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Linking Temporal Changes of Climate Factors with Staple Cereal Yields in Southern Burkina Faso

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Abstract : In the Sahel, climate variability has been associated with a complex web of direct and indirect impacts. This natural phenomenon has been an impediment to agro-pastoral communities who experience uncertainty while involving in farming activities which is also their key source of livelihood. In this scenario, the role of climate variability in influencing the performance, quantity and quality of staple cereals yields, vital for food and nutrition security has been a topic of importance. This response of crops and subsequent yield variability is also a subject of immense debate due to the complexity of crop development at different stages. This complexity is further compounded by influence of slowly changing non-climatic factors. With these challenges in mind, the present paper initially explores the occurrence of climate variability at an inter annual and inter decadal level in South Burkina Faso. This is evidenced by variation of the total annual rainfall and the number of rainy days among other climatic descriptors. Further, it is shown how district-scale cereal yields in the study area including maize, sorghum and millet casually associate variably to the inter-annual variation of selected climate variables. Statistical models show that the three cereals widely depict sensitivity to the length of the growing period and total dry days in the growing season. Maize yields on the other hand relate strongly to the rainfall amount variation (R2=51.8%) showing high moisture dependence during critical growth stages. Our conclusions emphasize on adoption of efficient water utilization platforms especially those that have evidently increased yields and strengthening of forecasts dissemination.

Keywords : climate variability, cereal yields, seasonality, rain fed farming, Burkina Faso, rainfall
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