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Dammed-up Problems: Challenges and Difficulties in Small-holder Irrigation Agriculture in Southwestern Burkina Faso

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Abstract

The adequate distribution of water over time as well as its efficient use is one of the major challenges for irrigation agriculture in southwestern Burkina Faso. Although an average annual rainfall of about 900 mm would be high enough to assure sufficient yields in agriculture in general and to account for food production for the 13.9 million inhabitants of Burkina Faso in specific, the unevenly distributed rainfall leads to severe water allocation problems during the dry season. Small dams are so far the most commonly used practice to store rainfall water in the rainy season and to enable irrigation agriculture in the dry season. During the last 20 years, the number of reservoirs in Burkina Faso has increased from 186 in 1985 to more than 600 in 2006 and construction of new dams continue to be sponsored by a great number of donors.

The questions to raise in this paper is, in which way these micro dams may be a viable option particularly to small-farmers, given the problems of farmers' capacity to organise themselves effectively in addition to agro-ecological and economic concerns.

Therefore, this study exemplifies the ecological and technological potentials and limitations of small dams in southwestern Burkina Faso in order to illustrate their agro-economical constraints and benefits for small-scale irrigation systems. For example, although some small dams were only built recently, erosion and siltation problems are already visible, which is indicated by changes in reservoir morphology. Water discharge measurements show that these changes in sediment budget have a considerable effect on relative evaporation losses in correlation to water volume and water storage capacity.

On the other hand agro-economical potentials and limitations are studied, concerning the spatial and temporal relations between the flooded land surface to the utilised irrigation perimeters and the number of cropping cycles without irrigation to the number of cropping cycles with irrigation, crop profitability, water use efficiency as well as farmers' organisation and management structures.

Keywords: Crop profitability, erosion, farmers' organisation , irrigation agriculture, off-season crop, rice, silting, small reservoirs