POSTER SUMMARY

SASRI'S MONITOR FARM: PUTTING THEORY INTO PRACTICE

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The pressure on sugarcane farmers to improve their efficiency and sustainability is continuously mounting. At the same time, there appears to be a delay in the adoption of SASRI research outcomes by growers. A possible explanation of this paradox is that much of this research has been mono-disciplinary, and conducted at field trial level, removed from the context of everyday farming. The Monitor Farm Project responds to this problem by applying a multi-disciplinary, participatory approach to farming systems level research and technology transfer. In this project, a large team of research and extension specialists works together with sugarcane growers to integrate state-of-the-art best management practices (BMPs) into a practical system on a whole-farm scale.

Specific objectives of the project are:

1. To benchmark the current agronomic, environmental and socio-economic status of the monitor farms in terms of practices (e.g. land preparation, crop husbandry, harvesting, pest and disease management, financial planning) and performance (e.g. soil health, pest and disease incidence, yields, economics); see left-hand side of Figure 1. An audit of SuSFarMS, the Sustainable Sugarcane Farm Management System (Maher, 2007; Sustainable Sugar Initiative, 2008) is an important tool used in the benchmark assessment.
2. To determine and recommend specific BMPs to be implemented by the grower; see right-hand side of Figure 1.
3. To monitor the integrated effects of improved management practices, as compared to the original situation benchmarked for objective (1).
4. To improve BMP adoption beyond the monitor farm(s) by showcasing the outcomes.
5. To evaluate and refine the approach to optimise its effectiveness, eventually resulting in more sustainable sugarcane farming throughout the sugar industry.

The approach followed was inspired by similar initiatives in, for example, Australia (Campbell *et al.*, 2006) and The Netherlands (Langeveld *et al.*, 2005). Participating growers needed to be innovative and open to change, whilst their farms needed to provide challenges typical of their homogeneous ward areas. A Memorandum of Understanding (MoU) was signed with each grower, allowing access to farm records and agreeing that suitable changes would be discussed and implemented whenever these appeared to be practical and economically attractive within their farming systems. The MoU would stand for a period of three years with the option to continue on a triennial basis.

The project started with two farms: a fully irrigated farm near Heatonville, and a predominantly rainfed farm in Upper Tongaat.

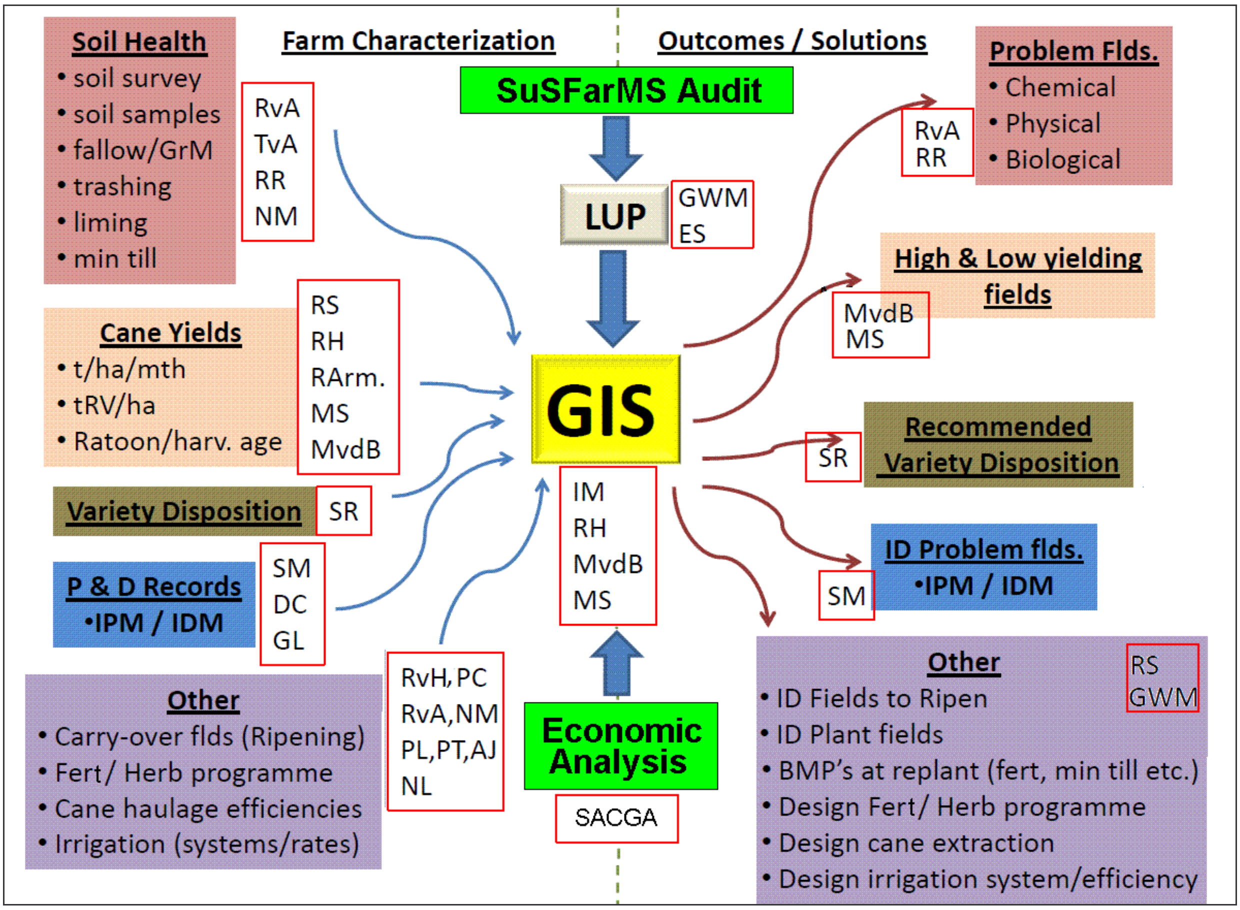

Figure 1. Schematic diagram indicating the different farm performance characteristics and management practices inventoried. These form the basis of an integrated analysis enabled by a geographic information system (GIS) within the framework of the land use plan (LUP). Acronyms in the red rectangles refer to the different research and extension staff responsible for specific components of the analysis.

A project of this magnitude, conducted within South Africa's socio-economic climate, brings with it a number of challenges. Economic and personal factors resulted in the Heatonville grower pulling out of the project.

While the objectives of the project are primarily industry oriented, the main lessons learnt so far are a better understanding by SASRI research staff of the importance and challenges of such an integrated approach. For example:

- An improved appreciation of the multi-faceted challenges faced by growers.
- The need to account for resource constraints in real farm situations, which make it impossible to fully implement sets of BMPs within a short time span.
- The need to examine all practices from different disciplinary angles and an understanding of the side-effects or trade-offs between BMPs. Such trade-offs can make it difficult or impossible to accommodate certain BMPs or combinations of BMPs into a single system. For example, rotation with green manure crops on steep slopes.
- The need to document BMPs in a more systematic and user friendly format.
- The need to quantify the economic benefits of BMPs implemented (i.e. return on investment).

- The challenge to facilitate and consolidate activities undertaken by a large group of specialists in different disciplines.

The project also underlines the crucial importance of a Land Use Plan and good record keeping as the bases for any farm improvement.

For the Upper Tongaat monitor farm, the project is currently in the interface between the left-hand side (farm characterisation) and right-hand side (outcomes/solutions) of the diagram in Figure 1. The farm characterisation results show that farm practices, as well as the many constraints identified are well representative of the Coastal and Zululand regions. The latter include *inter alia* acid soils, low yields, steep slopes and a high incidence of the stalk borer, *Eldana saccharina*. The results also indicate considerable potential for improved performance through the implementation of BMPs which are currently in different stages of discussion amongst team members or with the grower.

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