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# Decision Support Systems and the Economics of Seeding Rate in Crop Yield

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## Abstract

The present study reviews the determination of the crop yield issues. Data analysis and utilization in the determination is essential for better production and economic performance. We follow the method of Williamson (1988) in discussing those issue and briefly compare them to application in Sudan.

## 1. Introduction

Meeting the increasing demands of the Sudanese food production needs in the coming decades will require substantial innovation and tools from information technologies to offer the promise of transforming the way agricultural practices (Bachev 2000). Research and outputs impact on farmers and consumer are reviewed. In the 1980s and 1990s new concepts of information systems evolved , managers increasingly need information to make decision about how to organize and control resources effectively (Sporleder 1992). These systems known as decision support systems are different from the information systems of the past (Bachev and Tsuji 2001). They are designed by managers themselves, sometimes with the help of data processing professionals serving as user-consultants (Demsetz 1969). The rapidly growing demand for the application of information technology have induced managers, farmers and policymakers to question the performance of the systems when no use of the information systems applications to apply the information technology techniques (Eggertsson, 1990).

In Sudan the agricultural, environmental and resource management researchers data requirements and support during the period of reseach which are necessities as indicated by Barry (1993). All the mentioned before causes a very much wasting time and effort and depend on data manipulation that is done (Bachev and Labonne 2000). So the degree of accuracy, reliability and promptness achieved from that clculations, will not satisfy the desired results (Sporleder 1992). According to Barzel (1997) it is imperative to conduct research in order to apply, monitor and analyze data and help to achieve best results and decision in specific circumstances, e.g., which dose of fertilizer is performing efficiently and how to choose the appropriate decision in capital use (Furuboth and Richter 1998).

## 2. Agricultural Decision in Sudan

Decision is a tool that describes key processes and spatial and temporal connections within and between human and envirnmental system prespective (Arrow, 1974). It uses multitude approaches to provide representation of a system (Jensen and Meckling, 1976). Mathematical modelling are utilized and multiple management objectives are recognized and built into the evaluation framework (Cook and Chaddad, 2000). Resources availability drive researchers and organizations to seek increased integrating information and improved justification to reach their goals (Barzell, 1997). Thus, decision plays a role in

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transforming production aspects to face yield trends (Barney, 1990). Information required in agriculture research and development efforts focus on results of data evaluations and qualitative characteristics (Barry, 1993). However, information provide better knowledge to represent the utility of agricultural research and development (Tirole, 1988).

### 3. Farm Management

There is increasing need for better data on which to the right decision. The problem is important in capital-intensive farming. Information is required for farm management ranging as applying insecticide or using more labor (Dahlman 1979). Capital-intensive farming generates more yield that requires additional capital inputs. Different volumes of input-output affect yield trends (Kaneva 2001). Thereby the have to be controlled and subjected to cost-benefit evaluations (Grossman, and Hart, 1986). Field data are essential for a better farm management (Williamson, 1996). The Mechanisms of Governance. New York: Oxford University Press. Universities and specialized research centers should try to study and produce more programs to serve this discipline (Hart, 1995). Also the Government and universities should plan for a reasonable level of computer software applications and decision support systems in research centers and universities to achieve adequate researches and researchers (Williamson 1996).

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