Raising adaptive capacities through agrometeorological learning – lessons from Burkina Faso and Senegal

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Abstract

Climate change poses significant challenges to farmers worldwide, impacting crop yields and exacerbating food insecurity. To address these challenges, enhancing agricultural resilience is crucial. One effective approach is empowering farmers with tools for informed decision-making, such as local weather observation and agrometeorological learning. A three-year collaborative research project, part of the Nutrigreen initiative supported by the European Research Area Network Cofund (ERA-NET) Food Systems and Climate (FOSC), examined the feasibility and impact of such initiatives in Senegal and Burkina Faso.

Data on daily maximum and minimum temperatures and rainfall in eight rural villages in semi-arid agro-climatic zones were collected and analysed from 2022 to 2023. This data, collected by trained observers, facilitated by NGOs, and analysed by students, was compared to long-term averages. The results were fed back to the local weather observers on a quarterly basis and combined with focus group discussions to evaluate the process. For the analysis of historical weather data, re-analysed open source weather data provided by the World Bank was used. Results of ombrothermal diagrams showed decreased rainfall and increased maximum temperatures, with variations among villages and years compared to the long-term average from 1991 to 2020. Rainfall occurred mainly in July and August, while the other months of the rainy season - June, September and October - were comparatively dry. The number of rainy days varied widely between villages and years, with the largest difference in Razoutenga village of Burkina Faso being 21 days in 2022 and 40 days in 2023.

Despite challenges, such as poverty, food insecurity, illiteracy, and logistical issues, the experiment had positive outcomes. Communities expressed a strong demand for improved rainfall information, and observers were empowered to read and interpret climate data, bridging the knowledge gap between science and local communities. This study underscores the importance of localised climate information and community engagement in building agricultural resilience. However, to maximise benefits, agro-meteorological learning should be further integrated with support for agro-ecological farming practices, directly impacting food security and smallholder incomes.

Keywords: Agroecology, agrometeorology, Burkina Faso, climate change, climate information, Senegal, weather observer

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