POSTER SUMMARY

TECHNOLOGY TRANSFER AMONG SMALL-SCALE SUGARCANE FARMERS IN SOUTH AFRICA

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Abstract

Between 2006 and 2008, the extension program in the Umbumbulu District of KwaZulu-Natal has been comprehensively planned and meticulously implemented according to sound technology transfer principles. Theoretical messages disseminated during formal presentations were reinforced with practical lessons at demonstration plots of sugarcane. Small-scale sugarcane farmers usually evaluate a technology and determine its economic benefits before adoption. Perceptions by the people involved, and findings from farmer questionnaire surveys, have indicated a high level of knowledge acquisition with the concomitant reasonable levels of awareness on the topics of correct harvest age, varieties and fertilisers, and the need to replant. In contrast, information about the symptoms caused by diseases in sugarcane, and the importance of taking soil samples before planting, require further attention.

Keywords: sugarcane, extension, technology transfer, small-scale growers

Introduction

The viability of the small-scale farmers in the South African sugarcane industry has always been important, and their success is assisted greatly by local extension efforts. The extension program provides information on sugarcane husbandry, and serves as the conjugate between research outcomes and technology transfer and adoption.

Gillespie and Mitchell (2006) provide a successful methodology for establishing an extension program in a small-scale grower area. Features include an emphasis on financial gains accrued from adopting novel technology, inclusion of all role players and/or all stakeholders, developing understandable extension messages and defining clear goals that are linked to feasible schedules.

In the Umbumbulu District, additional features have been recognised as contributing towards the success of the program. It has been vital to bridge the divide between theory and practical skills, and this has been achieved really well using demonstration plots cultivated in the district. This concept is described in detail by Gillespie *et al*. (2009). The greatest value of

demonstration plots is that they provide a means for the farmer to assess the performance of specific cane varieties *in situ*. Moreover, the high quality plant material obtained from these plots at harvest is used for seedcane within the district (Gillespie and Way, 2008).

The extension program in the area has achieved continuity through adherence to comprehensive documentation and follow-up action after meetings. Furthermore, all the groups that were involved in the program participated in the initial planning phase, therefore there was a sense of ownership. Lastly, adequate social interaction was organised at the end of every meeting and this fostered trust and respect within the professionally diverse delegates at the meetings. In short, many of the fundamental principles applicable to extension work were systematically applied in this district. There was feedback that the farmers had passed through the following phases identified by Pike *et al.* (2000), namely: awareness - interest - evaluation - trial - adoption - continue or reject.

A further valuable step in the extension process is evaluation. This provides information about farmer awareness with respect to specific topics that can be used to address any knowledge gaps in future extension programs.

Method

Over the past three seasons, agronomic information relevant to the farmers in the Umbumbulu District was presented at grower meetings, usually by specialists from the South African Sugarcane Research Institute (SASRI). Practical skills were then demonstrated in the plots of sugarcane that had been cultivated in the district specifically for this purpose. These plots are locally referred to as demonstration plots, and have become one of the most important extension tools employed in the sugar industry. In 2008, questionnaire surveys were carried out to determine the level of comprehension of the material presented in the extension program. This procedure relied on assistance from extension technicians who speak the local language.

Results and Discussion

Table 1 gives the results of the survey, which showed that more effort is required in the Dwengu area since the mean awareness level scored was 49.1%. As a next step the various topics were ranked (50% was arbitrarily used as a reasonable level of awareness) from highest to lowest awareness level by topic. The following ranking was obtained: harvest age, varieties and fertilisers, pests, need to replant, soil sampling and lastly diseases. The topic of diseases, specifically damage symptoms, and the topic of soil samples, specifically the purpose of taking samples, both scored relatively low. In contrast, farmer awareness of variety information scored relatively high; however, this knowledge did not translate into the need to replant, which scored relatively low.

Production constraints mentioned by the farmers were: limited access to new varieties; harvesting and haulage logistical shortcomings; inability to afford the escalating fertiliser costs; and the fact that there is a paucity of young farmers entering the agricultural sector. Indeed, the age of farmers canvassed in the awareness survey averaged 56.6 years, ranging from 48 to 70. Production constraint topics that fall within the scope of extension programs will be addressed.

Table 1. Level of agronomic knowledge in eight small-scale grower grower groups in the Umbumbulu District of the South African sugarcane industry in 2007.

Grower group	Number of surveys	Average farmer age (years)	Crop management topic							Group mean
			Varieties	Pests	Diseases	Soil sampling	Fertilisers	Harvest age	Need to replant	
Umnini	6	60	100	83	33	17	50	100	83	66.6
Ismont	33	50	73	39	27	70	85	58	58	58.6
Mdumezulu	30	56	61	61	50	64	82	79	36	61.9
Mpusheni	6	70	83	83	83	83	100	100	83	87.9
Dwengu	16	56	37	50	38	56	69	56	38	49.1
Odinini	14	62	57	50	29	79	86	86	43	61.4
Mpandwini	7	48	100	83	33	17	50	100	83	66.6
Ngilangoni	40	51	85	80	32	80	73	85	61	70.9
Mean		56.6	74.5	66.1	40.6	58.3	74.4	83.0	60.6	65.2
Standard Error		2.57	7.77	6.45	6.55	9.54	6.24	6.34	7.24	4.6
Minimum		48	37	39	27	17	50	56	36	49.1
Maximum		70	100	83	83	83	100	100	83	87.9

Values are expressed as a percentage of the numbers of surveys with adequate knowledge about each of the seven sugarcane crop management topics investigated.

Conclusion

A method has been developed to assess the awareness level about agronomic topics of small-scale farmers following an extension program. This process identifies shortcomings and knowledge gaps that can be addressed in future extension programs.

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