



I - Introduction - The sugarcane production chain plays a very important role because it is the main raw material used in the milling and because it could result a higher efficiency in the production of sugar, and ethanol. The integration and coordination of activities between the links in the production chain should result in better quality, productivity and reduction of losses for the sugarcane production chain. To do this the theory of Supply Chain Quality Management (SCQM) presents elements of Supplier Relationship Management (SRM) and Focus on Consumer and Market (FCM) as a basis to assist in the integration between the links of the agents that form a particular production chain. Companies of this chain must develop practices that are interconnected and based on collaboration, communication and participatory integration in quality improvement processes across Supply Chain (SC) to supply services and products with the quality that is required by the customer [1], and that the integration between partners in the CS positively affects the quality practices and the manufacturer's performance [1]. The main objective of this work is to present a proposal to manage sugarcane requirements based on growers' relations with their suppliers and customers. Within this context, the research aims to answer the following question:

- How to manage the product requirements of the sugarcane production chain?
- To achieve this work proposal, some specific objectives are considered:
- Identify the elements, related to the supplier and customer relationship of the GQCS in the literature;
- Find the main practices of these elements in the literature;
- Identify on the field research, the practices of these elements used by companies in the sugarcane production chain;
- Investigate in field research the product requirements demanded by the sugarcane production chain;
- Present a proposal based on what was identified in the previous steps.

II - Supply Chain Quality Management

The GQCS concept is based on the common elements of Quality Management (QM) and Supply Chain Management (SCM) [2]. GQCS is an approach based on a systemic concept in order to improve the performance of a group of organizations in a SC. This approach uses supplies flows extending from the upstream toward the downstream suppliers towards the clients. GQCS helps to coordinate and integrate the business of the various processes in SC organizations with the purpose of adding value through the measurement, analysis and continuous improvement of products, services and processes for intermediate and final customers [2-3]. For the authors [4], supplier and customer relationships and product quality are the major concerns of the GQCS elements.

Focus on Consumer and Market (FCM)

Practices: Actions towards guidelines for preserving the quality of the final product; feedback information from customers regarding the demanded requirements, product quality and services offered; elaboration of audits and action plans for improvement together with the clients; measurement and analysis of quality performance indicators of the clients; measurement of quality performance indicators of the clients.

Focus on Supplier and Relationship (SRM)

Practices: Partnership relations between the company and its suppliers; incentives and actions provided by the company to its suppliers in order to improve of the products' quality of the suppliers; elaboration and implementation of improvement action plans together with suppliers; measurement of quality performance indicators of the suppliers.

III - Methodology - The research method used in this work is the study of multiple cases. The research is aimed at the elaboration of a proposal through the verification of the SRM and FCM elements from the SCQM for different approaches and with replication of it in the agents that holds part of the production chain of sugarcane as: seedlings growers (A and B), manufacturers of machines and equipment to growers (A and B), sugarcane growers (A and B) and millings (A and B).

Table I - Overview Planning of the Method.

| Topics | Steps | Description | Results for the research |
|---------------------|-------|--|---|
| Literature Review | S1 | Supply Chain Quality Management | Definition of the theory of SCQM, explanation of the elements FCM and SRM with their respective practices. |
| Field Research | S2 | Establishment of criteria for case selection. | Identification and selection of companies for cases. |
| | S3 | Elaboration and evaluation of the research protocol. | Better understanding of themes, validation and improvement of the questionnaire. |
| | S4 | Conducting the interviews. | Field verification of the practices of the FCM and SRM elements of the SCQM theory for the cases. |
| Analysis of Results | S5 | Case report, cases 'analysis and solution proposal. | Comparative analysis of the existing practices and the missing ones investigated in the cases. Proposal solution. |

IV - Results and Discussions - The case study identified the necessary sugarcane requirements demanded by the sugarcane agents and the gap of the practices of the FCM and SRM as well. All of these products requirements of the sugarcane production chain must be accomplished by each one of its agents. Then, the quality of sugarcane needs of a management that enables the attainment of these requirements and also the gaps related to the practices of the FCM and SRM elements of the SCQM theory in the sugarcane production chain (identified in the field research), as a lack of: partnership, quality preservation actions, incentives that foster quality, and quality. To perform these needs, a Quality Management (QM) proposal is presented, which seeks to fill these gaps in the supplier-customer relationship of the agents that forms the sugarcane production chain. This reveals the need of integration among the main agents of the chain through an information flow for the product quality requirements, having the FCM and SRM practices, as a basis for the implementation of the proposal. Fig. 1 shows an illustration of the proposal to manage the product requirements in the sugarcane production chain.

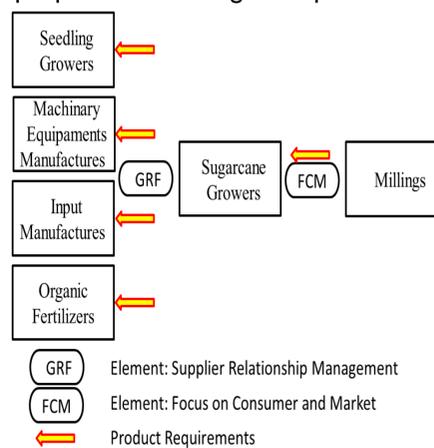


Figure 1. Illustration for managing the product requirements of the sugarcane production chain.

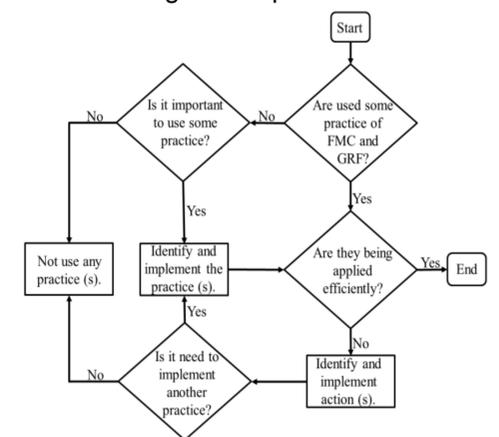


Figure 2. Flowchart of the information flow of the practices of the SRM and FCM elements

All product requirements of the main agents, represented by a red-yellow arrow on Fig.1, must be attained through the accomplishment of the FCM and SRM practices and Fig. 2 shows a flowchart that guides how the information flow should be for joint actions, related to the practices of the SRM and FCM elements of the sugarcane growers, with their upstream suppliers and the downstream mills respectively. Follow in the specific subtopics how these practices can be managed.

Focus on Consumer and Market (FCM)

The sugarcane produced in the farms must meet the quality requirements of the millings. For this, the orientation of the quality for the client must evolve to a partnership with the milling in search of the best quality of the sugarcane. The agents that make up the sugarcane production chain must share ideas, action plans together with its partners in each links of the chain in order to realize an efficiently implementation of FCM practices.

Supplier Relationship Management (SRM)

The need to meet milling requirements leads farms to have a long-term, trusting relationship with their key suppliers in order to jointly deploy actions to effectively address SRM practices.

V - Conclusion - The FCM and SRM elements and its main practices were identified in the literature of the SCQM theory. The empirical research of multiple cases investigated the use of the practices of these elements in the chain of production of sugarcane and also the product requirements demanded by the agents of this chain. Some shortcomings were identified regarding to relationship among sugarcane growers both upstream and downstream, such as the lack of: partnerships, quality preservation actions, incentives to promote quality in this chain and quality audits. To fill these gaps in order to meet the requirements on the chain, a proposal was presented to strengthen the relationship of the growers with their suppliers and customers, corroborating with the quality improvement of the sugarcane supplied to the milling. The main objective of this work, which is to present a proposal to manage the requirements of sugarcane focused on the integration among sugarcane growers with their suppliers and customers, was performed. However, the proposal does not address aspects related to the internal activities of the sugar cane farms. This is a suggestion for a future work.

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