

Original Scientific Paper

DOI: 10.7251/AGRENG1603039T

UDC 634.3:631.546(72)

VALUE NETWORK OF THE PERSIAN LIME IN MEXICO

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ABSTRACT

Mexico produces the three most important types of lime: Mexican, Persian, and Italian. Persian lime (*Citrus latifolia*) is the second most important in planted area. Forty-six percent of the production is intended for export. The objective of this research was to analyze the Persian lime value network of the packing and exporting companies. It was conducted at the main Persian lime producing area, located in the central coastal region of the Gulf of Mexico. As an average, the sampled companies were using 55% of their packing capacity. Most of them (83%) work all year long. They have been from 6 to 15 years in operation. They employed a mean of 41 people, thus they are medium-size enterprises. Fourteen actors were complementing their business in production and marketing. The relationship between packers and the small lime producing farmers was very inequitable. Low prices were common for Persian lime producers. The fruits they were packing came mainly from local producers (90%). Their main export destinations were: United States, Europe, Canada, and Japan. Other regions are increasing Persian lime production, threatening the marketing of the farmers of the central coast of the Gulf of Mexico.

Keywords: *Citrus latifolia*, citrus, packing companies.

INTRODUCTION

Mexico has the soils and climate to produce the three most important types of lime: Mexican, Persian, and Italian. Mexican lime (*Citrus aurantifolia*) is the most important in area and production (SIAP, 2014). It is used in fresh, and to extract pectin and essential oils for foreign markets.

Persian lime (*Citrus latifolia*) is the second most important in planted area. It was introduced in 1975, but it grew as an important crop in the 1980s years. Over one million tons are produced every year (SIAP, 2014). The coastal plains of the Gulf of Mexico are the largest producing area. Sixty percent of the Persian lime is harvested at their central part.

Mexico is the main producer and exporter of Persian lime (FAOSTAT, 2014). Forty six percent of the production is intended for export. United States is the main destination. Netherlands and Great Britain are other markets. Over 242.5 million U.S. dollars are earned for these sales (SIAVI, 2014).

It is important to study the links between the different stakeholders of a value network. They should promote the increase in productivity, an efficient administration, the rational use of available resources, and the reduction of middle men through the marketing process, among others (García, 2000). The success of a great number of companies around the world has been a strategy of having a relationship with business or organizations that complement their resources and capabilities to deliver to the market an offer of products or services with higher value than their competitors (Rodriguez and Hernandez, 2003).

The objective of this research was to analyze the Persian lime value network of the packing and exporting companies at the central coastal plains of the Gulf of Mexico to identify its key stakeholders.

MATERIALS AND METHODS

The research was conducted at the Martinez de la Torre municipality, in the State of Veracruz, which is located at the coastal plains in the center of the Gulf of Mexico. Six lemon packing facilities were surveyed in the second semester of 2015. The sample was 15% of the registered companies. They were selected due to their close relationship with the Persian Lime Producing and Exporting Council (Copelp). They were classified according to the size criteria of INEGI (2009), based on the number of permanent workers.

The survey included six parts: a) The general data about the person interviewed, b) The characteristics of the company, c) The suppliers, d) The customers, e) The complementors, and f) The competitors. The owners or general managers of the packing facilities were interviewed. They provided the information requested. It was used to study the relationships and roles of the stakeholders. The Brandenburger and Nalebuff (1997), adapted by Muñoz-Rodríguez (2010) value network approach was used. The stakeholders were identified and diagramed. The governance structure was classified according to Gereffi *et al* (2005).

RESULTS AND DISCUSSION

The lemon packing facilities studied were classified as medium businesses (INEGI, 2009), with 25 to 100 employees. They have been functioning from 6 to 15 years, with 10 years as an average. Some have been working longer, but with different denomination. They use 55% of their capacity. The largest agribusiness belonged to a farmer's association. It exports its production, mainly to Texas (Table 1).

Table 1. Lemon packing facilities studied

N/P	Name	Years in operation	Partners	Employees	
				Fix	Eventual
1	Cítricos M y Cis	6	-	-	25
2	Prolime, S.A de C.V.	8	30	26	-
3	CítricosCadillo, S.A de C.V.	15	5	100	-
4	Exportadora de cítricos y otros productos del estado de Veracruz, S.A de C.V.	14	-	30	-
5	Citrícola Tropical, S. A.	8	2	30	-
6	CorporativoCitrijal, S.A de C.V.	10	6	35	-

*Source: Interviews with owners or general managers, 2015.

Most of the Persian lime packed (90%) came from local production. It is available all year round. The rest is from another lime producing areas in Central and Southwest Mexico, it is only needed during limited periods. In a nearby municipality (Cuicahuac), other packing facilities, for Persian lime exports are established. They are a direct competition to the ones studied.

The relationship between packers and the small lime producing farmers was very inequitable. Low prices were common for Persian lime producers. There were not formal contracts between farmers and packers. The price volatility has limited the interactions. A large proportion of them are small holders who sell their harvest to middle men with the best offer. The middle men acted as purchasing agents for the packers, reducing their transaction costs. They also limit the transfer of information between producers and packers. Thus, their articulation is very low.

Although there has been a differentiation in Persian lime prices by quality, the scarce transfer of information about the requirements of the fruit from packers to farmers has limited the implementation of crop management practices to improve the quality of the fruit to be packed. It is, the producers have a "basic routine capability." An effort is needed to promote them to "basic innovative capabilities" in order to provide them with the ability to make incremental changes in their processes to improve quality. The support of the packers is needed in this process (Zhenming and Guanghai, 2009). This increment in capabilities is beneficial for both.

In the network governance hierarchy, the agribusinesses acted as lead player, and they were at the core of the network (Figures 1 and 2). The governance structure was a "market" type, because the cost to switching to new partners is low for both parties (Gereffiet al., 2005). The other stakeholders identified were the customers (intermediate and final), the suppliers, the complementors, and the competitors according to Brandenburger and Nalebuff (1997) and Muñoz-Rodríguez (2010).

Based on the destination of the production, the Persian Lime Packing facilities were classified in two groups. The first one includes the business selling

domestically, and exporting mainly to the United States. In the second one, the limes were only exported to Canada, United States, Europe, Japan, and Korea. In the first group, two companies were placed, Prolime S.A. de C.V. (Number 2 at the Table 1) and Citricola Tropical S.A. (Number 5 at the Table 1). Their suppliers were mainly producers from the region. They were complemented by farmers from nearby regions of the same state, and only in occasional times; they packed fruit from other states. They exported limes to Texas, United States. Other fruits were sold at the local auction (only for Prolime), and to companies producing juice. For Prolime, the lime packing facilities of the region acted as complementors, but they were competitors for Citricola Tropical. Other complementor for Prolime was the Ministry of Agriculture (Sagarpa). The governmental organism related with food quality, and safety (Senasica) acted as a complementor for both enterprises. It promoted, verified, and certified the systems to reduce the risks of contamination in the production and packing, such as Good Agricultural Practices (GAP), and Good Manufacturing Practices (GMP; FAO, 2003). They are essential for food safety, and a requirement for exporting. The Persian Lime Producing and Exporting Council (Copelp) acted as complementor only for Citricola Tropical. The lime production from other states acted as competitor for Prolime (Figure 1).

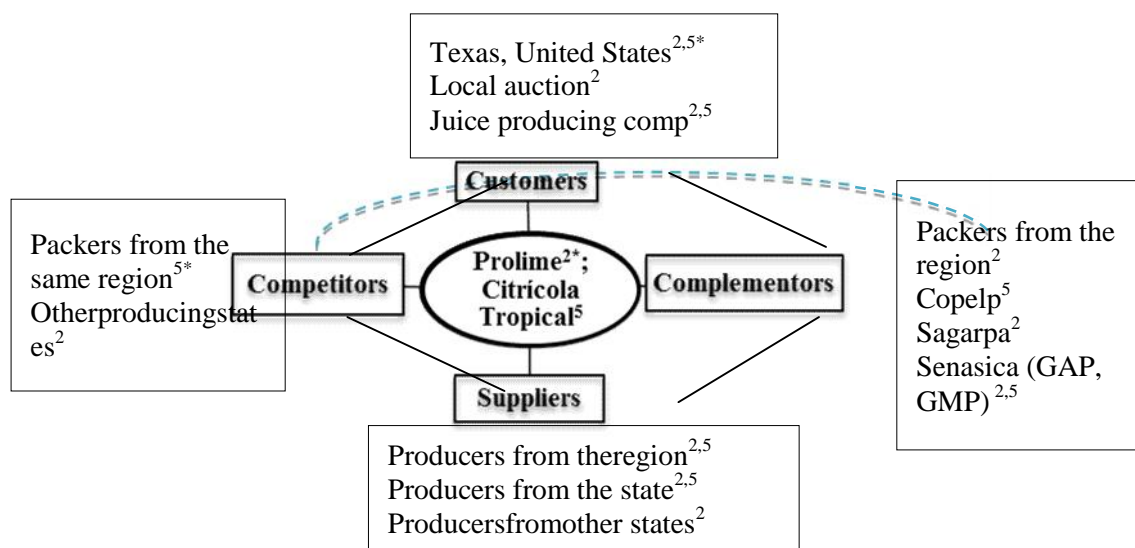


Figure 1. Value network of the Persian lime packing business with domestic and exporting markets.* It refers to the packing facilities listed in Table 1.

*Source: Interviews with owners or general managers and field research, 2015.

The second group included the other four lime packing facilities: Citricos M y C (M y C, number 1 at the Table 1); Citricos Cadillo S.A. de C.V (Cadillo, Number 3 at the Table 1), Exportadora de cítricos y otros productos del estado de Veracruz, S.A de C.V.(Exportadora, number 4 at the Table 1), and Corporativo Citrijal, S.A

de C.V. (Citrijal, number 6 at the Table 1). They only have as customer, markets from other countries. They exported mainly to Texas (for 1, 3, and 4) and California (for 4, and 6) in the United States. Canada, Europe, and Korea were other important destinations for the fruit for Cadillo. Cadillo and Exportadora sold fruit to Japan.

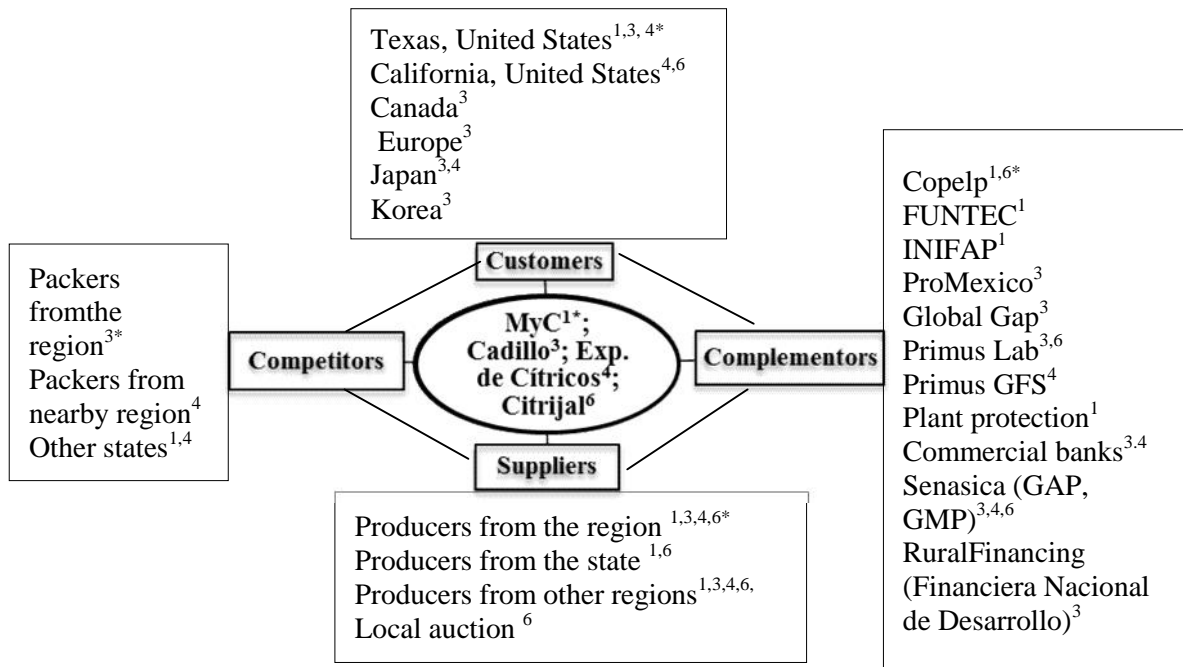


Figure 2. Value network of the Persian lime packing business with only exporting markets* It refers to the Packing facilities listed in Table 1.

*Source: Interviews with owners or general managers and field research, 2015.

All the companies in the second group had, as suppliers, the producers within the region, and those from other states. M y C, and Citrijal used the farmers from other regions within the state as suppliers too. Citrijal also got fruit from the local auction. Cadillo had the packers from the same region as competitors. The packers from the nearby region acted as competitors for Exportadora. The packers from other states were competitors for M y C, and Exportadora.

Cadillo had the greater number of destinations for exports. Therefore, they need several types of certifications. It used ProMexico, Global Gap, Primus Lab, and Senasica for such purpose. The last one was used by Exportadora and Citrijal too. Primus GFS was the certification agent for Exportadora. M y C had FUNTEC, the National Institute for Forestry, Agricultural, and Livestock Research (INIFAP), and the state committee related with Plant Protection (Sanidad Vegetal) as complementors. The Persian Lime Producing and Exporting Council (Copelp) was complementor for M y C and Citrijal.

Financing is important for several needs of companies. Cadillo used the governmental organization for rural financing (Financiera Nacional de Desarrollo). It and Exportadora used commercial banks for credit. The lack of formal financing of the other packers can limit their business.

The value networks need to increase their articulation through better communication channels between parties. The main emphasis should be the relationship packers-suppliers. To offer better conditions to Persian lime producers, a collaboration of the packers is needed to increase the capabilities of their suppliers to basic innovative ones. This upgrade process is very important in order to compete successfully with companies from other regions, and have a sustainable growth and development.

CONCLUSIONS

Most of the Persian lime packed (90%) at the coastal plains in the center of the Gulf of Mexico came from local production. The agribusinesses acted as lead player of the value network. But the relationship between packers and the small lime producing farmers was very inequitable. It limited the articulation between farmers and packers, and the implementation of crop management practices to improve the quality of the fruit to be packed.

Two types of value networks were identified. One included the business selling domestically, and exporting mainly to the United States. In the other, the limes were only exported to Canada, United States, Europe, Japan, and Korea. It included a greater number of complementors to satisfy the requirements of different markets.

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