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Research Application Summary

Explanatory variables associated with the yield perfomance gap among small, medium and large scale sugar cane growers at Ubombo Sugar

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Abstract

In Swaziland, sugar cane is grown on small, medium and large scale. The yield of sugarcane between these grower types is large, with small scale producers having the least yield. The study was therefore carried out to determine factors responsible for the low sugarcane yield among small scale producers and ways to mitigate them. Using self-administered questionnaires, the effect of distance to the mill, manday for fertilizer application, and accessiblity to inputs and sowices on sugarcane yield was investigated. Other factors investigated included: effectiveness of training, time between cane cutting and first irrigation, age of farmer and period between harvesting and seasonal fertilizer application. Distance to mill, mandays of hand application of fertlizers and labour strength of farms explained only 0, 4 and 4%, respectively of the variation in sugarcane yield. However inputs and services were equally accessible to all three categories of cane farmers. It is recommended that small-scale farmes be given more training in input usage.

Key words: Farm inputs, fertilizers, irrigation, labour strength, Swaziland

Résumé

Au Swaziland, la canne à sucre est cultivée sur des petites, moyennes et grandes échelles. Le rendement de la canne à sucre entre ces types de producteurs est grand. Les petits producteurs reçoivent moins de rendement. L'étude a donc été menée pour déterminer les facteurs responsables du faible rendement de la canne à sucre chez les petits producteurs et des moyens de les atténuer. En utilisant des questionnaires auto-administrés, l'effet de la distance à l'usine, manday pour l'application d'engrais, l'accessibilité aux intrants et aux sowices sur le rendement de canne à sucre a été étudiée. D'autres facteurs étudiés comprennent: l'efficacité de la formation, le temps entre la coupe de la canne et la première irrigation, l'âge de l'agriculteur et la période entre la récolte et l'application d'engrais saisonniers. La distance à l'usine, l'application de manday à la main pour épandre les engrais et la force du travail des exploitations agricoles a

expliqué 0, 4 et 4%, respectivement, de la variation du rendement canne à sucre. Cependant, les intrants et les services étaient également accessibles à tous les trois catégories de producteurs de la canne. Il est recommandé que les fermes à petite échelle donner plus de formation dans l'utilisation des intrants.

Mots clés: Les intrants agricoles, les engrais, l'irrigation, la force du travail, le Swaziland

Background

The sugar cane industry in Swaziland has undergone major expansion during the past five years. However, there is huge gap in performance between small-scale and large-scale sugar cane growers. The challenges that are faced by the smallholder sugar cane grower include the debt burden, social conflict, improving productivity and efficiency and reducing costs of production (Swaziland Sugar Association Annual Report 2007/ 2008). Sugar cane statistics for the past six years at Ubombo Sugar indicated a yield difference of 10 tonnes per hectare between small, medium and large-scale sugar cane growers. A significant increase in overall yield could be obtained if this gap is minimised. The study was, therefore, carried out to identify the factors responsible for this gap and to determine ways in which these factors could be mitigated.

Literature Summary

Sugar cane production is a long process that requires efficient use and proper management of different inputs and services. In spite of the fact that sugar cane production in Swaziland has tremendously improved, there are still some challenges facing the small hold sugar cane grower (SSG). The Swaziland Sugar Association (SSA) noted that most of the problems facing smallholder sugar cane growers revolved around financial and social issues. Swaziland Sugar Association Annual Report 2007/ 2008). Sifundza and Ntuli (2001) reported that fluctuations in yield for small scale growers could be associated with inputs not being affordable as well as internal disputes or changes in leadership. According to the United Nations Conference on Trade and Development (2000), access to finance is presently the biggest constraint to increased production by small holder farmers. There are few institutions that lend money without collateral.

Study Description

The study design was *ex post facto* using multiple regression procedures. The study targeted small-scale sugar cane growers (N = 76), in addition to some medium- (N = 16) and large-scale

sugar cane growers (N = 16). Data were collected using self-administered questionnaires. Of the questionnaires supplied, only 103 were found usable. The Statistical Package for Social Sciences (SPSS) version 12 for windows was used to analyse data. Regression analysis procedures were used to explain factors perceived to influence yield. The analysis of variance (ANOVA) and independent t-test were used to test the significant differences in farmers' responses towards the factors influencing yield. An *a priori* probability of $p<0.05$ was set to determine the level of statistical significance.

Research Application

The findings indicated that large scale farmers obtained higher yields than small and medium scale growers. Inputs and services were available, accessible, and affordable to all groups of sugar cane growers. Small scale sugar cane growers however were less effective in training their employees. They also had inadequate knowledge on chemical usage. Explanatory variables for sugar cane yield were distance between the farm and the mill; hand application fertilizer man-days per hectare; and labour strength. Distance between the farm and the mill had a negative influence on sugar cane yield. Lack of training had an impact on sugar yield for medium scale farmers. Delays between seed cane cutting and first irrigation, age of farmer, and number of weeks between harvesting and second fertiliser application had a negative effect on sugar cane yield for large scale farmers. The findings revealed that distance from the mill to the farm was explained by only six percent of the variation in yield. It further indicated that four percent of the variation in yield can be explained by hand application fertilizer man days and another four percent by labour strength for each farm. Regarding the sugar cane production inputs and services, the study revealed that they were all available, accessible and affordable to all the sugar cane growers in the Ubombo sugar.

Table 1. Yield in tones cane per hectare for the past six years at Ubombo Sugar.

	2003	2004	2005	2006	2007	2008	Average
Large-scale growers	107.2	104.5	94.5	101.4	90.8	106.1	100.7
Medium - scale growers	91.5	102.9	96.2	90.6	97.1	91.1	94.9
Small-scale growers	90.5	90.9	90.8	90.1	92	89.3	90.6

Source: Swaziland Sugar Association, Industry data base, 2009.

Recommendation

The findings showed that the further away the farm is from the mill, the lesser the yield. Farmers, therefore growing sugar cane far away from the mill need to consider venturing into other

viable enterprises that will give them more returns as opposed to sugar cane production. Sugar cane growers must use the recommended inputs in all the sugar cane production activities. There is a need for an intensive education drive to the sugar cane growers by the sugar cane extension workers on the use of chemicals and the importance of reducing the delays in post planting activities.

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