Analysis of trait preferences in pearl millet in Senegal

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CONTEXT

The ***African agricultural sector*** faces numerous challenges, including climate change, limited natural resources, low productivity, marketing issues, and social inequalities. Additionally, African agriculture predominantly consists of small-scale farmers who are often vulnerable to economic and environmental shocks.

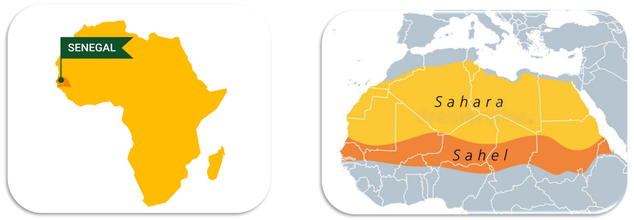

Figure 1. Desert advance and climate change

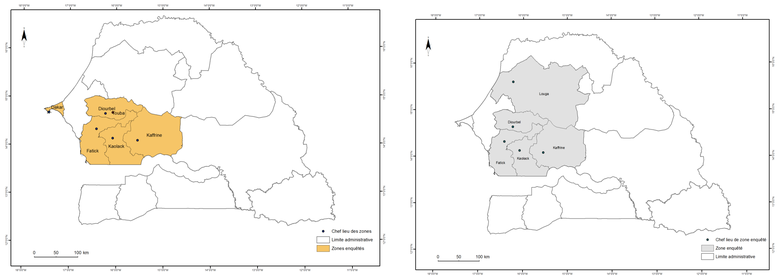

Figure 2. Area of production and high consumption of millet in Senegal

Recurring droughts: The Sahel region is known for experience recurrent droughts and difficult climatic conditions for production. This greatly influences the varieties of millet to grow and the importance of this crop.

Staple cereal for food and feed: Millet is a dual-use crop. In Senegal, millet is the most cultivated crop and the second most consumed cereal after rice. Animals consume grain and straw.

Several improved varieties have been produced but the adoption rate remains low. The question remains: what are the traits that guide the choices of actors in the millet value chain?

Through Willingness To Pay project, we aim to find the perfect variety that would meet the needs of all stakeholders (producers, processors and consumers).

METHODS

1. Data Collection Instruments

2. Focus Groups survey

8 Prod FG

12 (7+5) Processors FG

3. System Characterization and BPP with the Breeders

23 traits ⟺ **4 traits**

9 traits ⟺ **3 traits**

5 traits ⟺ **2 traits**

4. *New Method*: Discrete Choice Experiments

410 Prod

5. *New Method*: Discrete Choice Experiments

100 Units Processing

200 Streets Sellers

6. *New Method*: Discrete Choice Experiments

500 Households Heads

7. Update the BPP with the Breeders

8. Variety Profitability Study

9. Variety Released

KEY FIGURES / PHOTOS

RESULTS

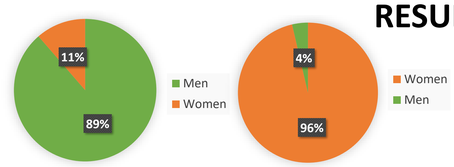

Figure 3. % of men and women in WTP producers and processors sample

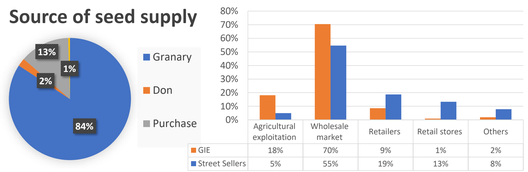

Figure 4. Source of millet seed/grain supply

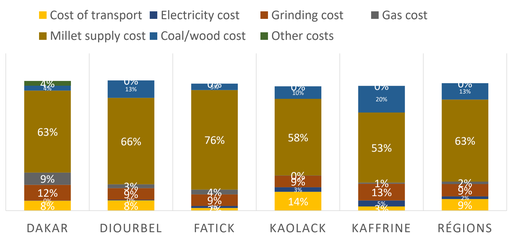

Figure 5. Cost excluding labor /processor

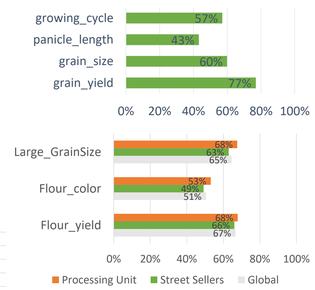

Figure 6. Bundle Probability Analysis

Our study allows us to achieve 2 fundamental things, firstly to know the important traits and the secondary traits but also to be able to explain the perceptions of the different stakeholders.

Knowledge among producers is very increased, while it is low among processors. This is because the traits are more visible among producers while processors only have the grains and therefore their preferences start there.

This method is innovative in Senegal and will help guide selection programs in terms of priorities. We also plan to write articles to publish our results.In this year 2024, we will have finished all the WTP studies.

RELEVANCE

- ***Support breeders' decisions in terms of varietal development:*** We provide them with real information through the collection and analysis of data to facilitate their decision-making and justify investments in breeding programs.

- ***Sustainable agriculture:*** Communities in rural and urban areas depend on millet cultivation. Millet cultivation corresponding to producers' expectations (grain yield, grain size and crop cycle) ensures a good food base for consumers and a sufficient quantity of raw material all year round.

- ***Adaptation to climate change:*** Genetically improved varieties can be an important tool for farming communities to adapt to a more unpredictable and drier climate.

- ***Reduce rural exodus:*** Bad weather conditions and food insecurity often lead to forced migration of rural communities in the groundnut basin to cities.

- ***Produce scientific evidence to improve adoption and guide policies:*** informing agricultural policy choices helps guarantee food security and make public investments profitable.