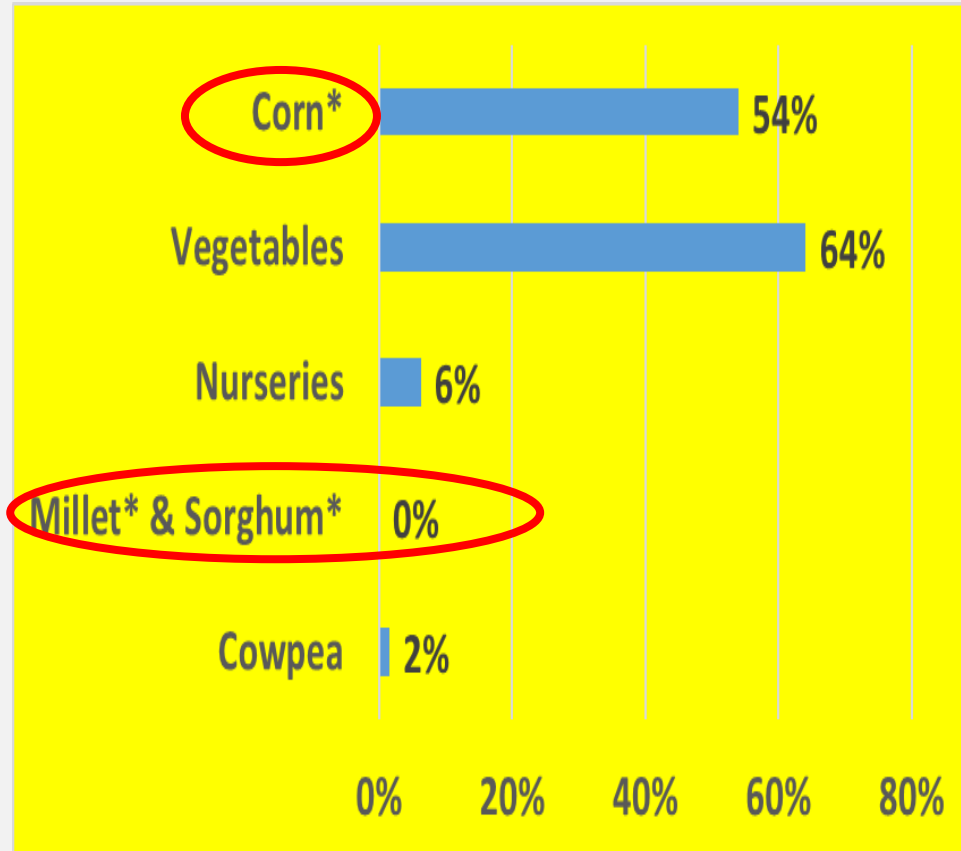
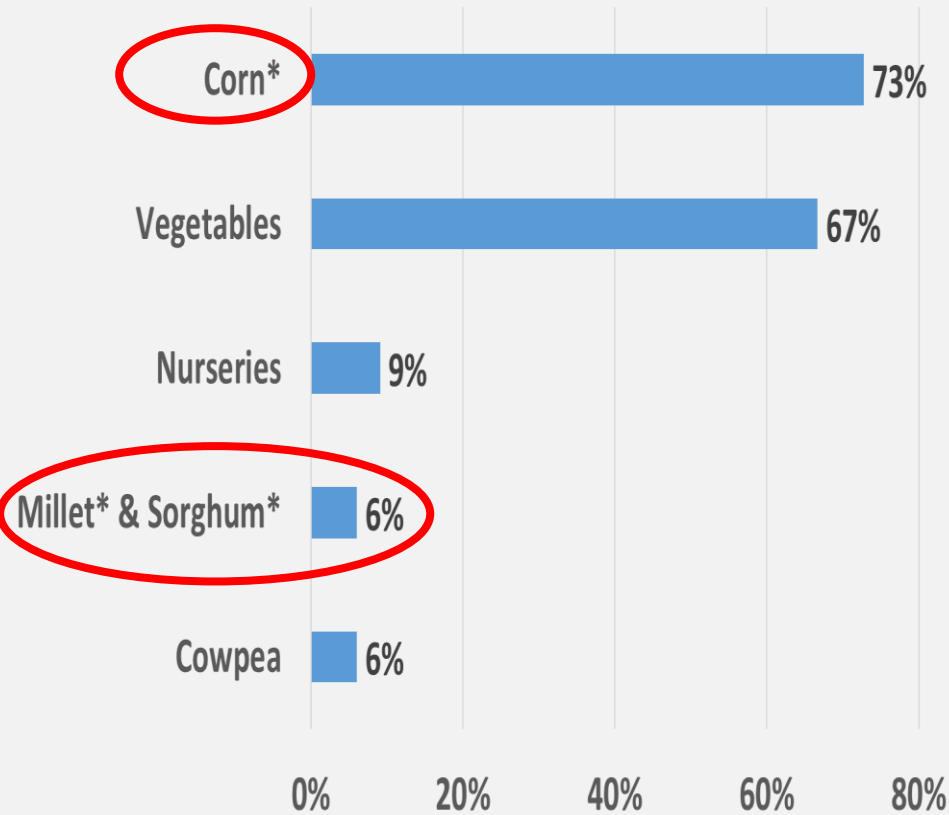
Institutional actors' goals

Supplemental irrigation using farm ponds:

- To support **agricultural production**
- To achieve **food security**

The gap: crops irrigated

Farmers=>cash crops



Institutional actors

=> subsistence crops*: corn, millet & sorghum

Change of farmers' behavior

First step:

- Institutional actors influenced farmers' social norms
- Farmers lifted their taboo

Second step:

- Farmers develop preferences for the characteristics of the innovation
- The multi-purposes of farm ponds reflects the expected utility (“new consumer theory”)

Social norms & Preferences

The important factors that explain the decision of farmers to adopt an innovation are:

- Collective agreement of farmers: social norms
- Preference for the characteristics of an innovation

Policy relevance

The promotion of an innovation should be based on two steps:

First step: farmers' social norms

- Farmers' intention to adopt is linked to their social norms

Second step: farmers' preferences for the characteristics of the innovation

- Farmers' behavior to adopt is linked to their preferences

Thank you for your attention