SUSTAINABILITY FOR A SUGARCANE GROWER IN THE SOUTH AFRICAN SUGAR INDUSTRY – CAN SUSFARMS® ADD VALUE?

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Abstract

A farm management system called SUSFARMS® was developed for growers in the South African sugar industry concentrating mainly on the sugar industry's best management practices but also taking the legislative requirements and sugar industry standards into account. Refinement of this tool in 2012 resulted in a revised approach, from linear to the full integration of the three principles of planet, people and prosperity. This paper will review the improvements and consider whether the sustainability of the South African sugarcane grower can be assisted by the implementation of SUSFARMS®. The paper will argue that although SUSFARMS® is a critical farm management tool that can be used to improve farm sustainability, the sustainability of the South African grower depends on a broader framework. Growers, however, play an integral role in the sugar value chain and therefore their adoption of SUSFARMS® would add value to all sugarcane products in the long term and their revenue in the short term. Although the Prosperity principle requirements have been enhanced in the 2012 version, further revision will be required and it is clear that adoption of this principle will provide a big challenge.

Keywords: planet, prosperity, people, sugarcane, SUSFARMS®, management
Sub-theme: environmental aspects of farming

1. Introduction

Sugar industries world-wide have become increasingly concerned about their own sustainability as many industries face declining margins between returns and cost of production, due to a long-term downward trend in the inflation adjusted price for sugar. This is a world-wide phenomenon and has resulted in competition for water, nutrients and other resources and consequently increased the risk of environmental impacts, such as degradation in soil health, climate change and atmospheric pollution. This has led to increasing scrutiny from regulatory agencies, community and consumer groups of the environmental sustainability of current sugarcane production systems (IFC, 2011).

The South African Sugar Industry is no exception to this position, revitalisation is critical to return the industry revenue to sustainable levels. In 2010 (SASA, 2010) a development plan was proposed for the industry which included the following elements:

- Appropriate regulatory environment,
- Harmonisation of SACU sugar sector policies to pave the way for SADC integration,
- Equity in access to preferential markets in EU,
- Regulatory environment in South Africa that allowed for participation in ethanol markets,
- Appropriate protection against low-priced imports of sugar,
- Comprehensive, co-ordinated approach to land reform and timely resolution of land claims.

Although varying degrees of progress has been made on most of these fronts, none of these have yet delivered any real change. Growers remain price takers mainly as a result of the industry regulatory environment and when combined with above inflation increases in input costs, it has resulted in many growers unable to achieve a return on their investment for a number of years.

Growers have responded by trying to improve their production efficiencies through improving yields or reducing costs, or a combination of both options.

When considering the above environment, it should come as no surprise therefore that the introduction of the Sustainable Sugarcane Farm Management System called SuSFarMS in 2007 was met with reluctance and suspicion by growers. Reluctance, as many growers saw SUSFARMS® as another "cost" to their business, and suspicion, as it looked like a way that local retailers would force producers to carry their "sustainability" cost and it could also be used as a barrier against third world sugar producers.

SUSFARMS® was developed mainly as a farm management system focusing largely on the sugar industry's best management practices (BMPs) but also taking the legislative requirements and sugar industry standards into account (Maher, 2007). SUSFARMS® (version 1) was refined through a rigorous stakeholder consultation process that included government, policy makers, NGOs and sugarcane producers (Maher, 2007; SUSFARMS®, 2008). It has recently undergone another major review resulting in SUSFARMS® version 2 (2012) in preparation of an industry roll out.

SUSFARMS® does not impose standards but works on the principle of continuous improvement through identifying areas of strengths and weaknesses, prioritising these, and implementing an action plan to address these, dependent on the financial status of the business (Maher, 2007).

This paper will argue that although SUSFARMS® is a critical farm management tool that can be used to improve farm sustainability, the sustainability of the South African grower depends on a broader framework. Growers, however, play an integral role in the sugar value chain and therefore their adoption of SUSFARMS® would add value to all sugarcane products in the long term and their revenue in the short term. Integration of the three principles in the 2012 version of SUSFARMS® will ensure that all aspects of the business are considered. Although the Prosperity principle requirements have been enhanced in the 2012 version, further revision will be required and it is clear that adoption of this principle will be a bigger challenge.

2. Methodology

Using the Good Management Practices Manual for the Cane Sugar Industry (IFC, 2011), a comparison will be undertaken of the initiatives that a number of sugarcane growing industries are implementing to address the issue of grower sustainability/economic viability and those of South Africa.

Business sustainability is important for all growers and the adequacy of SUSFARMS® to assist in this regard, particularly the prosperity principle, will be assessed. The 2008 and 2012 versions of SUSFARMS® prosperity principle and the three modules will be compared to determine whether the three modules adequately cover modern South African business requirements. The prosperity principle will be the focus of this analysis.

Six farms were audited focussing on SUSFARMS® BMPs (INR, 2011). The responses of these growers will be used as an indicator of grower sentiment to SUSFARMS® participation. More recently (Koopman, 2012) held a series of interactive workshops to identify the obstacles to grower participation in SUSFARMS® before the 2013 industry-wide roll out. These outcomes will be used to inform the future requirements for implementation.

3. Results and discussion

3.1. Assessing sustainability/economic viability in Brazil, Argentina, India, Swaziland and South Africa

The 'Good Management Practices Manual for the Cane Sugar Industry" (IFC, 2011) visited a number of sugarcane industries to identify measures used to achieve Economic Viability, Social Sustainability and Environmental Sustainability in these countries (Table 1). The last two columns provide the South African perspective which shows that although inertia exists at an industrial level, the move of the industry into a vertical slice structure (slices) may provide the required impetus to introduce sustainability/viability measures. The measures identified in the "slices" column resemble the results in the Brazil column. Many of the Brazilian measures are driven by the independent Millers and it is anticipated that the same will happen in the "slice" environment in South Africa.

Table 1. Measures identified to support economic viability of sugarcane growers in sugarcane growing countries

Economic Viability Measure	Category	Brazil	Argentina	India	Swaziland	South Africa	Slices
Strategic acquisition	Innovation	√		√			√
Partnerships	Structure	√				√	√
New Projects	Innovation	√					√
Data management and action plan	Knowledge	√			√		√
Optimising cane supply into mill	Optimisation	√					√
Optimising variety per mill (P&D)	Optimisation	√	√		√	√	X
Precision agriculture – fertilizer and herbicides	Optimisation	√			√		X
Investing in R & D to reduce input costs	Innovation	√					
Expanding sugar and ethanol markets	Markets	√			√		
Promotion of by-products	Markets	√			√		√
Partnership and supplier models	Structure	√					√
Utilization of all products by industry	Innovation	√					
Gravity powered irrigation systems /energy	Optimisation	√			√		X
Controlled traffic, min till and green manuring	Optimisation		√			√	X
Green cane trash blanket	Optimisation		√				X
Farm labour efficiencies	Optimisation		√		√		X
Intercropping and crop rotations	Optimisation			√			X
Effective use of farm infrastructure	Optimisation		√				X
Bargaining position of growers	Structure		√	√		√	
Small-scale grower models	Structure			√	√	√	
Farmer support model	Advisory			√		√	
ISO system	Structure				√	√	
Pest and Disease support service	Advisory				√	√	
Seedcane nursery schemes					√	√	

Because sugarcane growers world-wide operate in highly regulated socio-political environments, the broader framework of industry initiatives including institutional arrangements, new products and new markets, research and development and advisory support become fundamental to the survival of growers. Also not discussed here are the issues of supply and demand, government support mechanisms and low export market prices, all impacting on the price growers receive for their sugarcane (Maher, 2010).

3.2. Comparison of the two versions of SUSFARMS®

SUSFARMS® was designed to encourage sustainable sugarcane production through the implementation of better management practices (BMPs), which reduced the negative impacts of sugarcane agriculture on the environment.

3.3. SUSFARMS version 1 (2008)

The three fundamental principles embraced in both versions of SUSFARMS® include prosperity (economics), people (social) and planet (environment).

Each principle included a criterion/a in version 1 which added meaning to the principle but was not a direct measure of performance. A set of indicators and verifiers were developed for all the criteria in version 1 (2007). The indicator was the fundamental audit element and the degree to which a farm complied with the indicator was assessed by the verifier. The verifiers required compliance or non-compliance, from which corrective actions were identified for implementation. In principle, if the verifiers and indicators were met then the objectives of the criteria and principle would be satisfied leading to sustainability (Figure 1).

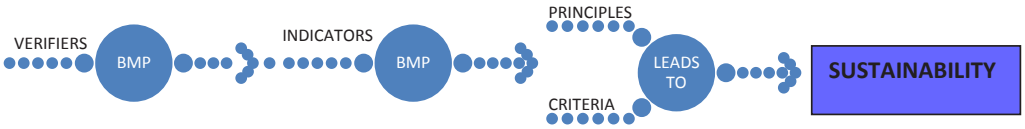

Figure 1. Linear Conceptual Framework of SUSFARMS (Maher 2007)

The way this worked is illustrated below using the prosperity principle, criterion, indicators and verifiers as an example.

3.4. Prosperity Principle

Economically viable sugarcane production is maintained or enhanced.

3.5. Criteria

The agronomic and mechanisation practices of the sugarcane farm are integrated with the climate, soils, water and topography to obtain an optimum and sustained economic crop production.

3.6. Three key indicators

- **The Land Use Plan.** This is the foundation of SUSFARMS® and is a critical visual planning tool.
- **The Annual Production Plan.** The production potential of the land is maintained or enhanced through recording and monitoring inputs. The measures require a good up-to-date record-keeping system to capture area planted, variety planted, yields, replant information, type of inputs applied and quantities eg fertiliser and herbicides and infrastructure development and maintenance.
- **The Annual Financial Plan.** This was linked to farm budgets and costing's.

3.7. Verifiers

Details and specifications were listed. The emphasis in this version is mainly on the land use plan, production plan and lastly, the financial plan. Given that SUSFARMS® was designed by the sugar industry Sugarcane Research Institute (SASRI) extension service, it is not surprising that the land use and production plans were considered important tools for managing sugarcane cultivation in a sustainable manner (Maher, 2007). The financial plan module does not address legislative nor accounting requirements and it duplicates much of the two other module requirements.

The industry advisory service is divided into two components with agronomic advice provided by the SASRI and the economic advice by CANEGROWERS. Neither group provides financial advice. Implementation of SUSFARMS® took place through SASRI and it is not surprising therefore that the land use and production plans were promoted at the expense of the financial plan.

3.8. SUSFARMS – version 2 (2012)

In version 2 (2012), the conceptual framework has been changed from a linear to an integrated relationship (Figure 2). This approach is similar to that of the World Economic Forum presented at IFMA 2011, where the goals of prosperity, people and planet do not have to be divorced and in its new vision for agriculture its key goals are to "provide food security for all, in an environmentally sustainable way, while generating economic growth and opportunity".

The new version has moved away from criteria, indicators and verifiers but has categorized the overall objective for the principle as a "statement of intent" with "measures" as auditable elements. The weakness of the Prosperity /financial plan has also been addressed. In addition a useful tool, the Progress Tracker" has been included to measure progress against a better management practice (BMP) or requirement (usually regulatory).

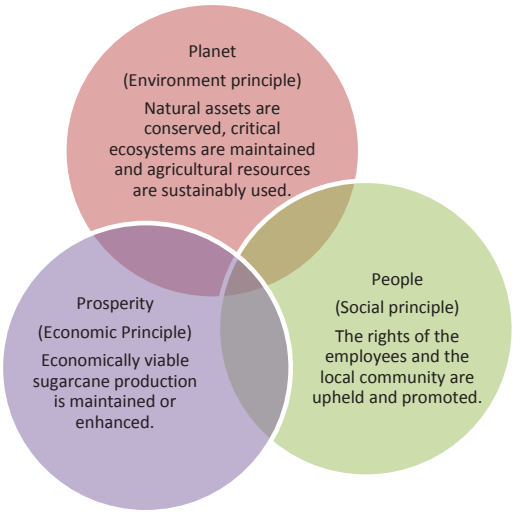

Figure 2. Integrated Conceptual Framework in SUSFARMS® (2012)

Once again, the Prosperity Principle is used as an example of the way this would work.

Prosperity Principle: Economically viable sugarcane production is maintained or enhanced.

"Statement of Intent": The agronomic and mechanisation practices of the sugarcane farm are integrated with the climate, soils, water and topography to obtain an optimum and sustained economic crop production.

In version 2, the three indicators become three modules supporting the Prosperity Principle:

- The Land Use Plan remains the same.
- The Annual Production Plan remains the same but is linked to the financial plan.
- The Financial Plan is considerably updated.

The annual financial plan requires that a farm budget and cash flow analysis be drawn up for the farm on an annual basis, this would include the production and mechanisation plans. There is a requirement for accurate record keeping, monthly account management and compliance with legislation:

- Annual Budget is drawn up.
- Monthly account management undertaken.
- Annual Financial Statements drawn up and audited where required.
- Financial tools are used annually to review the health of the business.
- Full understanding of the obligations of a business owner.

Annual financial planning relies on accurate record-keeping as per the Annual Production Plan and those aspects are identified below:

- A budget for income and expenses should be drawn up as per the production plan as well as other monthly expenses such as living costs, finance costs, insurance and also asset replacement, taxes, bonds and hire purchase.
- Cash flow and savings projections should be drawn up annually.
- All transactions associated with the farming activities must be captured on a monthly basis and monthly reports generated.
- Monthly account management should be undertaken which reviews the budget and cash flow and forecasts for the following months in order to take action when required.
- Annual Financial Statements should be prepared by an Accountant and these should be audited for specific entities.
- An annual review of the profitability of the business can be undertaken by CANEGROWERS using suitable financial indicators.
- The second version reflects integration of the three principles and also has addressed the weaknesses that were identified in the Prosperity section of version 1.

CANEGROWERS participated in this process to ensure that financial and production activities were not segregated. Service provision would need to be undertaken in an integrated way to avoid the bias towards BMPs (Maher, 2007) rather than integration of all three principles.

Further investigation into the prosperity principle was undertaken by SASA (2012) to determine whether the industry and growers would be able to comply with this principle. The results showed the following:

- Land Use plans and farm maps are either non-existent or outdated.
- Yield comparisons are not done on a field basis and variety information is sometimes collected on a field basis but age of crop is not.
- Book-keeping is often of a poor quality and accountants do not check the monthly book keeping. This is a risk to growers in terms of meeting their financial compliance.
- Monthly monitoring, cash flow reviews and forecasting are not undertaken regularly.

- Many growers and their book keepers are not aware of their compliance requirements and responsibilities as business owners
- Compliance with financial legislation eg Income Tax No.58 of 1962, Companies Act No.71 of 2008 and Value Added Tax Act No.89 of 1991 is not specified.

3.9. Growers' opinions on the benefit of SUSFARMS®

Although the opinions of six growers who participated in a cost benefit analysis of SUSFARMS® (INR, 2011) does not necessarily represent all growers, it does highlight that growers think that SUSFARMS® is all about farming better, the planet principle, rather than considering all three principles equally.

Grower 1 acknowledged that 'long-term agronomic benefits would be realised, but that the degree of compliance with BMPs was not being recorded and that the benefits referred to anecdotally above were not being monitored".

Grower 2 noted that the "application of soil conservation BMPs … reducing long term input costs and the likelihood of damage from severe storm events".

Grower 3 pointed out that cash-flow and funds to invest in SUSFARMS® BMPs are an important consideration for many growers. Farmers are more likely to invest in areas where short term results would be achieved, such as planting newer more productive cane varieties.

Grower 4 suggested that "a lot of the management practices contained in SUSFARMS® have to do with common management logic".

Grower 5 said that the pressure to produce sugarcane constantly is intense. "Cash flow requirements and production cycles do not favour fallow periods with green manure crops due to short term negative effects on cash flow, although the grower has noted yield responses directly after green manure cropping. In addition, the less noticeable, but critically important long term sustained yield benefits are not enjoyed in the short term and long term sustainable farming cannot be achieved without a proper LUP."

Grower 6 acknowledged that while the implementation of BMPs is management intensive and time consuming, they do provide the opportunity for guidance and continuous improvement.

3.10. Barriers to adoption

More recently an analysis of the barriers to adoption of SUSFARMS® was undertaken (Koopman, 2012) and showed that the key issues which hinder sustainability learning and practice were:

- There is weak participation from growers in formal learning opportunities.
- The lack of quantifiable evidence hinders grower and extension support.
- Strategic leadership from industry governance structures is not evident to people on the ground.

4. Concluding comments

The margins between production costs and the financial returns that growers receive and in more recent times the margins of profit, have been extremely tight. The profitability of growers is determined by a number of economic factors e.g. the sugarcane price, interest rates and the cost of essential inputs such as fertilizer, herbicides, and labour however the level of managing these inputs and resources in achieving attainable yields is a major factor that influences the viability of sugarcane farming. The price growers are paid for sugar is not adequate but this needs to be

addressed within a broader industrial framework as is demonstrated in Brazil. SUSFARMS® can add value in this area only if the market were to pay more for "sustainable" sugar.

In this low income environment it becomes very difficult to "sell" SUSFARMS® especially in terms of cost benefits. Action research needs to be strengthened to quantify evidence of the cost-benefit risks associated with SUSFARMS® and implementing holistic on-farm sustainability practices. Based on observations during the INR (2011) study, it appeared that a growers' long term approach to farming and environmental ethic largely determines the degree of adoption of SUSFARMS® BMPs that focus on environmental outcomes. This means that to facilitate the wider adoption of these BMPs, incentives or real evidence of reward will be necessary. Although, when individual grower yields, cane quality and revenue on a homogeneous ward basis, within one ward, are compared, there are still growers that continue to grow sugarcane at a profit, some with and others without the implementation of SUSFARMS®.

A number of weaknesses exist in the support for SUSFARMS® in the industry. If a land use plan is a key requirement for successful farm planning and many growers do not have a plan, then the industry must provide this service to ensure the integrity of SUSFARMS®. The same applies to the financial plan module where an integrated grower support service would advise on all three principles of SUSFARMS® thus ensuring that growers view their business in a fully integrated manner.

It is recommended that a fourth module be included to elaborate on and highlight the importance of financial compliance and that an easy record-keeping tools be developed for the next version.

Until this happens the Prosperity principle will not be implemented in its entirety preventing growers from adding value to their own operations in the long term and many growers will remain suspicious and reluctant to embrace SUSFARMS® holistically.

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