

Factors Influencing the Price of *Chile Piquin* wild Chili (*Capsicum annuum* L. var. *Glabriusculum*) of North-east Mexico

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Abstract

In order to understand the factors influencing the great demand and also the high cost of piquin pepper (*Capsicum annuum* L. var. *glabriusculum* Heiser & Pickersgill) in north-eastern Mexico, surveys were undertaken in the study area. This was done to determine the factors that make people to pay a high price for piquin pepper. The results showed with 95% confidence, that its desirable flavor compared to that of other chilis like serrano and jalapeno, was the main reason for the consumer to pay more for the piquin pepper in the market. Hence it is considered a premium product for which people pay on average US\$ 6.25±3.75 for one pound of piquin pepper.

1. Introduction

Historically, the forms of extraction of natural resources represents a traditional income of farmer family, and also the culture of a long process of interaction of mankind in their prevailing environmental conditions. The “Chile piquin”, a wild chili (*Capsicum annuum* L. var. *glabriusculum*) represents a natural resource and typical culture of north-east Mexico. This plant species is a component of the piedmont shrubs of this region and is perennial. It grows in the semiarid and tropical region of Mexico.

The chile piquin is an important source of food as condiment, of medicinal value and also a source of income of the inhabitants of the region (Medina Martinez, 2007).

From the social point of view, it is estimated that the 15% of the rural population of north-east Mexico is dedicated to the collection of chile piquin during the months of September to December, and during this period, 60% of the income obtained by the communities is through the collection and sale of the abundant product present during this period. The rest of 40% of the income is obtained from other agricultural activities.

This activity is carried out mostly by women and children in this process (Medina Martinez, 2007; 2010).

The demand of this regional product has great potential in the market on the basis of the appearance and the characteristics of the products well known to the consumers and can be differentiated with comparative advantage with other cultivated introduced from other states of Mexico.

The consumers of the public have special preference for the variety of the regional chile piquin in comparison with serrano and jalapeno pepper, although having the same characteristics (Rodriguez et al., 2004).

The price of the product is influenced by the demand of the market, and the free offers in the case of all types of products. It may be mentioned that the greater offers of the product by the producers tends to reduce the price (Medina Martinez, 2007). At the same time, the greater part of the production and offers of this wild chili, which is available in the natural vegetation of north-east Mexico, depends mainly on the rainfall and the prevailing temperature (not more than 35°C), so that the pollens are not dehydrated and the minimum temperature (not lower



than 15°C) for normal physiological processes.

The prices found from 1998 to 2006, reach to an average price of Mexican \$70.0 (\$1.0 US=13.0 Mexican Pesos) per kg of fresh green chilli, and while in 1990, it was \$60.00 in the regional market in January, 2005 and up to June, 2006. The collection was found to decrease owing to the decrease in rainfall and high temperatures (up to 42°C in the region of present study) (Rodriguez et al., 2004; Medina et al., 2006).

With respect to the commercialization of this product, it is sold commonly in fresh forms. In the first phase it is essential to study in details the factors to generate the products of greater additional value. Besides, some alternatives may be to store in dry forms in packets, preparing sauce, in brine, or in the form of powders, which pretends to give higher prices, and there by, preserve the resource in natural forms (Medina, 2010).

There exists a potential offer-demand of this product depending on its appearance in the regional markets, although this does not determine exactly owing to the distant location of the natural populations of chile piquin, where one has to pay a very high price compared to the price paid for commercial chili, besides, other factors involved such as size, taste, hotness, the quality of the smell and the use of the products (Medina et al., 2006).

It is of great importance to understand the causes of the variations of the prices in response of the market of chile piquin in order to determine the productive activities necessary to satisfy the demands of this product and also to understand the value of this natural resource starting from its economic value up to social and culture, and how it is influenced by ecological and productive technology. Thus, the objective of the present study was to determine the causes in price variation depending on the offers and demands and the high cost of chile piquin in north-east Mexico.

2. Materials and Methods

The present study has been undertaken in north-east Mexico, located specifically in the more representative municipalities where chile piquin is mainly marketed: in Ciudad Victoria (Tamaulipas state) and Linares and Monterrey (both located in Nuevo Leon, north-eastern Mexico). In order to accomplish this study, a survey questionnaire was designed and applied in order to obtain and gather information from interviewers at different locations within each municipality. The surveys have been undertaken with individuals of different ages of both sexes, which is of great importance for obtaining reliable data.

The number of interviews necessary to perform statistical analysis ($p=0.05$) was calculated, for which a sampling test was undertaken utilising the following equation (Briones, 1998; and Rojas 1998):

$$n = (p \cdot q \cdot z^2) / e^2$$

Where:

n =Sample size

$z=1.96$ =level of confidence or probability at 0.95.

p =proportion of positive responses.

q =proportion of negative responses= $1-p$.

e =accuracy level from which the results were obtained.

In the first place interviews were undertaken with the persons who have already bought chile piquin, which is an important factor to fulfil the objective of this study.

3. Results and Discussion

In this study the interviews gave the following results. The question yes was registered, when interviewed persons have already bought chile piquin. A significant positive response was obtained from 82% of undertaken interviews.

In the following phase, the question was asked: How much money you could pay for buying one kilogram of chile piquin? Taking as an example, jalapeno and serrano pepper, was sold at a price in the market at \$6.50 MX Pesos per kg (August 1, 2013).

The results obtained are shown in Figure 1. It is clearly shown that the ability of the persons to pay a price per kilogram of chile piquin varies; for instance less than 50 Mexican pesos was paid by 12% of interviewed persons. Between 51-100 pesos corresponds to 35% of the surveys, this is followed by 15% to cover a price from 101-150, and 12% from 151 to 200 Mexican pesos. This amount is not too high to cover and the price is as expected. However, only 1% of surveys may pay upto an amount between 451-500 pesos. Of course this is a high price to be paid, although, as mentioned, by some interviewed

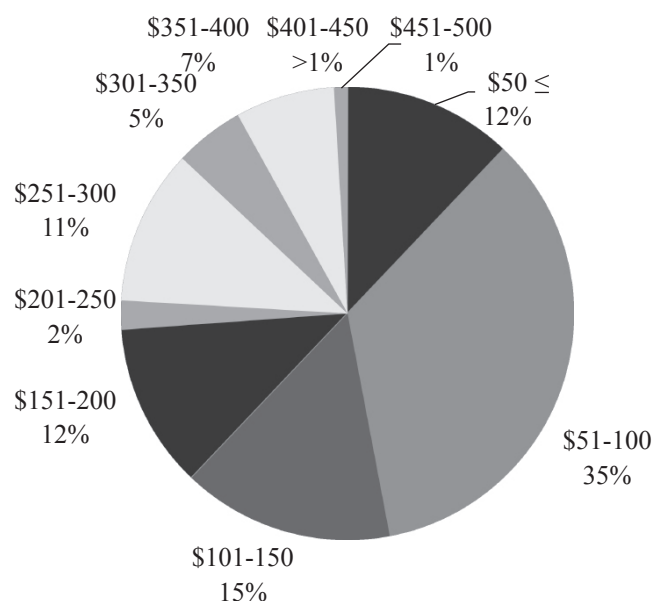


Figure 1: Relationships of disponibility/ability to pay in ranges of different prices (in Mexican Pesos) a kg of chile piquin.

persons could paid up to \$800 per kg of chile piquin.

In this study it is also observed that there are different factors associated to establish the price of chile piquin suggesting that the persons who paid higher price for chile piquin compared to the prices paid to other cultivated chillis (for example, jalapeno and serrano pepper) are related to flavor, pungency, healthy, quality, among others. The results are described in Figure 2. The reasons for which the persons were ready to pay a higher price were mainly for the desirable taste of the fruits (38%) followed by a low price offered by sellers (14%). These results are very important, showing that although there was no sufficient economic resources to pay higher prices but consumers were ready to pay a high price per kilogram of chile piquin, compared to other cultivated chillies, which were sold at lower prices in the market. It was considered that the chile piquin is a regional resource and it was estimated that only 12% of the population interviewed was ready to pay higher price for chile piquin because this product was considered difficult and troublesome jobs for the farmers for harvesting these fruits from the fields in remote or hilly areas. Two of the reasons were similar with 10%; whereas the persons offering a high price for better quality, which they do not offer for other, cultivated chillies. Another reason was in the same manner by the offer and demand for this product due to the scarcity of this wild chili leading to the higher price of the product in the market.

The reasons described before were the main determining factors for the extent of pesos offered per kilogram of chile piquin. The individuals were ready to pay more depending on the offer and demand. The prices ranged between \$140 to \$360 (Figure 3). Among the reasons which influence the range of prices was when this product is being utilized for sale by the harvesters/collectors, which sell one kilogram of this product from \$220 to \$320. The previous factor mentioned is due to the fact that the persons can buy easily in packets of 50 g. It seems that the price paid for this was low and unknowing that various purchases were done under normal price conditions of one kilogram of chile piquin for a price fluctuating from \$400 to \$1000 Mexican pesos. However, there are reasons for which the persons paid less than \$100 per kilogram of chile piquin; mainly those were not taken into consideration the sufficient economic resources for payment of high costs for this product, although they paid up to 10 times higher compared to that of other chillies, already mentioned. Other persons consider that it is a natural resource of the region, for which they pay a lower price and not accepting to pay a higher value (between \$50 and \$100 pesos).

The other variable which was also considered in this study was the gender of the interviewed person where the majority of the prices to be paid were found to be in the same range although there exists a little difference of \$21.80 for the average value

of payment (Figure 4), which shows that females tend to pay a higher amount. The mean price per kilogram of chile piquin to be paid by female and male was \$189.0 and \$167.20 Mexican pesos, respectively.

After compiling data it was found that the average price per kilogram of chile piquin was \$176.75 with a standard deviation

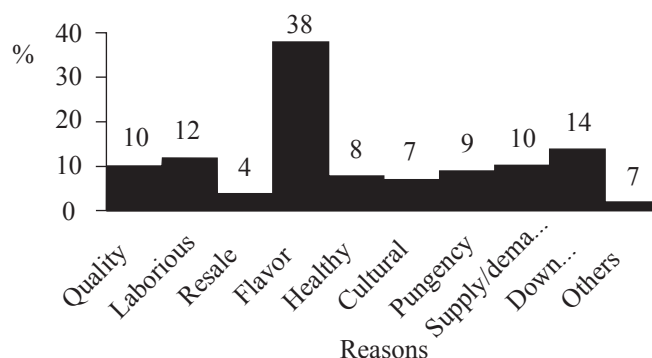


Figure 2: Reasons for which the inhabitants in northeast of Mexico pay per kilogram of chile piquin compared to other commercial chillies in the market.

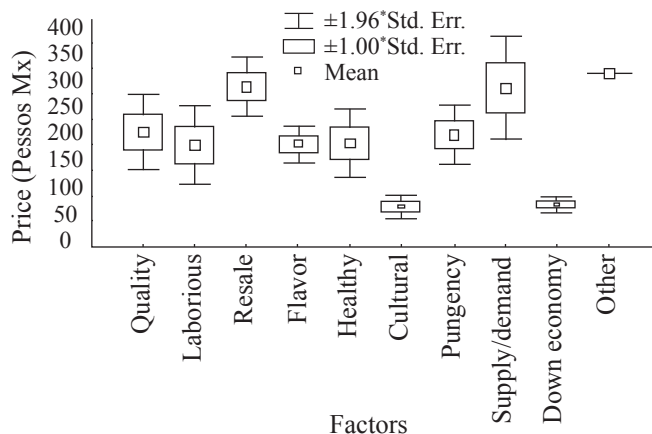


Figure 3: Relationship of factors and price of one kilogram of chile piquin which are defined by consumers.

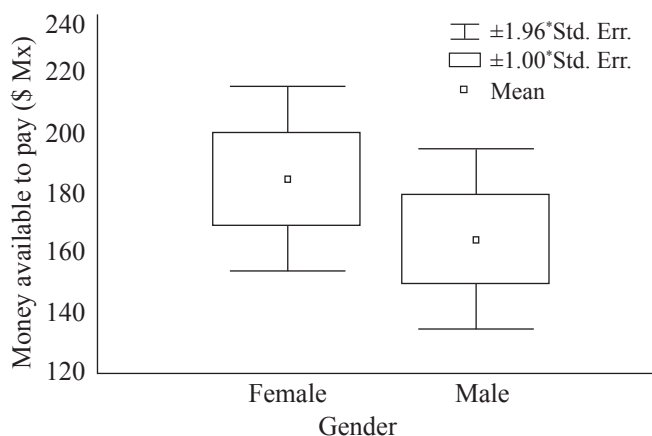


Figure 4: Variation in the amount of Mexican pesos to be paid per one kilogram of chile piquin as a function of gender.

of \$107.88. The minimum and maximum price registered was \$50 and \$500 Mexican pesos respectively.

4. Conclusion

The persons in the north-east of Mexico offer a high price for chile piquin compared to other commercial chili due to the fact that it is considered a product of better taste, quality, and understanding the hard work required for its production, besides it is considered as a regional resource identified. On average, consumers pay around \$176.75 per kilogram of chile piquin.

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