

## **Area II: Effective Food Chain Management**

### **IMPROVING SUPPLY CHAIN MANAGEMENT THROUGH A MANAGEMENT INFORMATION SYSTEM: THE CASE OF A BRAZILIAN RICE COOPERATIVE**

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## **Abstract**

This research studied the implementing of a management information system (MIS) between farmers and a rice cooperative in the south of Brazil. The research examined a method to implement a MIS and how a MIS impacts the overall relationship between the cooperative business unit and its farmer members (suppliers). The MIS was implemented with a focus on strengthening the Supply Chain Management (SCM) process. The main objective was to improve the farmer's decision making process through a budget planning, controlling, and managing process in the rice production activity, and the over-all economic results.

After planning, implementing and monitoring a three-year long project, the results showed that the MIS could be a powerful tool to increase the production efficiency and the commitment between farmers and their cooperative business partner.

The results showed improvement of the farmer's management skills, including recognition of and good understanding the MIS components. The increased managerial knowledge of the economics of rice production also resulted in trustworthiness gains, which is a valuable element for the cooperative SCM process. Some limitations, as well as important preconditions, for a successful implementation process were discussed in the overall research results.

**Keywords:** Supply Chain Management (SCM), Management Information System (MIS), supplier development, vertical coordination, rice production sector, cost management.

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## Introduction

There is widespread interest in studying the changes in vertical and horizontal market structures in many agri-food industries. During the past years, there have been numerous professional meetings with themes on structural change, supply chain management, vertical coordination, and similar elements of the evolution of agri-food industries (Western & Zering, 1998).

Supply Chain Management (SCM) has become a strategic matter in the competitiveness of many industries (Price, 1996; Lambert et al., 1998; Min & Mentzer, 2000). A cooperative, in essence, is an SCM model. Each member owns part of the business (cooperative) so the economic results depend on good business practices and the commitments of their members to it. Like a SCM model (Lambert & Cooper, 2000), the agriculture cooperative business should be viewed as a unique business process, involving the farm production fields and the cooperative processing plants. In fact, this frequently does not occur. What we usually see is very independent business operations that do not know each other well.

The SCM paradigm embraces partnerships and joint ventures with open, shared information and communication (Lambert & Cooper, 2000). It is important to point out that SCM is viewed as a *continuum* too. Some authors have said that a full SCM process does not exist, but instead, it has different levels of participation and proactive ways that two or more companies run their business together (Min & Mentzer, 2000).

Cox (1999) highlights the question about the ability of companies to appropriate value for themselves from their participation in a supply chain. In the agricultural sector, and especially in the farm sector, where farmers are the main suppliers of raw materials for food-processor firms, the participation issue was difficult to treat in the past. The new economic environment is changing this ordinary viewpoint in many ways. A lack of knowledge shows up as soon as we begin to seek solutions and new ways to do business in this new environment.

Hansen et al. (1999) highlighted that: “Whenever two or more organizations decide to cooperate they face at least two objectives. The first objective of such cooperation is to maximize the opportunities for benefiting from the cooperation. The second objective is to minimize the risk of exploitation by a partner. Farmer cooperatives are no exception. A farmer joins a cooperative to gain the benefits of cooperating with others who have similar interests. However, by joining a cooperative a farmer is exposed to the risk of unfair opportunistic behavior on the part of other cooperative members or by members of the cooperative’s management team. Of course, the cooperative itself also faces some risk of damaging opportunistic behavior at the hands of members. At a fundamental level, a cooperative’s success, and, of course, the success of an

individual member depends on the ability of the cooperative to simultaneously manage the opportunity maximizing objective and the opportunism minimizing objective.”(p.1).

Hakelius (2001), studying a Swedish farmer cooperative, observed a lack of trust between members as well as between members and the cooperative. She suggests that adjustments targeted at strengthening the trust within the cooperatives are necessary in order to improve trustworthiness.

The present paper examines a case study of a rice cooperative in southern Brazil. The case study was conducted as part of a research project into business information flows as a tool to improve commitment between cooperative members. The aim was to improve vertical coordination or the supply chain management process.

The management information system (MIS) is a computer-based system of processing and organizing information so as to provide various levels of management within an organization with accurate and timely information needed for supervising activities, tracking progress, making decisions, and isolating and solving problems. MIS is a system for gathering financial, production, and other information that managers need to operate a business, especially a system that is computerized. Specifically, in this case, the computer-based systems were used to process the original data received from production fields, and then publish in a report form allowing the farms and cooperative managers to know better their relevant business information.

The research observed how an improved MIS flow impacts the commitment between partners (farmers and cooperative). The results may be a useful tool for practitioners and managers dealing with vertical coordination development or supply chain management issues.

The paper is structured as follows. After this introduction, the second part presents a problem statement bringing some concepts of supply chain management and its fundamental elements, as well the research objectives. The third section shows some basic economics characteristics of the agribusiness rice sector and the cooperative studied, as well as the methodology used. The last section presents project results and discussion.

## **Problem Statement**

Increased communication, information flow and trust certainly contribute to the success of the chain process. Stuart (1997) points out that “commitment and trust” must be key features of a supply chain partnership, as well as Morgan and Hunt (1994) for its effectiveness. They link these values closely with open communication, relationships, shared values and opportunistic behavior (Perry, M.; Sohal, 2001). Stuart (1997) adds the important point that in order for a supply chain to remain a cooperative unit over time, the dominant party must refrain from the overuse of power.

The trust issue should be addressed to decrease the lack of knowledge among players and to build a friendly and proactive business relationship. One of the most important aspects of the transaction is the ability to trust and share previously undisclosed information through the supply chain (Handfield & Bechtel, 2002). A lasting relationship based on trust can enable players to “synergize their strengths” to improve the supply and development of the market. For these and others reasons a collaborative environment with suppliers is called for, not one characterized by confrontation (Madhok, 1995, Lindenberg, 2000; de Ruyter, Moorman & Lemmink, 2001; Wilson & Kennedy, 1999).

Despite of the acceptance of the concept of managing the supply chain, and partly due to the misunderstanding, the growth of integrated supply chain management has been slow (Lummus, & Vokurka, 2001). These authors point out some reasons for that:

- ⇒ Lack of guidelines for creating alliances with supply chain partners.
- ⇒ Failure to develop measures for monitoring alliances.
- ⇒ Inability to broaden the supply chain vision beyond procurement or product distribution to encompass larger business processes.
- ⇒ Inability to integrate the company's internal procedures.
- ⇒ Lack of trust inside and outside a company.
- ⇒ Organizational resistance to the concept.
- ⇒ Lack of buy-in by top managers.
- ⇒ Lack of integrated information systems and electronic commerce linking firms.

The main claim of an SCM action should result in gains for all channel members involved. The agriculture sector works with low margins where the production cost is a key factor. Improving managerial skills and business information flows should play a fundamental role to improve member competitiveness (mainly farmers). Therefore, in some difficult cases, it will be necessary to find better ways to manage the coalition. For the coalition to remain intact, the rewards of cooperation must be redistributed. Ballou, Gilbert, & Mukherjee (2001) point out that this requires three things:

- ⇒ A new type of metrics beyond normal accounting procedures for capturing inter-organizational data and expressing them in terms that facilitate benefits analysis.
- ⇒ An information sharing mechanism for transferring information about cooperative benefits among channel members.
- ⇒ An allocation method for redistributing the rewards of cooperation in a way that all parties benefit fairly.

The above arguments highlight the importance of the MIS role in vertical coordination. Sharing a common interest is a key element to improve the farmers managing process, because to achieve the goals cited above, some particular information will need to be disclosed.

In this regards, Corbett et al. (1999), said: "The more open exchange of information (e.g., sharing cost and demand data) and coordinated decision making typical of a long-term supply-chain partnership can reduce the inefficiencies inherent in less collaborative relationships, such as excess inventories and slow response. Different from strategic alliances or project-based partnerships, supply-chain partnerships are characterized by levels of investment that further improve the joint supply chain to mutual advantage". (p.71)

A MIS implies more data disclosing. How could this affect a multi-player integration like a cooperative unit? Should the overall gains exceed the possible power losses? How could someone involved in a collective MIS process could react and why, or in which circumstances? These are unanswered as well as key questions for the success of a SCM process.

This research project was proposed after a rice cooperative team asked how a MIS could be implemented and what they should expect of it. Once this affordable environmental took place, these claims was looked as an opportunity to observe how such initiative could impact the involved actors towards implementation of a MIS, which is a fundamental step to achieve an efficient SCM system. The cooperative received close support of a research team of three

professors and four graduate students of the agronomy college at the Federal University of Pelotas. Several steps were developed in a three years period project.

## Objectives

This case study examines a Management Information System (MIS) implementation process between rice producers and a rice cooperative, identifying how MIS may affect the overall relationship between the involved actors, highlighting the concerns about the improvement of vertical coordination or SCM.

## The Agribusiness Rice Sector and the Cooperative Case

The average world rice production of last five years was 593.8 millions tons (Table 1). The world annual consumption in 2001 was 598.06 millions tons or 185.7 pounds/per capita/year. China and India are the biggest players in the world with more than 52% of the total production, an average of the last five years (Table 1). Brazil was the 9<sup>th</sup> largest producer at the year 2003 with 10,727,260 tons. In Latin America, Brazil was the bigger producer followed by Colombia (2.5), Peru (2.1), Ecuador (1.2), Uruguay (0.9) and Argentina (0.7 millions tons) in 2003 (FAO Website, 2004).

Table 1 – The biggest rice producers in the world (Tons).

Country	1999	2000	2001	2002	2003	Average Last 5 Years	World Share %
China	200,403,308	189,814,060	179,304,887	176,342,195	167,617,000	182,696,290	30.8%
India	134,495,904	127,531,000	139,735,008	113,580,000	133,513,000	129,770,982	21.9%
Indonesia	50,866,388	51,898,000	50,460,800	51,579,104	51,849,200	51,330,698	8.6%
Bangladesh	34,600,500	37,627,500	36,269,000	37,851,000	38,060,000	36,881,600	6.2%
Viet Nam	31,393,800	32,529,500	32,108,400	34,447,200	34,605,400	33,016,860	5.6%
Thailand	24,172,000	25,844,000	26,514,000	25,610,900	27,000,000	25,828,180	4.3%
Myanmar	20,126,038	21,323,868	21,914,306	22,780,000	21,900,000	21,608,842	3.6%
Philippines	11,786,600	12,389,400	12,954,900	13,270,653	13,171,087	12,714,528	2.1%
Brazil	11,709,700	11,089,800	10,195,400	10,472,100	10,219,300	10,737,260	1.8%
Japan	11,468,800	11,863,000	11,320,000	11,111,000	9,863,000	11,125,160	1.9%
World	611,511,311	599,114,543	597,889,044	575,429,633	584,975,923	593,784,091	100.0%

Data source: FAOSTAT – FAO: <http://apps.fao.org/default.jsp> (searched at March 10<sup>th</sup>, 2004).

Even though Brazil's share is about 1.8% of the total rice produced in the world, rice is still important for the Brazilian agribusiness because it is producer and consumer good. Rice is third in production value; it represented 12.20% of the total value of the four most important Brazil's crops produced in 2003 (soybeans, 54.95%; corn 28.41%; and wheat, 4.45%).

The approximately 10.7 million tons produced in Brazil were cultivated on an average of 9.5 millions acres/year in the last ten years. The State of Rio Grande do Sul, (means, Big River of the South) with almost half of the total rice produced in Brazil, is the biggest player in the Country.

Figure 1 – Rice Production by Regions in Brazil (1000 Tons).



Data source: SIDRA-IBGE, <http://www.sidra.ibge.gov.br> (searched at March 10<sup>th</sup>, 2004), translated by author.

The South Region of Brazil is responsible for 58.3% of the total rice production in Brazil. The Rio Grande do Sul (RGS), in turn, is the biggest state producer (Table 2). Rice production value represented 35.19% of the total value of soybeans, rice, corn and wheat, coming in second place after the soybeans (40.76%).

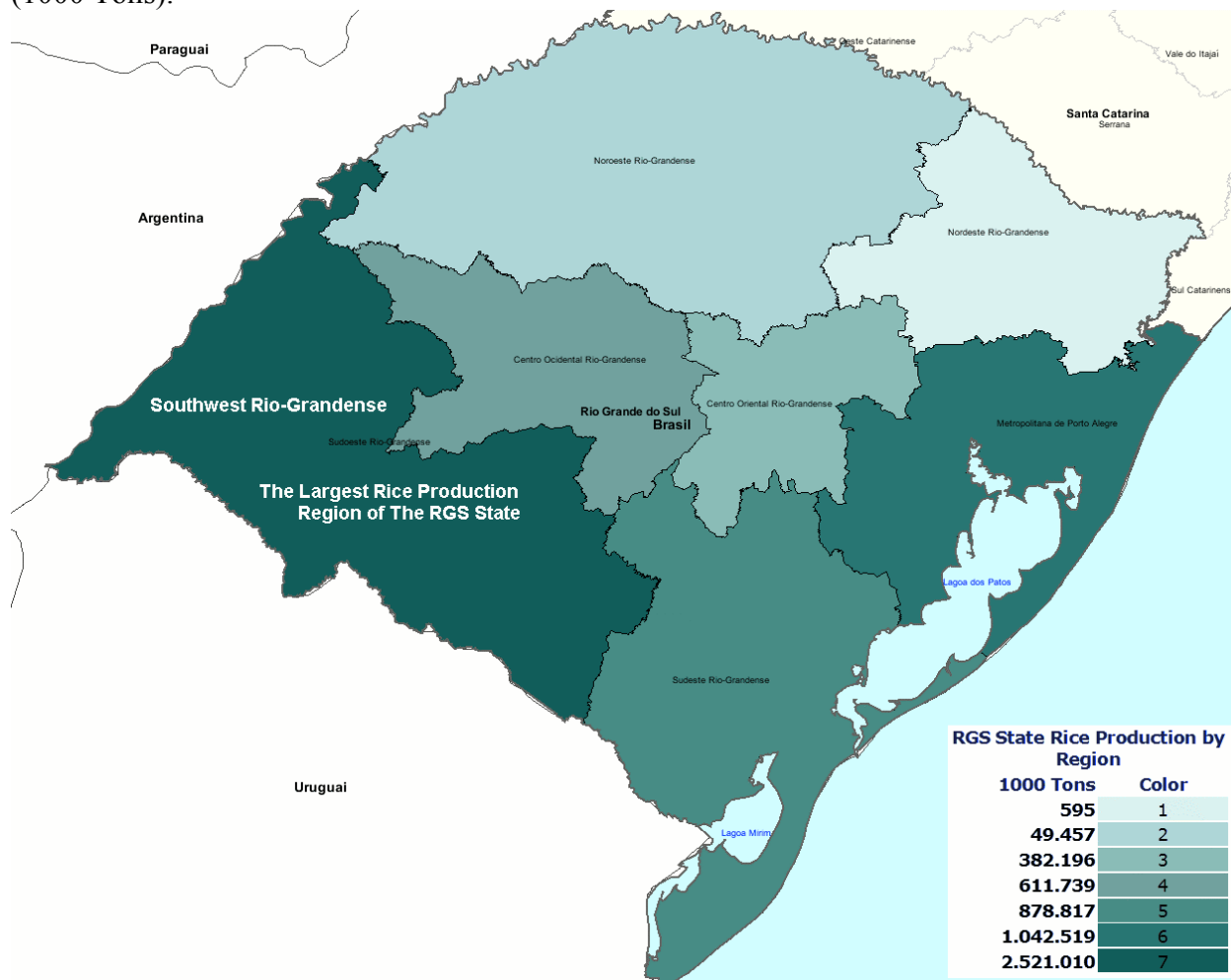
The Rice Cooperative Case Study is located in the Southwest Region of the RGS State (Figure 2). This Southwest Region is the largest rice production area in the State and the rice sector has an important impacts in the regional economy.

Table 2 – Brazil, the South Region and RGS regional rice production (Tons).

Brazil - Regions	1998	1999	2000	2001	2002	Last 5 Years Average	Brazilian Share %
Brazil	7,716,090	11,709,694	11,134,588	10,184,185	10,457,093	10,240,330	100.0%
South Region	4,396,826	6,575,799	5,959,573	6,327,310	6,595,570	5,971,016	58.3%
Rio Grande do Sul	3,591,864	5,630,077	4,981,014	5,256,301	5,486,333	4,989,118	48.7%
Southwest	1,421,199	2,514,452	1,977,694	2,336,585	2,521,010	2,154,188	21.0%
Southeast	846,656	1,145,264	1,060,503	1,033,719	878,817	992,992	9.7%
Metropolitan Area	737,688	1,003,693	1,001,871	934,142	1,042,519	943,983	9.2%
Middle West	318,143	555,797	534,140	549,663	611,739	513,896	5.0%
Middle East	219,831	348,455	343,629	346,155	382,196	328,053	3.2%
Northwest	46,781	61,133	62,327	55,303	49,457	55,000	0.5%
Northeast	1,566	1,283	850	734	595	1,006	0.0%

Data source: SIDRA-IBGE: <http://www.sidra.ibge.gov.br>, (searched at March 10<sup>th</sup>, 2004), translated by author.

Figure 2 – The Southwest Region, the largest rice production Region in Rio Grande do Sul State (1000 Tons).



Data source: SIDRA-IBGE, <http://www.sidra.ibge.gov.br>, (searched at March 10<sup>th</sup>, 2004), translated by author.



The rice cooperative is located in the Alegrete County. The cooperative has approximately 840 members who cultivate more than 81.6 thousands acres of rice a year from a total of 121 thousands acres/year cultivated in the county. The cooperative is third biggest rice producer of the country and its members produce above 6 tons/ha (5,350 pounds/acre).

The farmers cultivate rice on an average of 150 ha/years (371 acres/year). The production technology used is flood irrigation, which implies a higher cost and produces higher yields than dry land rice.

The cooperative members were not pre-selected for the project. Instead, they were invited to join it and decided on their own. Their education level and management skills were low when compared with farmers in other sectors. The low educational and skill level did limit some of the project results. The cooperative had a technical support team of eight agronomists and ten agriculture technicians to assist the cooperative members at technical level.

The technical support team did not have much knowledge about economic management and they were not familiar with the financial and economics reports.

At the cooperative administrative level (other businesspersons), the knowledge level is higher. The cooperative has a skilled professional team to work at that level because revenue is about 2 hundred million dollars year.

## **Methodology and Procedures**

To study the relationship between a rice cooperative and its cooperators (farmers), a faculty and student research group from the Federal University of Pelotas started working with sixty cooperative members (rice farmers), and the cooperative technical unit staff in 1997.

The study was characterized as a case study research. Yin (1994) argues that case research and survey methods are better suited than other techniques for analyzing contemporary events. Case research is superior to survey methods at answering the “whys” and “how” because its analysis can delve more deeply into motivations and actions than structured surveys.

This case study is characterized as a single case with one unit of analysis. The main focus is the relationship between the cooperative technical team and its suppliers in concern of the MIS implementation and how this process could improve a partnering behavior between them.

To respond the cooperative technical staff claims, a project was developed including two steps: first the project developed a MIS focusing the farmer’s production rice activities, and second the study assisted in the implementation.

Several procedures were implemented focusing on specifics points. First, the study developed a business report adapted to the farmers and cooperative concerns, allowing them to increase knowledge about rice production costs and returns, as well as comprehensive reports to support their decision-making. Second, it was necessary to teach farmers about the MIS procedures, increasing their knowledge and skills to complete and analyze their own business reports, and economically plan the production activities. Finally, the project improved cooperative knowledge and forecasts of expected harvest volumes, yields, amounts to trade, production costs, financing and overall economics results.

Through a daylong seminar, with the presence of the cooperative high staff and the designated farmer members, we discussed and established a mutual agreement on processes and objectives.

Then the operational tasks and the chronological schedule to implement the project within the respective organizations were defined. The farmers trained were in three fronts: filling out and completing reports; economic and financing data concepts, and the meaning and interpretation of the managerial reports. The cooperative technical staff participated in all the farmers training process even though some had previous explanations about them.

The basic process of the MIS was to obtain the relevant economic information from farms all year long. These data were sent to the cooperative technical unit which process it and generate the manage reports. Then reports were sent back to the farmers.

This was a three year project. In the first year, the goal of the MIS was to know the rice production results (costs, revenue, profits) of each farmer, and the average of all involved.

A year long period was dedicated to present, discuss and teach how to get and process the economic information from farms fields to the business report. The economic reports were based on Income Statement (IS) showing the profits or losses in rice production. At the end of the first production year, we had the first set of income statements to discuss with farmers and the cooperative staff (Tables 3, 4, 5 & 6).

These meetings were conducted as a training class where the discussions and suggestions about the whole process allowed the participants increase their knowledge, upgrading the project in its second year. Budget planning was introduced at this time and some of the farmers began to develop it for training proposes.

The second year was dedicated to improve farmers and cooperative technical team knowledge about the whole process. Usually there were five meetings a year, each of them after a strategic production stage. They are: pre-cultivation (budget planning in July), after completing planting (January), after stopping irrigation process (March), after finishing harvest (May), and at the end of the business year (July). Each of these meetings were used to dismiss doubts, improve reports, data collecting and processing routines. While these activities were happening, the interaction and exchange of information were improved, raising the commitment between agents and the recognition of the importance of the MIS.

The university team, which received the data of all farmer units through the internet, generated the consolidated analyses. The data were processed and an economic report was generated. The reports were then sent back to the cooperative which delivered the reports to each farmer to study and use them in their decision-making process. Through the reports, the farmers could compare their own results with the year before and the average results of the all farmers, which did prove to be a valuable learning tool.

At the end of the third year, the university team conducted an overall analysis of the research results showing some important elements. First, the team discussed the MIS results and its importance for an improved decision-making process. Second, the main benefits, as well as some limitations and consequences for future research were discussed.

## **Results**

The MIS worked as an alternative type of metrics beyond normal accounting procedures and it captured inter-organizational data and expressed them in terms that facilitate benefits analysis. The MIS as an alternative metric and information sharing mechanism helped to transfer information about cooperative benefits among channel members as well as from them to the

cooperative (Ballou, Gilbert, & Mukherjee (2001) point out some of the difficulties in managing the coalition).

What the results did not show was the introduction of some kind of a rewards redistribution of the achieved benefits between all parties. The economic reward may be viewed as the increased efficiency resulting from the MIS implementation at the farm level, but the cooperative staff did not explore this.

The overall MIS objectives were achieved at the end of the third year. The farmers could count on a set of business reports that allowed them to manage better their activities. The project established successfully several procedures to obtain the data and generate the businesses information reports.

A set of tables at the end of this paper, show some examples of these reports. The project produced all of these reports for each participating farmer and in aggregate form to support the cooperative demands as well.

The tables show some examples of the MIS reports. The three main reports were the Income Statement Results for the Aggregate Project Farmers and for each individual Farmer (Tables 3 & 4), Farmer Monthly Expenditures Statement (Table 5) and the Farmer Monthly Cash Flow (Table 6). The last two Tables (5 & 6) may report the aggregate data of all farmers whenever cooperative staff to wish.

Once finished the project second year, other reports could be made using the same data and/or layouts to generate additional information such as: a variation of Income Statement Results for the current year compared to the previous year for the average of all farmers enrolled in the project and for each individual farmer results (Tables 8 & 9) and the comparison of Project Average Income Statement Results (all farmers) with the Farmer Income Statement Results, these at the projects' two production years (1998 & 1999).

Finally, at the beginning of the third Project year a Budget Plan was made and its variation from the budget plan is showed in the Budget Plan Data Compared to the Actual Results report (Table 12). Figure 4 illustrates some results graphically. All Farmer' MIS Reports presented at the end are from a single farmer to facilitate the data analyses.

We should highlight that, concerning the main goals of the project, the numbers themselves are less important than are the formats and the set of useful information made available for decision makers. Once there is a valuable tool, it will be just a matter of adjusting it.

The benefits of the aggregate results may be difficult to measure, but they are undoubtedly positive for managerial improvement at the farm level. The increased knowledge of costs and the ability to manage them were very important for the overall results.

The possibility to analyze the results every year and compare them with previous results optimizes the decision-making process. Each farmer had the opportunity to compare their results with their previous data, and with the cooperative average data each year, and each farmer results with the average cooperative results. Knowing the specifically business process, permits each farmer to focus their own weakness thereby improving the overall production system.

For farmers or the cooperative, knowing the cost of production, developing a budget plan, managing the harvest and market forecasting, would not be possible without the achieved level of information exchange.

All the new information generated by the project helped to dismiss some of the arguments pointed out by Lummus, & Vokurka, (2001) regarding the slow movement by firms towards a SCM implementation processes.

The case study also highlights the needs for an open communication channel in order to facilitate the information flow throughout the supply chain. That flow only could be achieved with the intense participation of the technical support team. The University team was a key element for training activities.

There were also identified some limitations. The number of farmers who freely participated in the project decreased during the three-year project development. The low education level of some farmers and even some technicians of the cooperative, demonstrated that many of them avoided participating in the project because of their limited understanding of some MIS report data, indicating that a more intense training would be necessary.

Some of the cooperative members, who were not enrolled in the project, showed a lack of business competitiveness vision. Once they found out that the farmers enrolled in the project received a complete business report, they complained to the board and wanted to sue the project claiming that the cooperative should not spend resources on the project. Actually, the technical support team of the cooperative did try to encourage new farmers to join; that action could have increased its expenses.

About ten farmers who started with the project did not necessarily finish it and approximately the same number of new farmers joined it during its development. However, the total number of participants did not grow during the three-year period due to the weak support from the cooperative board, mainly represented by larger farmers, who did not join the project.

We observed some misunderstandings about the importance of the management process and the disclosure of economic data. Some cooperative members did not join the project because they were afraid of disclosing their economic data. The data confidentiality is an important asset of the MIS and the security of that is part of the trust issue.

Although the project faced some difficulties, the overall results were positive toward increasing the interaction among members. From the rice production activity, the new economic and finance knowledge improved the efficiency of the decision-making process for the farmers and cooperative technical department. These farmers became more confident with their business activities and that resulted in more commitment to the cooperative, their first "Client".

For the cooperative, the precise measurement of rice production costs and rewards were a fundamental tool to managing better the rice price paid to the farmers as well as its own decision-making process.

The simple fact that some previously undisclosed information were now transparent, induced a more committed and friendly relationship. There was no doubt, that the assisted farmers improved their overall knowledge and business efficiency. It is well known that the cooperative staff team continues running the MIS procedures until now. How they are performing is not well known and it may be a question to be answered in the near future through a new research project. What was expected at the end of the project was that more transparency must drive the relationship towards a dependable partnership as expected in a SCM process.

## Conclusions

The overall project showed that the MIS was an important element to improve vertical coordination management. Some of the potential gains for the farmers included improvement of cost control, budgets, and management skills. Another benefit was to increase the information flow, which could help farmers to manage better their business as well as the cooperative supply chain management decision-makers.

The results demonstrate that not only was a closer relationship between farmers and the cooperative essential, but also the existence of a coordination agent, such as the cooperative technical support team, was essential to develop a necessary interface between farmers and the information office.

The MIS itself played an important role in this process. The researchers observed that the interaction between farmers and technicians enforced its implementation. This also increased their mutual understanding about managerial issues and the commitment to achieve positive results. The MIS increased disclosing of data and information may be an important argument to begin a two-way information flow that should result in trustworthy gains.

The study found that a better relationship emerged between farmers and their cooperative resulting in important benefits at the managerial efficiency level; however, the commitment of the cooperative board, still is a fundamental element for its success.

For practitioners, the results may help them at the implementation level. The several procedures could be applied once the main goal of a similar MIS implementation process was achieved. To achieve the common goal, requires an in-depth training process for farmers and the technical support team.

The case study results showed furthermore that procedures that drive participants to increase their communication links also reinforce their commitment, which results in gains for the vertical coordination improvement process. Once the SCM is viewed as a *continuum* a simple MIS implementation may not be sufficient, but certainly the improvements would drive the organization toward a stronger SCM.

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Table 3 – Aggregate Income Statement Results for Project (all farmers).

Production Year 1999		Actual Month:		Jun-99			
Data Source:	AGGREGATE PROJECT	Cultivated Area (Ha)	2,831.7				
Activity:	Irrigated Rice	Yields (Bags/Ha)	143.5				
Location:	Alegrete - RS	Production (Bags):	406,239				
Deprec. Cost/Year:	218,021	Sale Price (50 Kg Bag):	14.49				
Items	Actual Month Jun-99	Acc. Year Jun-99	Until Acc. Production Year	R\$/Ha	R\$/50Kg Bag	% Cost & Outlays	% NI
Gross Income			5,884,501	2,078.1	14.49		
Tax - Funrural (2,2%)			129,459	45.7	0.32		
Cooperative Capital Share (1,0%)			58,845	20.8	0.14		
Net Income			5,696,197	2,011.6	14.02		100.0%
Cost & Administ. Outlay:	726,005	3,979,121	3,979,121	1,405.2	9.80	100.0%	69.9%
Total Cost	701,322	3,571,909	3,571,909	1,261.4	8.79	89.8%	62.7%
Direct Cost	249,430	2,354,318	2,354,318	831.4	5.80	59.2%	41.3%
Labor Operation	12,851	176,405	176,405	62.3	0.43	4.4%	3.1%
Maintenance	15,147	423,216	423,216	149.5	1.04	10.6%	7.4%
Oil and Gas	1,056	216,226	216,226	76.4	0.53	5.4%	3.8%
Fertilizers	-	249,569	249,569	88.1	0.61	6.3%	4.4%
Seeds	-	223,343	223,343	78.9	0.55	5.6%	3.9%
Agrochemicals	2,774	146,046	146,046	51.6	0.36	3.7%	2.6%
Agri Aviation	2,460	48,518	48,518	17.1	0.12	1.2%	0.9%
Energy	16,645	322,112	322,112	113.8	0.79	8.1%	5.7%
Freight	46,668	161,019	161,019	56.9	0.40	4.0%	2.8%
Interest	65,262	103,746	103,746	36.6	0.26	2.6%	1.6%
Contracted Work Force	74,570	185,190	185,190	65.4	0.46	4.7%	3.3%
Other Costs	11,997	98,928	98,928	34.9	0.24	2.5%	1.7%
Gross Operational Results			3,341,879	1,180.2	8.23		58.7%
Indirect Cost	451,891	1,217,591	1,217,591	430.0	3.00	30.6%	21.4%
Depreciation	22,375	281,364	281,364	99.4	0.69	7.1%	4.9%
Land Rent	255,480	686,029	686,029	242.3	1.69	17.2%	12.0%
Comissions	174,036	250,199	250,199	88.4	0.62	6.3%	4.4%
Operational Results after Indirect Costs			2,124,288	750.2	5.23		37.3%
Administrative Outlays	24,683	407,213	407,213	143.8	1.00	10.2%	7.1%
Profits/Losses			1,717,075	606.4	4.23		30.1%

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 4 – Farmer Income Statement Results

Production Year 1999		Actual Month:		Jun-99			
Farmer:	DRG-0229	Cultivated Area (Ha)	266.0				
Activity:	Irrigated Rice	Yields (Bags/Ha)	138.7				
Location:	Inhandul	Production (Bags):	36,887				
Deprec. Cost/Year:	12,339	Sale Price (50 Kg Bag):	15.00				
Items	Actual Month Jun-99	Acc. Year Jun-99	Until Acc. Production Year	R\$/Ha	R\$/50Kg Bag	% Cost & Outlays	% NI
Gross Income			553,305	2,080.1	15.00		
Tax - Funrural (2,2%)			12,173	45.8	0.33		
Cooperative Capital Share (1,0%)			5,533	20.8	0.15		
Net Income			535,599	2,013.5	14.52		100.0%
Cost & Administ. Outlay:	1,028	328,303	328,303	1,234.2	8.90	100.0%	61.3%
Total Cost	1,028	310,860	310,860	1,168.6	8.43	94.7%	58.0%
Direct Cost	-	197,849	197,849	743.8	5.36	60.3%	36.9%
Labor Operation	-	9,835	9,835	37.0	0.27	3.0%	1.8%
Maintenance	-	29,921	29,921	112.5	0.81	9.1%	5.6%
Oil and Gas	-	13,423	13,423	50.5	0.36	4.1%	2.5%
Fertilizers	-	20,510	20,510	77.1	0.56	6.2%	3.8%
Seeds	-	21,032	21,032	79.1	0.57	6.4%	3.9%
Agrochemicals	-	2,684	2,684	10.1	0.07	0.8%	0.5%
Agri Aviation	-	429	429	1.6	0.01	0.1%	0.1%
Energy	-	42,585	42,585	160.1	1.15	13.0%	8.0%
Freight	-	13,845	13,845	52.0	0.38	4.2%	2.6%
Interest	-	7,241	7,241	27.2	0.20	2.2%	1.4%
Contracted Work Force	-	22,657	22,657	85.2	0.61	6.9%	4.2%
Other Costs	-	13,688	13,688	51.5	0.37	4.2%	2.6%
Gross Operational Results			337,750	1,269.7	9.16		63.1%
Indirect Cost	1,028	113,011	113,011	424.9	3.06	34.4%	21.1%
Depreciation	1,028	23,999	23,999	90.2	0.65	7.3%	4.5%
Land Rent	-	75,000	75,000	282.0	2.03	22.8%	14.0%
Comissions	-	14,012	14,012	52.7	0.38	4.3%	2.6%
Operational Results after Indirect Costs			224,739	844.9	6.09		42.0%
Administrative Outlays	-	17,442	17,442	65.6	0.47	5.3%	3.3%
Profits/Losses			207,297	779.3	5.62		38.7%

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 5 – Farmer Monthly Expenditures Statement

End of Month:		Jun-99		COSTS & EXPENSES										Production Year 1999		
Producer Code:	DRG-0229	Irrigated Rice		Area Planted (hectares):			266.0			Production (bags of 50 kg):			36,887			
Location:	Inhanduf	Custo Depr/Ano:		12,339			Yield (bags/ha):			138.7			Estimated Sales Price:		15.00	
Analytical Account	Acc. Year	Nº of Bags	%	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	
<b>Costs &amp; Expenses</b>	328,303	21,887	100%	63,224	36,928	27,412	55,151	13,017	14,224	24,197	11,609	15,899	13,807	51,808	1,028	
Production Costs	310,860	20,724	95%	60,237	34,926	26,270	51,584	12,335	13,429	22,749	10,621	14,166	12,583	50,932	1,028	
Employee Wages	8,824	588	2.7%	637	413	762	631	935	1,287	833	833	888	902	703		
Temporary Labor Services																
Social Tax	1,011	67	0.3%	54		97	131	132	48	168	132	132	119			
Machine Maintenance Parts	13,848	923	4.2%	486	915	1,820	1,469	2,479	1,485	1,618	536	1,588	928	524		
Machine Maintenance Service	8,543	570	2.6%	515	5,041	147	55	191	342	270	1,150	468	40	324		
Maintenance Infrastructure & Bu	7,530	502	2.3%	1,381	478	1,405	109	1,743	25	422	243	1,650		74		
Fuel/Lubricants	13,423	895	4.1%	4,548		2,645	2,652		245	841	287	867	1,112	225		
Lime																
Base Fertilizer	20,510	1,367	6.2%	20,510												
Cover Fertilizer																
Seed	21,032	1,402	6.4%		21,032											
Agrochemicals	2,684	179	0.8%	2,684												
Agri-Aviation	429	29	0.1%						429							
Energy for Irrigation	42,585	2,839	13.0%	126	55		154	5,190	7,543	15,641	6,064	5,770	1,926	115		
Freight for Rice	12,345	823	3.8%										1,380	10,965		
Freight for Inputs/Others	1,500	100	0.5%	425	280		100	575						120		
Interest Operating Expense (Cu	7,241	483	2.2%				7,241									
Other Interest Expense (Curren																
Depreciation	23,999	1,600	7.3%	2,695	3,748	1,588	1,196	1,028	1,109	1,677	1,247	2,568	5,087	1,028	1,028	
Machine Planting Time																
Harvest Service																
Rice Drying Service	22,657	1,510	6.9%											22,657		
Other Costs	13,688	913	4.2%	1,176	2,964	2,807	2,847	61	917	1,279	129	235	1,089	184		
Land Rent	75,000	5,000	22.8%	25,000		15,000	35,000									
Comissions	14,012	934	4.3%											14,012		
<b>Administrative Expenses</b>	17,442	1,163	5%	2,987	2,002	1,141	3,567	683	795	1,448	987	1,733	1,224	876		
Personnel (Administration)	3,833	256	1.2%	1,324	298		446		50	88		943	377	307		
Maintenance (Administration)	1,282	85	0.4%	480		290	495			18						
Fuel (Administration)	779	52	0.2%	25	63	110		85	168	26	95		70	138		
Freight Various																
Rent																
I.T.R. Tax																
Funrural tax																
Taxes Various	3,413	228	1.0%	450	517	218		155		604	431	229	692	119		
Other Expenses	8,135	542	2.5%	708	1,124	524	2,626	443	577	712	462	561	85	312		

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 6 – Farmer Monthly Cash Flow

End of Month:		Jun-99		MONTHLY CASH FLOW										Production Year 1999		
Producer Code:	DRG-0229	Irrigated Rice		Area Planted (hectares):			266.0			Production (bags of 50kg):			36,887			
Location:	Inhanduf	Custo Depr/Ano:		12,339			Yield (bags/ha):			138.7			Estimated Sale Price:		15.00	
Item	Acc. Year	%	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99		
<b>Beginning Balance</b>	10,000		10,000	-47,915	-77,286	-94,192	15,341	19,339	9,688	-17,075	-19,011	-47,738	-97,047	-147,827		
<b>Cash Inflow</b>	259,342	100%	19,278	31,008	14,516	165,167	15,987	3,865		9,520						
Rice Harvest Sales	12,960	5.0%					12,960									
Rice Inventory Sales	141,570	54.6%	19,278	31,008	14,516	76,767										
Fixed Capital Sales																
Loan from others																
Production Loan	104,812	40.4%				88,400	3,027	3,865		9,520						
<b>Cash Outflow</b>	417,169	100%	77,193	60,379	31,422	55,634	11,989	13,517	26,763	11,456	28,727	49,309	50,780			
Personnel (Production)	9,835	2.4%	691	413	858	762	1,067	1,335	1,001	965	1,020	1,021	703			
Maintenance	29,921	7.2%	2,382	6,434	3,372	1,632	4,413	1,851	2,310	1,929	3,706	968	922			
Fuel/Lubricants	13,423	3.2%	4,548		2,645	2,652		245	841	287	867	1,112	225			
Fertilizers	20,510	4.9%	20,510													
Seed	21,032	5.0%		21,032												
Agrochemicals	2,684	0.6%	2,684													
Agri Aviation	429	0.1%						429								
Energy for Irrigation	42,585	10.2%	126	55		154	5,190	7,543	15,641	6,064	5,770	1,926	115			
Freight	13,845	3.3%	425	280		100	575					1,380	11,085			
Interest	7,241	1.7%				7,241										
Fixed Asset Expense (20 ye:																
Fixed Asset Expense (10 ye	109,126	26.2%	16,664	27,200	5,598	1,679			2,000		15,396	40,590				
Fixed Asset Expense (05 ye:	3,739	0.9%							402	2,243	1,095					
Third Party Services	22,657	5.4%											22,657			
Other Costs	13,688	3.3%	1,176	2,964	2,807	2,847	61	917	1,279	129	235	1,089	184			
Land Rent	75,000	18.0%	25,000		15,000	35,000										
Comissions	14,012	3.4%											14,012			
Personnel (Administration)	3,833	0.9%	1,324	298		446		50	88		943	377	307			
Other Administ. Expenses	13,610	3.3%	1,663	1,704	1,141	3,121	683	745	1,360	987	790	847	569			
Debt Previous Years																
Amortization/Production Loa																
<b>Ending Balance</b>	-147,827		-47,915	-77,286	-94,192	15,341	19,339	9,688	-17,075	-19,011	-47,738	-97,047	-147,827	-147,827		

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.



Table 8 – Project Average Income Statement Results – 1999/1998 Variation

Project Agg. Data	AVG Production Year 1998			AVG Production Year 1999			1999/1998 Var.	
Data Source:	PROJECT			PROJECT				
Cultivated Area (Ha)	1,716.2	Hectares		2,831.7	Hectares		65%	
Yields (Bags/Ha)	106.5	Bags/Ha		143.5	Bags/Ha		35%	
Production (Bags):	182,748	Bags	Jun-98	406,239	Bags	Jun-99	122%	
Sale Price (50 Kg Bag):	14.95	R\$/Bags 50 Kg		14.49	R\$/Bags 50 Kg		-3%	
Items	R\$/Ha	R\$/Bag	% NI	R\$/Ha	R\$/Bag	%NI	/Ha	/Bag
Gross Income	1,591.5	14.95		2,078.1	14.49		31%	-3%
Tax - Funnral (2,2%)	35.0	0.33		45.7	0.32		31%	-3%
Coop. Capital Share (1,0%)	15.9	0.15		20.8	0.14		31%	-3%
Net Income	1,540.6	14.47	100.0%	2,011.6	14.02	100.0%	31%	-3%
Cost & Administ. Outlays	1,310.7	12.31	85.1%	1,405.2	9.80	69.9%	7%	-20%
Total Cost	1,197.2	11.24	77.7%	1,261.4	8.79	62.7%	5%	-22%
Direct Cost	815.4	7.66	52.9%	831.4	5.80	41.3%	2%	-24%
Labor Operation	68.2	0.64	4.4%	62.3	0.43	3.1%	-9%	-32%
Maintenance	166.2	1.56	10.8%	149.5	1.04	7.4%	-10%	-33%
Oil and Gas	93.4	0.88	6.1%	76.4	0.53	3.8%	-18%	-39%
Fertilizers	84.4	0.79	5.5%	88.1	0.61	4.4%	4%	-22%
Seeds	80.8	0.76	5.2%	78.9	0.55	3.9%	-2%	-28%
Agrochemicals	45.1	0.42	2.9%	51.6	0.36	2.6%	14%	-15%
Agri Aviation	17.4	0.16	1.1%	17.1	0.12	0.9%	-2%	-27%
Energy	81.8	0.77	5.3%	113.8	0.79	5.7%	39%	3%
Freight	50.6	0.48	3.3%	56.9	0.40	2.8%	12%	-17%
Interest	46.2	0.43	3.0%	36.6	0.26	1.8%	-21%	-41%
Contracted Work Force	55.5	0.52	3.6%	65.4	0.46	3.3%	18%	-13%
Other Costs	25.9	0.24	1.7%	34.9	0.24	1.7%	35%	0%
Gross Operational Results	725.2	6.81	47.1%	1,180.2	8.23	58.7%	63%	21%
Indirect Cost	381.8	3.59	24.8%	430.0	3.00	21.4%	13%	-16%
Depreciation	76.2	0.72	4.9%	99.4	0.69	4.9%	30%	-3%
Land Rent	215.0	2.02	14.0%	242.3	1.69	12.0%	13%	-16%
Comissions	90.6	0.85	5.9%	88.4	0.62	4.4%	-2%	-28%
O.R. after Indirect Costs	343.4	3.23	22.3%	750.2	5.23	37.3%	118%	62%
Administrative Outlays	113.5	1.07	7.4%	143.8	1.00	7.1%	27%	-6%
Profits/Losses	229.9	2.16	14.9%	606.4	4.23	30.1%	164%	96%

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 9 – Farmer Average Income Statement Results – 1999/1998 Variation

Farmer Data	Farmer Production Year 1998			Farmer Production Year 1999			1999/1998 Var.	
Data Source:	DRG-0229			DRG-0229 Angico				
Cultivated Area (Ha)	139.2	Hectares		266.0	Hectares		91%	
Yields (Bags/Ha)	110.8	Bags/Ha		138.7	Bags/Ha		25%	
Production (Bags):	15,423	Bags	Jun-98	36,887	Bags	Jun-99	139%	
Sale Price (50 Kg Bag):	18.00	R\$/Bags 50 Kg		15.00	R\$/Bags 50 Kg		-17%	
Items	R\$/Ha	R\$/Bag	% NI	R\$/Ha	R\$/Bag	%NI	/Ha	/Bag
Gross Income	1,994.4	18.00		2,080.1	15.00		4%	-17%
Tax - Funnral (2,2%)	43.9	0.40		45.8	0.33		4%	-17%
Coop. Capital Share (1,0%)	19.9	0.18		20.8	0.15		4%	-17%
Net Income	1,930.6	17.42	100.0%	2,013.5	14.52	100.0%	4%	-17%
Cost & Administ. Outlays	1,504.1	13.58	77.9%	1,234.2	8.90	61.3%	-18%	-34%
Total Cost	1,324.9	11.96	68.6%	1,168.6	8.43	58.0%	-12%	-30%
Direct Cost	775.4	7.00	40.2%	743.8	5.36	36.9%	-4%	-23%
Labor Operation	42.9	0.39	2.2%	37.0	0.27	1.8%	-14%	-31%
Maintenance	134.3	1.21	7.0%	112.5	0.81	5.6%	-16%	-33%
Oil and Gas	105.5	0.95	5.5%	50.5	0.36	2.5%	-52%	-62%
Fertilizers	88.7	0.80	4.6%	77.1	0.56	3.8%	-13%	-31%
Seeds	21.5	0.19	1.1%	79.1	0.57	3.9%	267%	193%
Agrochemicals	22.7	0.21	1.2%	10.1	0.07	0.5%	-56%	-65%
Agri Aviation	12.9	0.12	0.7%	1.6	0.01	0.1%	-88%	-90%
Energy	131.7	1.19	6.8%	160.1	1.15	8.0%	22%	-3%
Freight	44.8	0.40	2.3%	52.0	0.38	2.6%	16%	-7%
Interest	19.7	0.18	1.0%	27.2	0.20	1.4%	38%	11%
Contracted Work Force	95.5	0.86	4.9%	85.2	0.61	4.2%	-11%	-29%
Other Costs	55.1	0.50	2.9%	51.5	0.37	2.6%	-7%	-25%
Gross Operational Results	1,155.2	10.43	59.8%	1,269.7	9.16	63.1%	10%	-12%
Indirect Cost	549.5	4.96	28.5%	424.9	3.06	21.1%	-23%	-38%
Depreciation	127.8	1.15	6.6%	90.2	0.65	4.5%	-29%	-44%
Land Rent	371.4	3.35	19.2%	282.0	2.03	14.0%	-24%	-39%
Comissions	50.3	0.45	2.6%	52.7	0.38	2.6%	5%	-16%
O.R. after Indirect Costs	605.7	5.47	31.4%	844.9	6.09	42.0%	39%	11%
Administrative Outlays	179.3	1.62	9.3%	65.6	0.47	3.3%	-63%	-71%
Profits/Losses	426.4	3.85	22.1%	779.3	5.62	38.7%	83%	46%

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 10 – Income Statement Results – Project Average Compared to Farmer (1999)

Farmer / AVG Project	AVG Project - Year 1999			Farmer Production Year 1999			Farmer/Proj. Var	
Data Source:	PROJECT			DRG-0229 Angico				
Cultivated Area (Ha)	2,831.7	Hectares		266.0	Hectares			
Yields (Bags/Ha)	143.5	Bags/Ha		138.7	Bags/Ha			-3%
Production (Bags):	406,239	Bags	Jun-99	36,887	Bags	Jun-99		
Sale Price (50 Kg Bag):	14.49	R\$/Bags 50 Kg		15.00	R\$/Bags 50 Kg			4%
Items	R\$/Ha	R\$/Bag	%NI	R\$/Ha	R\$/Bag	%NI	/Ha	/Bag
Gross Income	2,078.1	14.49		2,080.1	15.00		0%	4%
Tax - Funnral (2,2%)	45.7	0.32		45.8	0.33		0%	4%
Coop. Capital Share (1,0%)	20.8	0.14		20.8	0.15		0%	4%
Net Income	2,011.6	14.02	100.0%	2,013.5	14.52	100.0%	0%	4%
Cost & Administ. Outlays	1,405.2	9.80	69.9%	1,234.2	8.90	61.3%	-12%	-9%
Total Cost	1,261.4	8.79	62.7%	1,168.6	8.43	58.0%	-7%	-4%
Direct Cost	831.4	5.80	41.3%	743.8	5.36	36.9%	-11%	-7%
Labor Operation	62.3	0.43	3.1%	37.0	0.27	1.8%	-41%	-39%
Maintenance	149.5	1.04	7.4%	112.5	0.81	5.6%	-25%	-22%
Oil and Gas	76.4	0.53	3.8%	50.5	0.36	2.5%	-34%	-32%
Fertilizers	88.1	0.61	4.4%	77.1	0.56	3.8%	-13%	-9%
Seeds	78.9	0.55	3.9%	79.1	0.57	3.9%	0%	4%
Agrochemicals	51.6	0.36	2.6%	10.1	0.07	0.5%	-80%	-80%
Agri Aviation	17.1	0.12	0.9%	1.6	0.01	0.1%	-91%	-90%
Energy	113.8	0.79	5.7%	160.1	1.15	8.0%	41%	46%
Freight	56.9	0.40	2.8%	52.0	0.38	2.6%	-8%	-5%
Interest	36.6	0.26	1.8%	27.2	0.20	1.4%	-26%	-23%
Contracted Work Force	65.4	0.46	3.3%	85.2	0.61	4.2%	30%	35%
Other Costs	34.9	0.24	1.7%	51.5	0.37	2.6%	47%	52%
Gross Operational Results	1,180.2	8.23	58.7%	1,269.7	9.16	63.1%	8%	11%
Indirect Cost	430.0	3.00	21.4%	424.9	3.06	21.1%	-1%	2%
Depreciation	99.4	0.69	4.9%	90.2	0.65	4.5%	-9%	-6%
Land Rent	242.3	1.69	12.0%	282.0	2.03	14.0%	16%	20%
Comissions	88.4	0.62	4.4%	52.7	0.38	2.6%	-40%	-38%
O.R. after Indirect Costs	750.2	5.23	37.3%	844.9	6.09	42.0%	13%	17%
Administrative Outlays	143.8	1.00	7.1%	65.6	0.47	3.3%	-54%	-53%
<b>Profits/Losses</b>	<b>606.4</b>	<b>4.23</b>	<b>30.1%</b>	<b>779.3</b>	<b>5.62</b>	<b>38.7%</b>	<b>29%</b>	<b>33%</b>

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 11 – Income Statement Results – Project Average Compared to Farmer (1998)

Farmer / AVG Project	AVG Project - Year 1998			Farmer Production Year 1998			Farmer/Proj. Var	
Data Source:	PROJECT			DRG-0229				
Cultivated Area (Ha)	1,716.2	Hectares		139.2	Hectares			
Yields (Bags/Ha)	106.5	Bags/Ha		110.8	Bags/Ha			4%
Production (Bags):	182,748	Bags	Jun-98	15,423	Bags	Jun-98		
Sale Price (50 Kg Bag):	14.95	R\$/Bags 50 Kg		18.00	R\$/Bags 50 Kg			20%
Items	R\$/Ha	R\$/Bag	% NI	R\$/Ha	R\$/Bag	% NI	/Ha	/Bag
Gross Income	1,591.5	14.95		1,994.4	18.00		25%	20%
Tax - Funnral (2,2%)	35.0	0.33		43.9	0.40		25%	20%
Coop. Capital Share (1,0%)	15.9	0.15		19.9	0.18		25%	20%
Net Income	1,540.6	14.47	100.0%	1,930.6	17.42	100.0%	25%	20%
Cost & Administ. Outlays	1,310.7	12.31	85.1%	1,504.1	13.58	77.9%	15%	10%
Total Cost	1,197.2	11.24	77.7%	1,324.9	11.96	68.6%	11%	6%
Direct Cost	815.4	7.66	52.9%	775.4	7.00	40.2%	-5%	-9%
Labor Operation	68.2	0.64	4.4%	42.9	0.39	2.2%	-37%	-40%
Maintenance	166.2	1.56	10.8%	134.3	1.21	7.0%	-19%	-22%
Oil and Gas	93.4	0.88	6.1%	105.5	0.95	5.5%	13%	9%
Fertilizers	84.4	0.79	5.5%	88.7	0.80	4.6%	5%	1%
Seeds	80.8	0.76	5.2%	21.5	0.19	1.1%	-73%	-74%
Agrochemicals	45.1	0.42	2.9%	22.7	0.21	1.2%	-50%	-52%
Agri Aviation	17.4	0.16	1.1%	12.9	0.12	0.7%	-26%	-29%
Energy	81.8	0.77	5.3%	131.7	1.19	6.8%	61%	55%
Freight	50.6	0.48	3.3%	44.8	0.40	2.3%	-11%	-15%
Interest	46.2	0.43	3.0%	19.7	0.18	1.0%	-57%	-59%
Contracted Work Force	55.5	0.52	3.6%	95.5	0.86	4.9%	72%	65%
Other Costs	25.9	0.24	1.7%	55.1	0.50	2.9%	113%	105%
Gross Operational Results	725.2	6.81	47.1%	1,155.2	10.43	59.8%	59%	53%
Indirect Cost	381.8	3.59	24.8%	549.5	4.96	28.5%	44%	38%
Depreciation	76.2	0.72	4.9%	127.8	1.15	6.6%	68%	61%
Land Rent	215.0	2.02	14.0%	371.4	3.35	19.2%	73%	66%
Comissions	90.6	0.85	5.9%	50.3	0.45	2.6%	-45%	-47%
O.R. after Indirect Costs	343.4	3.23	22.3%	605.7	5.47	31.4%	76%	70%
Administrative Outlays	113.5	1.07	7.4%	179.3	1.62	9.3%	58%	52%
<b>Profits/Losses</b>	<b>229.9</b>	<b>2.16</b>	<b>14.9%</b>	<b>426.4</b>	<b>3.85</b>	<b>22.1%</b>	<b>85%</b>	<b>78%</b>

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 12 – Income Statement Results – Budget Plan Data Compared to Actual Data

		Production Year 98/99			Actual Month: Jun-99			Budget Plan			Actual Data			Var. %		
Farmer:	DRG-0229							Cultivated Area (Ha)			245.0	266.0	9%			
Activity:	Arroz Irrigado							Yields (Bags/Ha)			132.0	138.7	5%			
Location:	Inhanduí							Production (Bags):			32,340	36,887	14%			
Deprec. Cost/Year:	12,339							Sale Price (50 Kg Bag):			12.00	15.00	25%			

Items	Month Data			Aggregate Data Until** Jun-99			Aggregate Data Plantation Year			Average/Ha Plantation Year *		
	Budget Plan	x Actual Data	Var. %	Budget Plan	x Actual Data	Var. %	Budget Plan	x Actual Data	Var. %	Budget Plan	x Actual Data	Var. %
Gross Income							388,080	553,305	43%	1,584.0	2,080.1	31%
Tax - Funrural (2,2%)							8,538	12,173	43%	34.8	45.8	31%
Cooperative Capital Share (1,0%)							3,881	5,533	43%	15.8	20.8	31%
Net Income							375,661	535,599	43%	1,533.3	2,013.5	31%
Cost & Administ. Outlay	87,472	0	-100%	262,696	328,303	25%	262,696	328,303	25%	1,072.2	1,234.2	15%
Total Cost	86,432	0	-100%	239,872	310,860	30%	239,872	310,860	30%	979.1	1,168.6	19%
Direct Cost	23,932	-		177,372	197,849	12%	177,372	197,849	12%	724.0	743.8	3%
Labor Operation	690	-		9,553	9,835	3%	9,553	9,835	3%	39.0	37.0	-5%
Maintenance	1,000	-		35,100	29,921	-15%	35,100	29,921	-15%	143.3	112.5	-21%
Oil and Gas	-	-		23,427	13,423	-43%	23,427	13,423	-43%	95.6	50.5	-47%
Fertilizers	-	-		20,510	20,510		20,510	20,510		83.7	77.1	-8%
Seeds	-	-		4,000	21,032	426%	4,000	21,032	426%	16.3	79.1	384%
Agrochemicals	-	-		2,250	2,684	19%	2,250	2,684	19%	9.2	10.1	10%
Agri Aviation	-	-		520	429	-18%	520	429	-18%	2.1	1.6	-24%
Energy	-	-		24,000	42,585	77%	24,000	42,585	77%	98.0	160.1	63%
Freight	-	-		12,610	13,845	10%	12,610	13,845	10%	51.5	52.0	1%
Interest	7,500	-		7,500	7,241	-3%	7,500	7,241	-3%	30.6	27.2	-11%
Contracted Work Force	14,652	-		21,552	22,657	5%	21,552	22,657	5%	88.0	85.2	-3%
Other Costs	90	-		16,350	13,688	-16%	16,350	13,688	-16%	66.7	51.5	-23%
Gross Operational Results							198,290	337,750	70%	809.3	1,269.7	57%
Indirect Cost	62,500	0	-100%	62,500	113,011	81%	62,500	113,011	81%	255.1	424.9	67%
Depreciation	-	0		-	23,999		-	23,999		-	90.2	
Land Rent	55,000	-		55,000	75,000	36%	55,000	75,000	36%	224.5	282.0	26%
Comissions	7,500	-		7,500	14,012	87%	7,500	14,012	87%	30.6	52.7	72%
Operational Results after Indirect Costs							135,790	224,739	66%	554.2	844.9	52%
Administrative Outlays	1,040	-		22,824	17,442	-24%	22,824	17,442	-24%	93.2	65.6	-30%
Profits/Losses							112,966	207,297	84%	461.1	779.3	69%

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Figure 3 – Graphics Illustration of some Farmer' Income Statement Reports

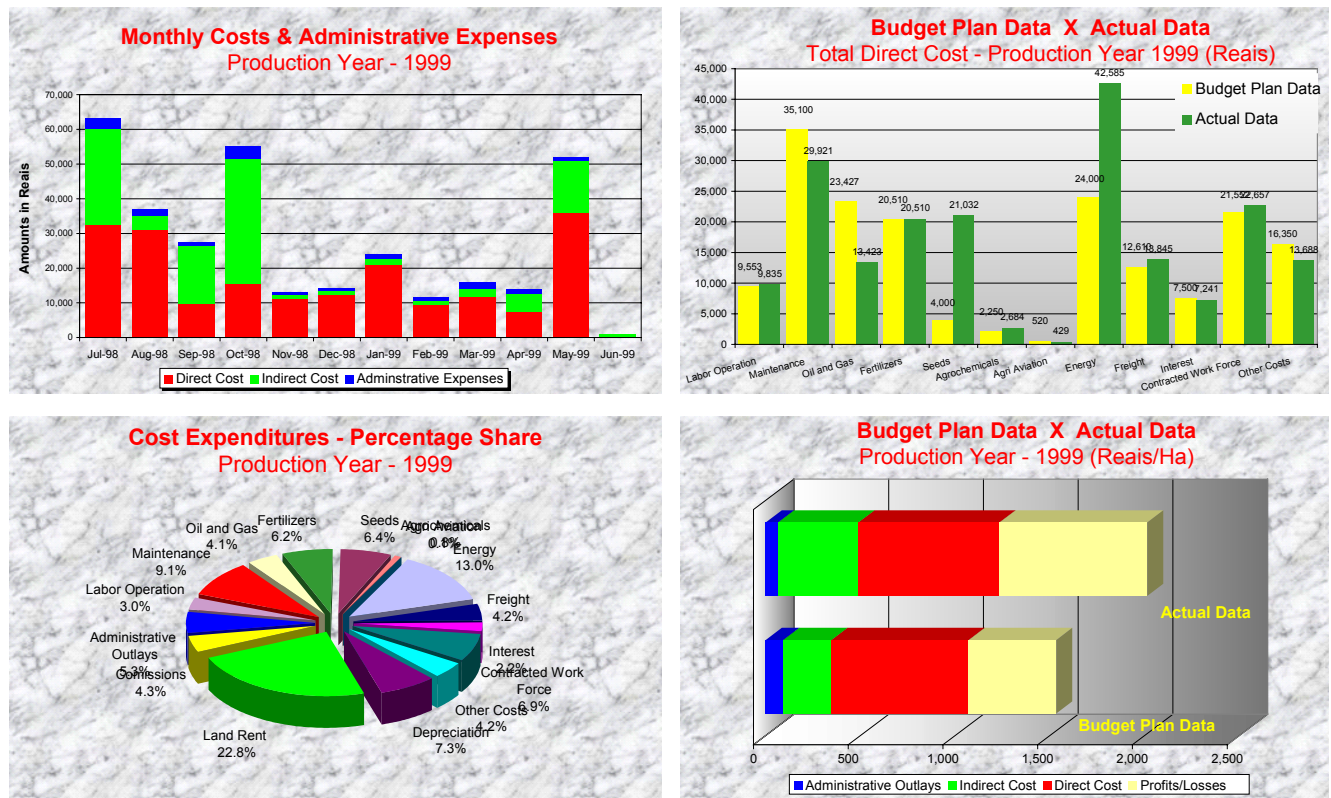


Table 13 – Income Statement – 1998/1999 Variation (Average Project and Farmer).  
(Farmers' Report layout for Tables 8 & 9)

Production Data	AVG Production Year 1998			AVG Production Year 1999			1999/1998 Var.		Farmer Production Year 1998			Farmer Production Year 1999			1999/1998 Var.	
Data Source:	PROJECT			PROJECT					DRG-0229			DRG-0229 Anglico				
Cultivated Area (Ha)	1,716.2	Hectares		2,831.7	Hectares		65%		139.2	Hectares		266.0	Hectares		91%	
Yields (Bags/Ha)	106.5	Bags/Ha		143.5	Bags/Ha		35%		110.8	Bags/Ha		138.7	Bags/Ha		25%	
Production (Bags):	182,748	Bags	Jun-98	406,239	Bags	Jun-99	122%		15,423	Bags	Jun-98	36,887	Bags	Jun-99	139%	
Sale Price (50 Kg Bag):	14.95	R\$/Bags 50 Kg		14.49	R\$/Bags 50 Kg		-3%		18.00	R\$/Bags 50 Kg		15.00	R\$/Bags 50 Kg		-17%	
Items	R\$/Ha	R\$/Bag	% NI	R\$/Ha	R\$/Bag	%NI	/Ha	/Bag	R\$/Ha	R\$/Bag	% NI	R\$/Ha	R\$/Bag	%NI	/Ha	/Bag
Gross Income	1,591.5	14.95		2,078.1	14.49		31%	-3%	1,994.4	18.00		2,080.1	15.00		4%	-17%
Tax - Funrural (2,2%)	35.0	0.33		45.7	0.32		31%	-3%	43.9	0.40		45.8	0.33		4%	-17%
Coop. Capital Share (1,0%)	15.9	0.15		20.8	0.14		31%	-3%	19.9	0.18		20.8	0.15		4%	-17%
Net Income	1,540.6	14.47	100.0%	2,011.6	14.02	100.0%	31%	-3%	1,930.6	17.42	100.0%	2,013.5	14.52	100.0%	4%	-17%
Cost & Administ. Outlays	1,310.7	12.31	85.1%	1,405.2	9.80	69.9%	7%	-20%	1,504.1	13.58	77.9%	1,234.2	8.90	61.3%	-18%	-34%
Total Cost	1,197.2	11.24	77.7%	1,261.4	8.79	62.7%	5%	-22%	1,324.9	11.96	68.6%	1,168.6	8.43	58.0%	-12%	-30%
Direct Cost	815.4	7.66	52.9%	831.4	5.80	41.3%	2%	-24%	775.4	7.00	40.2%	743.8	5.36	36.9%	-4%	-23%
Labor Operation	68.2	0.64	4.4%	62.3	0.43	3.1%	-9%	-32%	42.9	0.39	2.2%	37.0	0.27	1.8%	-14%	-31%
Maintenance	166.2	1.56	10.8%	149.5	1.04	7.4%	-10%	-33%	134.3	1.21	7.0%	112.5	0.81	5.6%	-16%	-33%
Oil and Gas	93.4	0.88	6.1%	76.4	0.53	3.8%	-18%	-39%	105.5	0.95	5.5%	50.5	0.36	2.5%	-52%	-62%
Fertilizers	84.4	0.79	5.5%	88.1	0.61	4.4%	4%	-22%	88.7	0.80	4.6%	77.1	0.56	3.8%	-13%	-31%
Seeds	80.8	0.76	5.2%	78.9	0.55	3.9%	-2%	-28%	21.5	0.19	1.1%	79.1	0.57	3.9%	267%	193%
Agrochemicals	45.1	0.42	2.9%	51.6	0.36	2.6%	14%	-15%	22.7	0.21	1.2%	10.1	0.07	0.5%	-66%	-65%
Agri Aviation	17.4	0.16	1.1%	17.1	0.12	0.9%	-2%	-27%	12.9	0.12	0.7%	1.6	0.01	0.1%	-80%	-90%
Energy	81.8	0.77	5.3%	113.8	0.79	5.7%	39%	3%	131.7	1.19	6.8%	160.1	1.15	8.0%	22%	-3%
Freight	50.6	0.48	3.3%	56.9	0.40	2.8%	12%	-17%	44.8	0.40	2.3%	52.0	0.38	2.6%	16%	-7%
Interest	46.2	0.43	3.0%	36.6	0.26	1.8%	-21%	-41%	19.7	0.18	1.0%	27.2	0.20	1.4%	38%	11%
Contracted Work Force	55.5	0.52	3.6%	65.4	0.46	3.3%	18%	-13%	95.5	0.86	4.9%	85.2	0.61	4.2%	-11%	-29%
Other Costs	25.9	0.24	1.7%	34.9	0.24	1.7%	35%	0%	55.1	0.50	2.9%	51.5	0.37	2.6%	-7%	-25%
Gross Operational Results	725.2	6.81	47.1%	1,180.2	8.23	58.7%	63%	21%	1,155.2	10.43	59.8%	1,269.7	9.16	63.1%	10%	-12%
Indirect Cost	381.8	3.59	24.8%	430.0	3.00	21.4%	13%	-16%	549.5	4.96	28.5%	424.9	3.06	21.1%	-23%	-38%
Depreciation	76.2	0.72	4.9%	99.4	0.69	4.9%	30%	-3%	127.8	1.15	6.6%	90.2	0.65	4.5%	-29%	-44%
Land Rent	215.0	2.02	14.0%	242.3	1.69	12.0%	13%	-16%	371.4	3.35	19.2%	282.0	2.03	14.0%	-24%	-39%
Comissions	90.6	0.85	5.9%	88.4	0.62	4.4%	-2%	-28%	50.3	0.45	2.6%	52.7	0.38	2.6%	5%	-16%
O.R. after Indirect Costs	343.4	3.23	22.3%	750.2	5.23	37.3%	118%	62%	605.7	5.47	31.4%	844.9	6.09	42.0%	39%	11%
Administrative Outlays	113.5	1.07	7.4%	143.8	1.00	7.1%	27%	-6%	179.3	1.62	9.3%	65.6	0.47	3.3%	-63%	-71%
Profits/Losses	229.9	2.16	14.9%	606.4	4.23	30.1%	164%	96%	426.4	3.85	22.1%	779.3	5.62	38.7%	83%	46%

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.

Table 14 – Income Statement – Average Cooperative Compared to Farmer (1998 & 1999).  
(Farmers' Report layout for Tables 10 & 11)

Farmer/AVG Project	AVG Project - Year 1998			Farmer Production Year 1998			Farmer/Proj. Var.		AVG Project - Year 1999			Farmer Production Year 1999			Farmer/Proj. Var.	
Data Source:	PROJECT			DRG-0229					PROJECT			DRG-0229 Anglico				
Cultivated Area (Ha)	1,716.2	Hectares		139.2	Hectares		4%		2,831.7	Hectares		266.0	Hectares			
Yields (Bags/Ha)	106.5	Bags/Ha		110.8	Bags/Ha				143.5	Bags/Ha		138.7	Bags/Ha			-3%
Production (Bags):	182,748	Bags	Jun-98	15,423	Bags	Jun-98			406,239	Bags	Jun-99	36,887	Bags	Jun-99		
Sale Price (50 Kg Bag):	14.95	R\$/Bags 50 Kg		18.00	R\$/Bags 50 Kg		20%		14.49	R\$/Bags 50 Kg		15.00	R\$/Bags 50 Kg			4%
Items	R\$/Ha	R\$/Bag	% NI	R\$/Ha	R\$/Bag	% NI	/Ha	/Bag	R\$/Ha	R\$/Bag	%NI	R\$/Ha	R\$/Bag	%NI	/Ha	/Bag
Gross Income	1,591.5	14.95		1,994.4	18.00		25%	20%	2,078.1	14.49		2,080.1	15.00		0%	4%
Tax - Funrural (2,2%)	35.0	0.33		43.9	0.40		25%	20%	45.7	0.32		45.8	0.33		0%	4%
Coop. Capital Share (1,0%)	15.9	0.15		19.9	0.18		25%	20%	20.8	0.14		20.8	0.15		0%	4%
Net Income	1,540.6	14.47	100.0%	1,930.6	17.42	100.0%	25%	20%	2,011.6	14.02	100.0%	2,013.5	14.52	100.0%	0%	4%
Cost & Administ. Outlays	1,310.7	12.31	85.1%	1,504.1	13.58	77.9%	15%	10%	1,405.2	9.80	69.9%	1,234.2	8.90	61.3%	-12%	-9%
Total Cost	1,197.2	11.24	77.7%	1,324.9	11.96	68.6%	11%	6%	1,261.4	8.79	62.7%	1,168.6	8.43	58.0%	-7%	-4%
Direct Cost	815.4	7.66	52.9%	775.4	7.00	40.2%	-5%	-9%	831.4	7.00	41.3%	743.8	5.36	36.9%	-11%	-7%
Labor Operation	68.2	0.64	4.4%	42.9	0.39	2.2%	-37%	-40%	62.3	0.43	3.1%	37.0	0.27	1.8%	-41%	-39%
Maintenance	166.2	1.56	10.8%	134.3	1.21	7.0%	-19%	-22%	149.5	1.04	7.4%	112.5	0.81	5.6%	-25%	-22%
Oil and Gas	93.4	0.88	6.1%	105.5	0.95	5.5%	13%	9%	76.4	0.53	3.8%	50.5	0.36	2.5%	-34%	-32%
Fertilizers	84.4	0.79	5.5%	88.7	0.80	4.6%	5%	1%	88.1	0.61	4.4%	77.1	0.56	3.8%	-13%	-9%
Seeds	80.8	0.76	5.2%	21.5	0.19	1.1%	-73%	-74%	78.9	0.55	3.9%	79.1	0.57	3.9%	0%	4%
Agrochemicals	45.1	0.42	2.9%	22.7	0.21	1.2%	-50%	-52%	51.6	0.36	2.6%	10.1	0.07	0.5%	-80%	-80%
Agri Aviation	17.4	0.16	1.1%	12.9	0.12	0.9%	-26%	-29%	17.1	0.12	0.9%	1.6	0.01	0.1%	-91%	-90%
Energy	81.8	0.77	5.3%	131.7	1.19	6.8%	61%	55%	113.8	0.79	5.7%	160.1	1.15	8.0%	41%	46%
Freight	50.6	0.48	3.3%	44.8	0.40	2.3%	-11%	-15%	56.9	0.40	2.8%	52.0	0.38	2.6%	-8%	-5%
Interest	46.2	0.43	3.0%	19.7	0.18	1.0%	-57%	-59%	36.6	0.26	1.8%	27.2	0.20	1.4%	-26%	-23%
Contracted Work Force	55.5	0.52	3.6%	95.5	0.86	4.9%	72%	65%	65.4	0.46	3.3%	85.2	0.61	4.2%	30%	35%
Other Costs	25.9	0.24	1.7%	55.1	0.50	2.9%	113%	105%	34.9	0.24	1.7%	51.5	0.37	2.6%	47%	52%
Gross Operational Results	725.2	6.81	47.1%	1,155.2	10.43	59.8%	59%	53%	1,180.2	8.23	58.7%	1,269.7	9.16	63.1%	8%	11%
Indirect Cost	381.8	3.59	24.8%	549.5	4.96	28.5%	44%	38%	430.0	3.00	21.4%	424.9	3.06	21.1%	-1%	2%
Depreciation	76.2	0.72	4.9%	127.8	1.15	6.6%	68%	61%	99.4	0.69	4.9%	90.2	0.65	4.5%	-9%	-6%
Land Rent	215.0	2.02	14.0%	371.4	3.35	19.2%	73%	66%	242.3	1.69	12.0%	282.0	2.03	14.0%	16%	20%
Comissions	90.6	0.85	5.9%	50.3	0.45	2.6%	-45%	-47%	88.4	0.62	4.4%	52.7	0.38	2.6%	-40%	-38%
O.R. after Indirect Costs	343.4	3.23	22.3%	605.7	5.47	31.4%	76%	70%	750.2	5.23	37.3%	844.9	6.09	42.0%	13%	17%
Administrative Outlays	113.5	1.07	7.4%	179.3	1.62	9.3%	58%	52%	143.8	1.00	7.1%	65.6	0.47	3.3%	-54%	-53%
Profits/Losses	229.9	2.16	14.9%	426.4	3.85	22.1%	85%	78%	606.4	4.23	30.1%	779.3	5.62	38.7%	29%	33%

\$ Real / \$ USD Exchange Rate: January/1998 R\$ 1,00 = \$ 0,90 - January/1999 R\$ 1,00 = \$ 0,83.