



Research paper

Potentials of Wheat Production and Competitiveness of Prevalent Crops in the Irrigated Farming System of the River Nile State, Sudan

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Abstract

In the River Nile State of Sudan, farmland and irrigation water are the main resources to attain sound crop combinations and sustainable farming systems, whereby resources use efficiency and optimization of available fundamental resources is needed. The broad aim of this research, based on competition indicators with respect to the available agricultural resources use (i.e. land and water) was to determine the promising crop combination taking on board alfalfa and wheat in terms of sustainability of farming system. The analysis depended on structured survey questionnaires and field observations in the area of the study where surface irrigation by pumps from the River Nile is predominant forming the major water supply choice. Integrated techniques comprising economic and hydrologic techniques are applied to assess land and irrigation water use in the State. Descriptive statistics including quantile analysis of the crop water applied and crop water requirements were applied. GAMS, CropWat4 and SPSS have been used to assess the irrigation water performance. The study findings represent the suitable cropping systems for exploiting the available agricultural resources where alfalfa was more competitive than wheat.

Keywords: Alfalfa, wheat, multi-cropping, competitiveness