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Policy Brief

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Farmers adaptation in response to soil salinity in Fimela, Senegal: Effective or not?

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Saline Soil

Summary

The expansion of land salinisation is one of the major challenges that farmers in arid and semi-arid zones are facing particularly in Fimela, Senegal. It is negatively impacting both farmers' productivity and food security. Farmers are adopting adaptation techniques to cope with it and to secure their sustainable livelihood. But despite of this, farmers are still complaining about the challenges they face due salinisation. Therefore, a review of the effectiveness of farmers' adaptation is necessary and should consider the scientific knowledge produced in this domain but also the different diffusion channels that should be used to reach the farmers' level.

Key Messages

- Salinity is restricting farmers productivity and food security in Fimela, Senegal.
- Soil salinity expansion in Fimela is increasing in space due to climate change.
- Despite of adopting adaptation techniques, farmers are still facing challenges in their agricultural activities due to salinity expansion.
- There is no evidence that farmers adaptation to cope with soil salinity are effective.
- There is an important need of improving adaptation strategies in saline condition for a sustainable livelihood.

Land salinization is a major worldwide problem, in arid and semi-arid regions in Africa. In Senegal, 1.230.000 ha are affected, with more than a third of the cultivable area in Fimela district. Salinity intrusion in lands negatively influences farmers' incomes and expenditure, and has emerged as a major factor responsible for decreasing crop production level. Farmers who face this negative environmental change have been adopting several types of strategies to cope with soil salinity. Among these adaptations, the main ones that are present in Fimela are: "increasing fertilizer application" lands and reforestation.

However, despite the adoption of adaptation measures, farmers in general are still complaining about the effect of soil salinity on their livelihood sustainability. Therefore, it becomes important to see if farmers' adaptation strategies to cope with soil salinity expansion are sustainable on their productivity. Bringing insights on this question would help to propose good and sustainable policies that would help farmers facing saline conditions.

Approach

The primary information for this brief was obtained from farmers community by face-to-face interview with 288 respondents, a focus group and the knowledge from stakeholder such as CAREM. Secondary level information from literature review was also used. To answer the problem that is stated scientifically, econometric analysis has been consider base on a random utility theory.

Key findings

- Increasing fertilizer application and Reforestation are the main adaptation strategies used in Fimela to cope with soil salinity expansion. The fertilizers are concerned by both chemical and organic (groundnut shell and millet residues), but sometimes also by domestic's waste.
- Farmers who implement adaptation are more affected by food insecurity than farmers who do not, **Figure 1**.
- Most of the farmers (75%) are increasing fertilizer application on their land and scientifical knowledge show that at a certain level, the fertilizer can be inefficient or harmful for some crops, **Figure 2**.

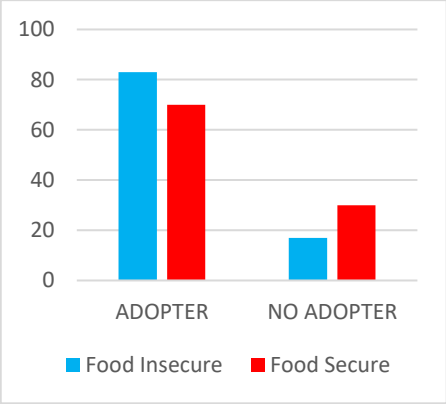

Figure 1: Distribution of adaptation strategies household according to food security status

- A large percentage of farmers have lost lands or part of their land due to soil salinity expansion. This loss is mostly affecting rice farmers, **Figure 3**.
- Adoption of adaptation strategies by farmers is increasing significantly farmers' groundnut yield. In this case it means that farmers who adopt adaptation would have low yield in case they did not adopt for groundnut farming.
- Farmers adaptation has no significant effect on millet yield. The type of adaptation used by farmers are ineffective for millet farming.
- Farmers' adoption is influenced by the amount of household asset they own, the influence of villages that surround them and the social influence represented by their relatives, close neighbours and parents.

Figure 2: Fertiliser application (Source: Google Wikipedia, 20/11/2022)

Figure 3: Farm rice affected by salt

Implication

- Considering local authorities and researchers in bringing new inputs to solve soil salinity's negative effects on farmers activities is important for farmers sustainable livelihood.
- To strengthen the capacity of farmers to cope with salinity will improve farmers' productivity and food security in saline conditions.
- Giving large and concise information on soil salinity issues on farmers' activities and their needs for effective and realistic adaptation techniques is important to support decision, and inform donors and decision makers involvement.

Policy Recommendations

- Improve farmers' adaptation techniques for improvement in coordination with researchers in this domain.
- Disseminate research findings on technical tools to **local authorities** and **farmers** in the district**.**
- Target a group of farmers for a training and application of efficient adaptation techniques. The positive results achieved by them may influence others farmers to adopt the efficient techniques through the channel of village and social influence.

- Develop policies that can improve household capital and community network to facilitate farmers' adaptation of new technologies developed by researchers.
- Install and developpe anti-salt damn as asked by the population to decrease the expansion of soil salinity.
- Improve farmers finance to ensure their capacity in building adaptation by providing subvention and material to them.

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