MARKETING CHAIN ANALYSIS: A CASE STUDY OF THE MELON SECTOR IN RIO GRANDE DO NORTE STATE IN BRAZIL

Análise dos canais de comercialização: estudo de caso do setor de melões do estado do Rio Grande do Norte Brasil

RESUMO

A cadeia de frutas frescas está focando de forma crescente no valor adicionado e na redução de custos, procurando atender a demanda do consumidor. Novos canais de comercialização são abertos como resultado da mudanca dos hábitos dos consumidores e do crescente domínio de grandes atacadistas nos países industrializados. Os estados de Rio Grande do Norte e Ceará são responsáveis por 98% da exportação brasileira de melão onde 99% destinam-se à União Europeia. Este artigo objetiva descrever a cadeia do melão, entender os canais de comercialização e analisar as relações contratuais entre compradores e produdores. Além disso, o artigo também se propõe a analisar as estruturas de governança predominantes na cadeia de valor em relação às características das respectivas transações. Foram conduzidos seis estudos de caso com produtores de melão no estado do Rio Grande do Norte no Brasil. O referencial teórico baseou-se nos conceitos da Cadeia Global de Valor e da Economia dos Custos de Transação. Os resultados mostram que os arranjos contratuais entre compradores internacionais e produtores, bem como entre empresas intermediárias e produtores são bem delineados. No entanto, arranjos com compradores domésticos ainda oferecem margem para melhoria. Conclui-se que produtores sem certificação precisam de apoio para um *upgrade* e para aumentarem a eficiência ao longo cadeia produtiva. Isto seria possível por meio da integração vertical, cooperação e coordenação, incluindo contratos formais entre os agentes da cadeia. Um u*pgradin*g na cadeia contribui para com padrões de qualidade, aumento no mercado internacional e melhorias nos arranjos contratuais.

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ABSTRACT

The fresh fruit marketing system is increasingly focused on adding value and decreasing costs by streamlining distribution and understanding customer demands. New marketing channels have opened up as a result of a combination of changing consumer tastes and the increasing dominance of large retailers in the markets of industrialized countries. Rio Grande do Sul and Ceara states are responsible for 98% of the country's total exports of melons when almost 99% of the fruit is designated to the European Union. This paper aims at describing the melon chain to understand the marketing chain and evaluate contractual arrangements between buyers and farmers. It also proposes an analysis of the type of governance used in this value chain regarding the characteristics of their transactions. 6 case studies were conducted with melon producers in Rio Grande do Norte state, Brazil. The theoretical background was based on concepts of Value Chain and the Transaction Cost approaches. The results demonstrate that contractual arrangements between international buyers and farmers as well as between trading companies and farmers are well-developed. However, arrangements with domestic buyers still open margin for some improvement. It is concluded the need of a support to upgrade and increase efficiency along the chains as something highly important - mainly for non-certified farmers. This would be possible via vertical integration, cooperation and coordination, including the use of written contracts among the actors in the chain. Upgrading along the value chains can help moving towards quality standards, increased international access, and better contractual arrangements.

Palavras-chave: Melão, contrato, cadeia de mercado

Key-words: melon, contract, marketing chain

1 INTRODUCTION

European retail chains have assumed a leading role in the formulation of food safety and quality standards. Their international supplier base, especially in developing countries, needs to adapt and comply, if they wish to continue trading with major retailers (FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS - FAO, 2007). It is widely recognized that quality and safety standards play an important role for developing countries, especially for their agricultural sectors. There is a growing concern that standards will undermine the

competitive progress already made by some developing countries and present insurmountable barriers to new entrants in the high-value food trade (JAFFEE et al., 2005). Henson & Loader (2001) find that Sanitary and Phytosanitary Measures (SPS) are the greatest impediment to developing countries' exports to the EU, surpassing transport and further direct export costs, tariffs or quantitative restrictions.

Nevertheless, food safety standards can also have positive implications for developing countries. These countries may gain and maintain access to markets of high-value agricultural and food products, especially in industrialized countries (HENSON; JAFFEE, 2007). From this standards-as-catalyst angle, the challenge inherent in compliance with food safety and agricultural health standards may as well provide a powerful incentive for the modernization of developing countries export supply chains and give greater clarity to the necessary and appropriate management functions. Further, via increased attention to the spread and adoption of good practices in agriculture and food manufacture, there may be spillovers into domestic food safety and agricultural health to the benefit of the local population and domestic producers. Hence, part of the costs of compliance could be considered as investments into the national economy.

Rather than degrading the comparative advantage of developing countries, the enhancement of capacities to meet stricter standards could potentially create new forms of competitive advantage. Thus, the process of standards compliance could conceivably provide the basis for a more sustainable and profitable trade over the long term, albeit with some particular winners and losers (HENSON; JAFFEE, 2004).

Fresh fruits are an example of a traditional agricultural export crop and they illustrate the potential for agricultural diversification and production of high-value crops. Brazil is the third largest producer of fruits among developing countries, after China and India. Its total production was 43.1 million tons in 2009, representing 4% of the production of all developing countries. However, it is estimated that around 2% of the country fruit production (in terms of volume) is exported generating US$560 million (INSTITUTO BRASILEIRO DE FRUTAS - IBRAF, 2009).

Rio Grande do Norte state, covering Mossoró/Serra do Mel, together with Ceará state is considered the second biggest irrigated tropical fruits region in Brazil with about 20,000 hectares (ha) (COSTA et al., 2007). Both states are responsible for 97% of the country's total exports of melons in 2009 when almost 99% of the fruit was designated to the European Union.

Therefore, the objective of this study is to describe the melon chain, understand the marketing chain and evaluate the contractual arrangements between buyers and farmers. The paper proceeds as follows: after this introductory section, recent studies will be reviewed in the second section. Section 3 presents the theoretical background and Section 4 presents the primary data base and methods applied in the study. Section 5 presents the results which will be followed by a final Section 6 with the main conclusions.

2 LITERATURE REVIEW

The rising competition in the fresh fruit industry and the need to meet norms and standards related to e.g. product characteristics, the production process and its impact on food safety and on the environment have meant a changing relationship between growers and buyers. The alternative strategies of buyers like supermarkets include formal and informal contracts directly with farmers and the establishment of their own distribution centers, which allow them a higher leverage when forcing their quality and safety norms and standards (FARINA, 2002). The compliance on the producers' side is driven by the demand of supermarkets on varieties, production methods, post harvesting technologies, packaging and labeling specifications, as well as acceptable environmental impacts and working conditions. -The global value chain analysis emphasizes that local producers learn significantly from global buyers on how to improve their production processes in order to attain consistent high quality and increase the speed of response (HUMPHREY; SCHMITZ, 2002).

For example, the banana market structure is very heterogeneous, depending on the producing and importing countries. The presence of diverse economic actors is also different among countries and regions at the several stages of the banana chain. Due to a high perishability, bananas require a careful control of its growing, packaging, transport, ripening, and distribution process. This leads to a highly vertically integrated banana sector, where large transnational companies tend to control from direct growing of bananas in producing countries, through ownership of specialized refrigerated shipping and ripening facilities to distribution networks in importing countries. An analysis of the banana marketing chain reveals that companies face the challenge of an increasing role that is being played by supermarkets and retail chains in the

distribution of bananas in developed countries, mainly in the US and the EU. Supermarkets tend to build long-term relationships with preferred suppliers in order to guarantee a continuous supply at the required level of quality (UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT - UNCTAD, 2007b).

In another study UNCTAD (2007a) develops the international citrus marketing chain. The international trade in the fresh citrus fruits sector is characterized by a reduced degree of concentration of supply with a multitude of medium-sized firms providing the fruit. On the contrary, orange juice trade is highly concentrated. A small number of companies that operate in Brazil and Florida dominate the market. The major supplier of orange juice in the world is Brazil, followed by the US. The most significant players in the distribution channels for orange juice and fruit juices are the global retail chains, responsible for more than 80% of the total exports to Europe.

Cueller (2003) aims to identify challenges faced by retailers in different marketing specificities in the US market. The study reveals that the key issues in the marketing of imported fruits and vegetables among retailers are food safety assurance, transportation cost reduction and quality improvement. Further, the key issues in marketing include improving packaging, adding value to products, and assuring food safety.

3 THEORETICAL BACKGROUND

1.1 Conceptual framework of the marketing chain

An analysis of marketing channels and upgrading strategies for fresh fruit demonstrate how the development of niche markets for high-value produce creates new opportunities for developing countries' producers and exporters that can meet the required standards. New marketing channels have opened up as a result of a combination of changing consumer tastes and the increasing dominance of large retailers in the markets of industrialized countries. The identification of opportunities for adding value and the development of strategies to take advantage of them are based on an analysis of the changing governance structures of food value chains (UNCTAD, 2000).

The framework presented in Figure 1 aims to facilitate the understanding of the marketing chain process of non-certified and certified producers in the melon sector. Certified farmers are more likely to have access to international markets and non-certified ones are more likely to sell the fruit production in the domestic market. Farmers can either trade with groups, associations and cooperatives or with individual buyers, who sell the fruit production in the domestic market.

However, farmers who expect to export, may trade their fruit in the domestic market in case of a non-favorable situation. Such a situation is given if there is a lack of quality caused by a bad-crop formation, diseases or climate conditions. Non-certified farmers are also vulnerable to those factors. However, non-certified producers may also export directly or indirectly to international markets. Direct exports occur when they export via a trading company; indirect when they sell the fruit production to the middleman who repack and export.

Entering new export markets could be considered a major challenge for many companies in developing countries. New skills and knowledge are demanded, mainly related to bureaucratic procedures, national standards and procedures, marketing channels and consumers' tastes. Upgrading could facilitate and promote competitiveness to access those markets.

The value chain literature focuses on the role of global buyers and chain governance in defining upgrading opportunities. Humphrey & Schmitz (2000) use the concept of upgrading to refer to three different shifts that companies could undertake. Firstly, a process upgrading: companies can upgrade either through transforming inputs into outputs more efficiently by re-organizing the production system or introducing superior technology; secondly, a product upgrading: companies can upgrade by moving into more sophisticated product lines. Thirdly, a functional upgrading: companies can upgrade by higher value added. Kaplinsky & Morris (2002) added a fourth case, intersectional upgrading: where firms can upgrade by moving out of a chain into a new one.

Value chain approach

The concept of governance

> […] is central to the global value chain approach […]; the concept is used to refer to the inter-firm relationships and institutional mechanisms through which non-market co-ordination of activities in the chain takes place. This coordination is achieved through the setting and enforcement of product and process parameters to be met by actors in which developing country producers typically operate (HUMPHREY; SCHMITZ, 2001, p. 3).

The authors use the concept of governance "to express that some firms in the chain set and/or enforce the parameters under which others in the chain operate. A chain without governance would be a string of market relations." (HUMPHREY; SCHMITZ, 2001, p. 4).

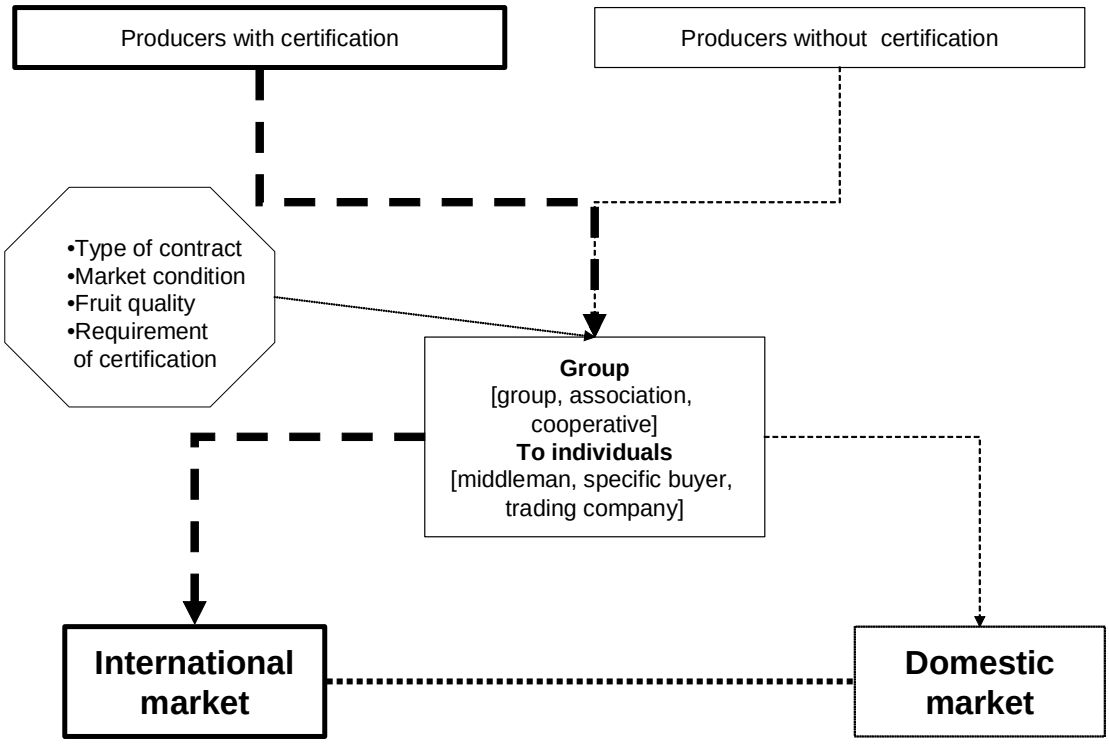

FIGURE 1 - Conceptual framework on the marketing chain for certified and non-certified melon producers.
Source: personal illustration

The determinants of governance presented by Humphrey & Schmitz (2000) are: arm's length market relations [buyer and supplier do not define the product; no long term relationship and the buyers' and producers' risks are low]; networks [the buyer and supplier define the product specifications together; the buyers' risk is minimized because of the suppliers' high level of competence]; quasi-hierarchy [high degree of control from buyers over suppliers; the former define the product] and hierarchy [buyers control the supplier production process]. The authors suggest that quasi-hierarchy is more likely to occur where global value chains frequently link producers in developing countries and retailers in developed countries.

Similarly, Keesing & Lall (1992) argue that producers in developing countries are expected to meet requirements that frequently do not apply to their domestic market. For instance, this creates a gap between the capabilities required for the domestic market and those required for the international one. This gap is widened when the buyers require consistent quality and supply, creating two reasons for quasi-hierarchical governance. The first refers to monitoring and control, which might be required to ensure that products and processes meet the required standards. The second reason - in this case the gap needs to be quickly closed - is that buyers will need to invest in a few selected suppliers and help them to upgrade. Mostly buyers have a higher interest in suppliers according to their relationships.

Gereffi, Humphrey & Sturgeon (2005) propose a more complete typology of value chain governance divided into five types: (i) markets: market linkages can persist over time with repeated transactions - the cost of shifting the partner is low for both; (ii) modular value chains: suppliers make the products according to the customers' specifications, detailed more or less by the former; (iii) relational value chains: complex interactions among buyers and sellers, often creating mutual dependence and a high level of asset specificity; (iv) captive value chains: small suppliers are transactional dependent on larger buyers, characterized by a high degree of monitoring and control by lead firms; and finally (v) hierarchy: characterized by vertical integration.

In the same study, the authors develop a theory of value chain governance based on three factors: (i) the complexity of information and knowledge required to sustain a particular transaction with respect to product

and process specifications, (ii) the extension in which knowledge and information are codified and transmitted efficiently, and (iii) the capabilities of actual and potential suppliers regarding the requirements of the transaction.

4 METHODOLOGY

Multiple-design cases were conducted through personal structured interviews with the 6 owners or managers of the companies, considering constraints like transportation and access to the melon farms. The study seeks to understand the characteristics of these farmers, their perception of certification and their marketing chains. More specifically, the interview was divided into 6 categories composed by open questions on: socio-economic factors, characteristics of the farms, investments necessary to comply with certification, benefits of certification, availability of information and future expectation. Based on this information, it was possible to follow with data descriptive analysis and to design the marketing chain of melons. The interview was recorded with the interviewees' permission. In order to preserve the integrity of the farmers, names were not mentioned.

A list of producers has been provided by the Comitê Executivo de Fitossanidade do Rio Grande do Norte (COEX). There are 26 companies of melons located in the region (Table 1). The categorization into small, medium and large farms is according to the definition of COEX.

Six interviews were carried out with melon growers, considering their access to international markets, either directly or indirectly, and their farm size (Table 2). Direct access means that farmers export to international buyers without a trader. Indirect access to international markets means that farmers sell the fruit production to a trader or a bigger company, being responsible for the exports. Each interview has the character of a case study.

The methodology of case studies is recommended when the researcher aims to increase the understanding of the subject. According to the author, general applicability results can be obtained from the qualitative data. In addition, case studies meet three branches of the qualitative method: describing, understanding, and explaining. Further details on procedures for constructing a case were also mentioned: case studies can have single or multiple-case designs. Single designs are applied in cases where there is no chance for replication, while a multiple design refers to cases with replication. Therefore, generalization of results from both designs is straightforward in the case of theory but not in the case of populations (YIN, 1994).

Further, interviews are considered one of the most important sources of case study information. There are several forms of possible interviews: open-ended, focused and structured or survey types. In open-ended interviews, key respondents are asked to comment on certain events. In focused interviews, the interviewer asks a set of questions in a short period of time. In the third type of structured interviews, the researcher organizes and details the questions in advance.

5 RESULTS AND DISCUSSIONS

1.2 A) Descriptive statistics of the survey

The descriptive statistics based on the survey are presented in the following. It is structured according to: (a) the characteristics of the farms, (b) investments and certification costs, (c) benefits of certification, (d) availability of information, and (e) farmers' expectation about the future. The results from six interviews with melon farmers, labeled as cases A-F, are discussed. While the first three cases A, B and C relate to non-certified farmers, D, E and F refer to certified ones.

Characteristics of the farms

Comparing certified and non-certified growers of melons, it is found that the certified ones have more land allocated to this fruit, a higher productivity and more years of experience in the field. All surveyed producers harvest the Yellow type of melon and some Piel del Sapo, both considered as common varieties. Certified growers plant additionally other varieties classified as nobles[1]. Taking into consideration the soil and climatic conditions, a drip irrigation system is needed for a successful production. Table 3 presents a summary of the main variables of characteristics of the farms and investments.

Since the production of melons has a very intensive capital with investments per ha ranging from R$11,000 to R$ 15,000 per ha, the trading company or importer provides a certain percentage of the value required to finance in advance a portion for the coming harvesting year to the producer. Alternatively, it is found that the producer invests his/ her own resources. This was the case for one non-certified producer; two certified producers indicated that they financed 90% and 70% respectively from their own financial resources. A third possibility refers to take loans from commercial banks, however this is considered the last and not favored option due to the high rates of interests. Only two producers indicated that they took a very small amount of loans from the bank.

[1]Cantaloupe, Orange Flesh, and Galia.

TABLE 1 - Population of the melon producers in Mossoró region

Size of producer	Ha	Number of producers
Small	<100	11
Medium	≥100 up to 499	12
Large	≥500	3
Total		26

Source: own compilation based on a list of producers provided by COEX

TABLE 2 - Case studies selected according to the type of producer

Size of producer	Exports directly	Exports indirectly
Small	1	0
Medium	1	2
Large	2	0
Total	4	2

Source: own compilation based on information released by COEX

1.2.1 Investments and certification costs

The estimated values on new infrastructure and reconstruction indicate that all certified farmers concentrated more on the latter. Comparing the amount invested, two of the certified farmers (case D and E) are quite similar (R$60,000 or R$500 per ha), while the third one (case F) presented a value of R$1,000,000 (R$555 per ha). Non-certified farmers plan to invest huge amounts on their farms: one plans to build a packing house estimated at R$1,000,000; the other two expect to invest around R$300,000 (R$1,500 per ha) and R$80,000 (R$615 per ha).

With relation to the monitoring, certified farmers mentioned that the certifying company which they are working with is a foreign one with a branch in Brazil. Monitoring activities vary between one to three times a year. It is interesting to note that one of the farmers faced three annual audits and paid R$15,000, while another paid an amount of R$11,300 for only one visit. The third certified farmer who indicated that has received 2 visits a year paid only around R$6,000. Thus, there seem to be large differences regarding the monitoring and the costs of certification.

Benefits of certification

Opposed to farmers without certification, producers with certification expected to receive a price premium, but this expectation was not met (Table 4). Instead, the farmers mentioned that certification enabled them to remain in the market of fresh melons. One of the certified farmers (case F) answered that the level of exports and the quality of his/her melons have increased. The two remaining certified producers (Case D and E) expected to increase the planted area. Also, those farmers without certification had a clear plan to increase the planted area and to obtain certification in the future. Besides, all certified farmers agreed that training courses and increased awareness about the certification requirements of the workers play an important role with relation to the benefits.

With respect to environmental benefits, two certified farmers (case D and F) answered that they have an environmental plan, a plant native vegetation and a mapping of fauna and flora species. Having a conservation area has been mentioned by all farmers. Nevertheless, to maintain natural fences, avoid burning, minimize soil degradation and recycle empty packages were mentioned by five farmers (except case B) as advantages of certification.

According to the results, two certified farmers highlighted that the clients ask if the farm is certified with a certain scheme. From the perspective of the three farmers without certification, there is an increasing need for promoting and ensuring quality, safety and no residues in fruit production. This was perceived by the uncertified farmers, although they also indicate that domestic consumers do not seem to be concerned about their health or aware about the meaning of food safety. Thus, certification is expected to provide a control of the whole chain. The main challenge faced by all producers is the Normative N. 58 launched in 2006 by the Brazilian Ministry of Agriculture, Livestock and Food, which monitors agro-toxics residues in fruits produced under the PIF system. More specifically, farmers who aim to export to the EU are obliged to have a PIF certification.

TABLE 3 - Summary of the variables on farms and farmers characteristics.

	Non-certified farmers			Certified farmers		
Description of the variables	Case A	Case B	Case C	Case D	Case E	Case F
If gender is male	yes	yes	yes	yes	yes	yes
Is the manager also the owner?	yes	yes	yes	yes	yes	yes
Years of schooling	16	16	16	16	16	16
Belongs to a group	yes	no	no	yes	no	no
Area only with melons (in ha)	3.4	130	200	120	400	1,800
Production (mean value in tons)	62	2,170	4,600	NA*	12,000	NA*
Productivity (tons per ha)	18,2	16,7	23,0	NA	30,0	NA
Labor intensity (permanent and temporary workers per ha)	NA*	1,7	0,7	0,8	0,8	1,1
Number of simple varieties produced: Yellow, Piel de Sapo	1	1	1	2	2	2
Number of noble varieties produced: Cantaloupe, Orange Flesh, Galia	1	0	0	3	0	3
If the type of irrigation system is drip	yes	yes	yes	yes	yes	yes
Years of experience in producing melons	3	8	11	11	7	18
Financing the melon production						
Receives resources in advance (in %)	0,0%	trader (75%)	trader (75%)	0,0%	clients (NA*)	buyers (30,0%)
Owns resources (in %)	100,0%	0,0%	25,0%	90,0%	NA*	70,0%
Loans obtained from banks (in %)	0%	25%	0,0%	10%	0,0%	0,0%
Current infrastructure						
Packing house	no	yes	yes	yes	yes	yes
Cold storage	no	no	No	yes	yes	yes
Shed	yes	yes	No	no	no	no
Loggings	no	no	yes	no	yes	yes
Deposit of agro toxics and fertilizers	yes	yes	yes	yes	yes	yes
Artesian wells	yes	yes	yes	yes	yes	yes
Machinery, tractors, trucks	yes	yes	yes	yes	yes	yes

Source: own compilation (Note: NA = not applicable; NA* = not available)

TABLE 4 – Farmers perspectives of certification

	Non-certified farmers			Certified farmers		
Variables	Case A	Case B	Case C	Case D	Case E	Case F
If receives price premium	NA	NA	NA	No	No	No
Expect to receive a price premium	yes	no	no	yes	yes	yes
If he had or will have increased exports	no	no	no	yes	no	no
Hired workers or he intends to hire	unknown	2	0	3	0	2
Workers reallocation	unknown	0	Yes	3	yes	198
Advantages of certifying:						
To access/remain the EU market	yes	yes	Yes	yes	yes	yes
Guarantee of food safety, hygiene	NA	yes	Yes	yes	yes	NA
To have control of the whole system	NA	NA	Yes	yes	NA	Yes
To decrease environ. damages	NA	yes	NA	NA	NA	NA
Training courses for workers	NA	NA	NA	yes	yes	yes
Disadvantages of certifying:						
High investment to comply	yes	yes	Yes	yes	yes	yes
Unfair market	NA	yes	NA	yes	NA	yes
Environmental concerns on the farm						
Having environmental plan	No	No	No	yes	no	yes
Having natural fences	yes	yes	NA	NA	NA	yes
Planting native vegetation	NA	yes	NA	Yes	NA	NA
Avoiding burns	yes	yes	NA	NA	yes	NA
Having conservation area	yes	NA	Yes	yes	yes	yes
Recycling packages	yes	NA	Yes	yes	NA	NA
Minimizing soil damages	yes	NA	Yes	NA	yes	NA
Mapping fauna and flora	NA	NA	NA	yes	NA	yes

Source: own compilation; (Note: NA = not applicable; NA* = not available)

1.2.2 Availability of information

The high level of melon exports to different markets leads certified farmers to have different certification schemes according to each buyer. According to the results, GlobalGAP was adopted by three farmers in 2002, 2003 and in 2005 (Table 5). However, PIF was only adopted in recent years. Melon farmers delay the adoption of PIF mainly due to its non-acceptance in the international market. Asking the non-certified farmers which certification program they would accept, they indicated that their choice would be GlobalGAP or PIF. One of the PIF certified farmers also intends to enter the Fair Trade market, BRC and UsGAP[2] certification schemes depending on the type of buyer. Furthermore, farmers revealed where they obtained information regarding standards. Five farmers mentioned that the main source of information was the buyer with whom they were trading. Updates are done basically through the certifying company and via internet.

1.2.3 Future expectation and perspectives

The surveyed melon producers also have positive future expectations. However, two uncertified farmers (cases A and B) and one certified farmer (case F) believe that certification schemes exclude the less capable growers from the market. The increasing level and number of requirements *per se* selects farmers who are able to comply with them. With respect to market changes, two certified farmers (case D and E) intend to continue producing the

[2]Good Agricultural Practices (GAP) protocol aiming to access the US market.

TABLE 5 – Main variables on type of certification adopted and information

	Non-certified farmers			Certified farmers		
Variables	Case A	Case B	Case C	Case D	Case E	Case F
Having GlobalGAP	NA	NA	NA	2002	2005	2003
Having Natural Choice/PIF	NA	NA	NA	2006	NA	2005
Year at aiming	GlobalGAP/PIF 2007	GlobalGAP/PIF 2008	GlobalGAP/PIF unknown	NA	PIF 2006	PIF/FAIR TRADE/ USGAP/BRC: unknown
Getting informed via	SEBRAE internet	trader	trader	client internet, certif. comp.	client	client
Updates on certification	internet, social network	trader	trader	certif. comp.	internet, clients, certif. comp	consulting company, internet

Source: own compilation; (Note: NA = not applicable; NA* = not available)

same type of melon and dealing with the same clients in the future. Case F aims to conquer new markets and diversify the range of clients while case B believes that once he/ or she is being certified he/ she will be able to export directly to international markets. Finally, case A together with other farmers plan to organize themselves and export as a group.

1.2.4 B) Marketing chain analysis of the melon sector

The analysis of this chain is unique when considering the type of marketing channel, final destination, and the contractual arrangements (Table 6).

The discussion starts with an overview of the chain. Figure 2 shows the marketing chain of selected producers from the melon sector. The cases A, B and C relate to non-certified farmers and the cases D, E and F to the certified farmers. The contractual relationship between non-certified farmers and the trading companies is based on formal contracts. Likewise, the majority of the certified ones have a formal contract with the international buyer, but a verbal and consignment type of contract with the domestic buyers.

Marketing channel

Around 80% of certified farmers designate their melons to the international market and 20% to the domestic market. In the domestic market, fruits are mainly sold on wholesale markets in Sao Paulo and in supermarket chains. Two non-certified farmers, for instance, trade all production with wholesalers in different states in Brazil including Sao Paulo. However, one non-certified farmer is not aware about the final destination of his/ her melons. In addition, the findings reveal that the volume which remains in the domestic market is usually comprised of fruits of low quality. More specifically, it derives from overproduction or/and fruits which have not met the standards (quality, size, and brix[3]) indicated in the contract.

Contractual arrangements

Moreover, negotiations between Brazilian fruit farmers and international buyers are based on a type of pre-fixed contract named consignment, which depends on market oscillations (NACHREINER; SANTOS, 2002). Further, Gomes (2004) argues that many small and medium fruits farmers also participate in markets by engaging in informal contractual arrangements with large-scale farmers. They benefit from these relationships by receiving clear standards based on which to produce, input packages and technical

[3]Brix is used to measure the approximate amount of sugar in fruits and vegetables and to determine ideal harvesting times.

TABLE 6 – Summary of data on marketing chain for melon growers

	Non-certified farmers			Certified farmers		
	Case A	Case B	Case C	Case D	Case E	Case F
Destination to IM (in %)	0%	NA*	80,0%	80,0%	70,0%	90,0%
Target international markets	NA	Unknown	Europe	Europe	Europe	Europe
Destination to DM (in %)	00%	NA*	20,0%	20,0%	10,0%	10,0%
Target domestic markets	Wholesale CEASA	NA*	CEAJESP	Supermarkets CEAJESP	NA*	Supermarkets, CEAJESP
Exports individually (in %)	100%	NA	NA	100%	80%	100%
Exports via a trading company (in %)	NA	100%	100%	NA	20%	NA
Type of contract: DM	consignation	NA	NA	consignation	NA	verbal
Type of contract: IM	NA	NA	NA	Written contract	Written contract	Written contract
Type of contract: with a trader comp.	NA	Written contract	Written contract	NA	Written contract	NA

Source: own compilation (Note: NA = not applicable; NA* = not available)

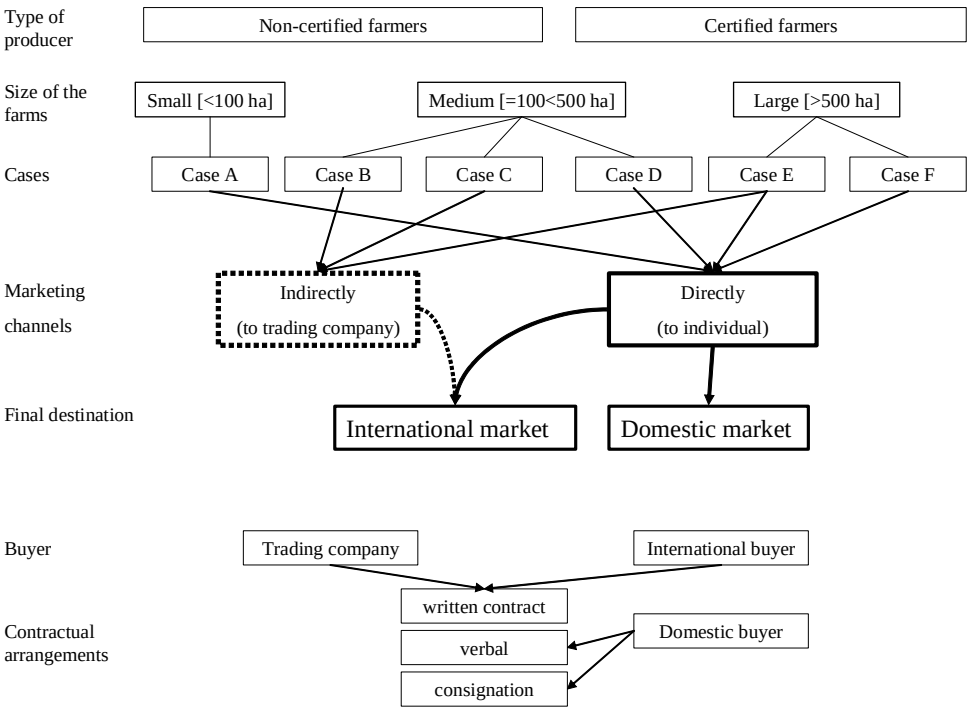

FIGURE 2 - Marketing chain of the melon sector

Source: own compilation

assistance from production through post-harvest. Therefore, contractual ties with large producers enable many small and medium farmers to participate in markets that are more demanding than the local ones. Not only do small and medium farmers benefit from contractual ties, but also large companies which establish a range of contracts.

With the aim of understanding the contractual arrangements between farmers and buyers, all interviewees have been asked to detail their own situation. Contractual arrangements vary according to the form of exports. Even though two certified farmers have a consignment or verbal type of relationship in the domestic market, they are highly dependent on daily price fluctuations. Hence there is no guarantee of payment; farmers have to build a relationship based on trust with the buyer to assure the payment. Therefore, one of them intends to trade with supermarket chains.

Moreover, a further analysis shows that two non-certified farmers deliver their total melon production to the trading company and the latter takes over all the responsibility. Evidently they depend on daily price fluctuations as well, but their payment is assured. On the contrary, the farmers who export either directly or indirectly to international markets mention to have a written contract. The procedure of settling contracts and particular details on the fruit characteristics is similar. Usually contracts are set from March and April for the coming harvesting season which encompasses the period from August to February specifying the quality, price, quantity, brix, and size.

6 CONCLUSIONS

Although some melon farmers are not certified, they have indirect access to international channels through trading companies. Contractual relationships between non-certified farmers and trading companies as well as between certified farmers and international buyers are all based on written contracts. According to the concepts of governance, transactions done directly and indirectly with international buyers are characterized as a captive type of governance where quasi-hierarchical relationships dominate [the buyer defines the product and controls over the suppliers]. The results confirm that the sector is well-coordinated along the chain up to the international buyer. In contrast, selling melons in the domestic market presents a high risk of payment failure. The lack of guarantees through formal contracts with national buyers and the dependence on daily price fluctuations contribute to make unstable the trading conditions in the country.

The reasons motivating farmers to vertically integrate are the reduction in transaction costs resulting from the economies of scale and the need to ensure consistent quality supply through the adoption of certification. Based on the findings from this study, certification is considered a catalyst to increase exports, with farmers benefiting in economic and environmental terms. On the one hand, farmers have an incentive to upgrade and are able to access the international market with certification. Thus, certification is indeed a passport to access international markets. On the other hand, certification excludes less capable growers from the market, meaning that the increasing level of requirements *per se* selects farmers who are able to comply. But also the access to information may restrict farmers from participation in certification programs. Thus, organizations supported by government should assure that information is available and that certification is a transparent and a voluntary process. Adopting two certificates does not necessarily pay off, but in some cases it might open the market to specific countries.

Although the major importer of melons is the EU, the status of pest-free zone of the fruit fly *Anastrepha Grandis* enables Brazilian farmers to also access the US market. Contractual arrangements between international buyers and farmers as well as between trading companies and farmers are well-developed. However, arrangements with domestic buyers still open margins for improvement.

Support to upgrade and increase efficiency along the chains is highly important mainly for non-certified farmers. This would be possible via vertical integration, cooperation, and coordination, including the use of written contracts, among the actors in the chain. Upgrading along the value chains can help moving towards quality standards, increased international access, and better contractual arrangements.

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