

Thalassorama

Marketing Extension and Outreach in Sinaloa, Mexico: A Preliminary Analysis of Preferences for Oysters

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Introduction

Shrimp mariculture, the leading form of aquaculture for the Pacific coast of Mexico is facing catastrophic losses due to disease and falling prices. Previous work conducted by a multi-institutional, international team since 1997 has built a solid foundation for diversification of aquaculture in Pacific Mexico emphasizing the use of native species, particularly those low on the food chain and with low culture technology requirements. Among the leading candidates are bivalves, which are currently cultured and fished extensively along the Gulf of California Coast, with much of the production attributed to wild capture fisheries. Great potential exists, however, to expand current aquaculture production through strengthening existing operations, either by developing new markets or increasing sales in current ones according to consumer preferences.

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From the Mexican government's perspective, specifically from CONAPESCA (National Aquaculture and Fishery Commission), economic diversification for aquaculture is stated as a prioritized policy goal. Today, the most available and feasible biotechnologies for species diversification in the country are tilapia and oyster farming (Martínez-Cordero 2007). In the last three years the Program *Alianza para el Campo* (Alliance for the countryside), which is the main federal program operated at the national level that promotes and supports the development of aquaculture projects, has financed tilapia and oyster projects at different scales of operation in many states. Social groups, like cooperatives, are usually selected to receive support for oyster farming, and in Sinaloa, coastal communities have benefited from this program. This includes fishermen entering aquaculture activities for the first time, which the Mexican government calls system conversion. Women's groups are also being involved in oyster culture efforts by the Autonomous University of Sinaloa.

While monetary assistance has been given to help in the establishment of new aquaculture enterprises, little work has been done to assess the social and economic impacts of increased production. Moreover, research on assessing market demand for said species and assisting farmers in market identification and market penetration strategies is lacking.

The objective of this work is to assist oyster aquaculture cooperatives in the region of Bahia Santa Maria (BSM), Mexico, to identify opportunities for the marketing of oysters within the state of Sinaloa.

Background and Methodological Approach

BSM is located on the southeastern coast of the Gulf of California, in the State of Sinaloa, and is part of the municipalities of Angostura and Navolato. For the past decade or so, shrimp farms in this area have suffered heavy losses due to outbreaks of viral diseases. These losses, coupled with the usual uncertain boom and bust cycles of wild capture fisheries, particularly the shrimp fishery, have contributed to unstable economic and social conditions in the area. In collaboration with the University of Sinaloa (UAS), and with support from the government of Mexico, the Coastal Resource Center, University of Rhode Island, and the Pacific Aquaculture and Coastal Resource Center, University of Hawaii, Hilo, have been providing economic and ecological sustainable development assistance to communities and resource management efforts in BSM since 2000.

During development planning, bivalves (clams, oysters, pen shells, etc.) were identified as the culture candidates with the most potential to offer an alternative to shrimp farming for coastal communities in Mexico given the extensive areas of wetlands and tidal flats (Haws 2005). Shellfish culture also offers opportunities to increase the participation of women and other marginalized groups due to their ease of culture and low input requirements. A key problem associated with the development of viable shellfish aquaculture enterprises is that there is little information available regarding marketing channels, opportunities, prices, and consumer preferences not only for bivalves around the BSM area but also for Mexico in general.

In 2007, an aquaculture economist from the Research Center for Food and Development, Mexico (CIAD), and a seafood market specialist from the University of Alaska, Fairbanks, were brought in to conduct extension and outreach in the form of marketing workshops and one-on-one business and marketing consultations with stakeholders, in this case the oyster growing cooperatives in the Mexican state of Sinaloa. Small-scale market research using personal interviews was conducted in the city of Guamuchil, close to BSM for two purposes: *i*) to demonstrate market research techniques and methods that stakeholders in Sinaloa and elsewhere can use for their operation; and *ii*) provide results of the market research to oyster growing cooperatives in BSM for decision-making purposes.

To carry out the extension project, the authors first met with stakeholders and members of the oyster growing cooperatives to assess their needs, production and marketing plans, experiences and knowledge in marketing, and actual production and marketing capabilities. Based on the information gained from the meeting, the extension agents recommended marketing and market research efforts should initially be focused on local markets, since the volume of production is small, and issues associated with transporting large amounts of products to distant markets has yet to be overcome. Further, the extension team also recommended that since there is already fairly sizable oyster production on the West Coast of Mexico, small-scale niche markets should first be explored to gain marketing experience and allow growers the opportunity to adjust production before expansion.

With approval from stakeholders, the extension team decided to focus the market research effort in the city of Guamuchil, a potential market that is considered easily accessible by the producer groups. Based on focused interviews, a survey was prepared to elicit the preference structure of owners/managers of restaurants that serve oysters (Engle and Quagraine 2006; Harrington 2005). Fifteen small-scale, individually owned restaurants were contacted, and all agreed to be interviewed. Although randomly selected, they correspond to almost the 100% of the seafood restaurants in the locality, covering all the public forms of bivalve points of consumption. The respondents were asked a variety of structured, open-ended questions concerning the preferred physical attributes of oysters, importance of water quality and production methods, preferred price and its sensitivity, and customer's preferences for oysters from the respondent's view. The following is a summary of the results of this study.

Summary of Results

Restaurant owners/managers, who are direct sellers to consumers and potential buyers of oysters from the oyster aquaculture cooperatives in BSM, were asked about their opinions and beliefs regarding a number of attributes for oyster products, ranging from supply characteristics to the importance of oyster size. Respondents were first asked to rate 10 product attributes to determine each attribute's significance with regard to the restaurant owner/manager's perception of product quality. The ratings were scaled from 1 to 10, where 10 reflects the situation where the attribute is highly desirable or important to the restaurant's operation, and 1 reflects the situation where the attribute is not desirable or important.

Results show that the three most important attributes of BSM cooperatives oysters are: consistency in supply, uniformity in size, and shelf life, all with a score of 10 (table 1). Product origin (Score = 8.18) and the shape of oysters (Score = 6.82) were of less importance to respondents' preference structure. The remaining five attributes obtained a rating of between 9 and 10 (table 1).

The respondents were asked to choose the most desired level of each of the seven attributes, supply schedule, product form, size, shelf life, species, harvest location, and production method that would make up the "highest quality oyster" (table 2). For example, each respondent was asked to choose from one of three areas, Northern Sinaloa, Southern Sinaloa, and Other Region for the attribute "Product Origin." The same exercise was carried out for the other six attributes. Results show that all respondents prefer live shell-on oyster (100%) as opposed to shucked and frozen, with the majority of them preferring "de placer" oyster (*Crassostrea corteziensis*, *C. virginica*) over Japanese oyster (*C. gigas*) (80%), year-round supply (73%) as opposed to intermittent supply, average shelf life of 3 days (67%) instead of less than 1 day and 10 days, and large size (60%) as opposed to medium and small sizes. Slightly over half of the respondents preferred oysters wild caught (53%) instead of cultured and from the Northern Sinaloa state region (53%).

Questions related to the relationship with the supplier were also solicited. Respondents were asked whether they have been purchasing oysters from their principle and secondary suppliers for more than three years, one to three years, six to twelve months, or less than six months, respectively. Results show that 46% of the respondents have been purchasing oysters from their main supplier for more than three years, and 27% of the respondents have been with their main supplier for one to three years (table 3). With respect to secondary supplier, only 18% of the respondents stated that they have been with them more than three years. Twenty-seven percent responded that they have been with their secondary supplier for one to three years, 37% responded with six to twelve months, and 18% with less than six months (table 3).

Respondents also provided their estimation of their customers' (restaurant patrons that consumes oysters) preferences for bivalves from BSM and Mexico in general. Table 4 shows that while the respondents' opinions are evenly split whether their customers prefer oysters from local regions or not, they all agree or strongly agree that their customers prefer live, shell-on oysters, and deemed that price of oyster products sold is important to their preference structure.

Table 1
Importance of Oyster Attributes

Attributes	Average Score
Consistency in Supply	10.00
Uniformity in Size	10.00
Shelf Life	10.00
Water Quality at Product Origin	9.73
Price	9.64
Mode of Transportation	9.45
Meat Fill	9.36
Size	9.00
Product Origin	8.18
Shape	6.82

Note: n=15.

Discussion

This work supports a greater effort in providing ecologically sustainable economic diversification for coastal Mexico. Specifically, this market research exercise provided oyster producer cooperative start-ups with information to optimise their production system towards their potential customers in their region. Moreover, in an extension context, information regarding how to conduct market research and its application to one's business is also transferred to the stakeholders by way of an extension publication, a marketing workshop, and individual stakeholder consultations.

Although this work is preliminary in nature, some general conclusions can be made that can be applied to producers in BSM. Results show that potential buyers of BSM oysters prefer large-sized, live, shell-on with at least a three-day shelf life that can be delivered consistently year round. Buyers also consider water quality at product origin and mode of transportation, which are proxies of a safe product important to their prefer-

ence structure. This result provides economic justification for ongoing efforts to establish shellfish sanitation plans for the growing grounds. Moreover, respondents from this study also seem to value long-term relationships, with close to half being customers with their main supplier for more than three years.

Table 2
Attributes Contributing to Perception of Oyster Quality

Attributes	Average Score
Supply Schedule	
Year-round	73.33
Intermittent	26.67
Product Form	
Live, shell-on	100.00
Frozen	0.00
Shucked	0.00
Harvest Location	
Northern Sinaloa	53.33
Southern Sinaloa	13.33
Other region	33.33
Species	
Japanese oyster (<i>C. gigas</i>)	80.00
“De placer” oyster (<i>C. corteziensis</i> , <i>C. virginica</i>)	20.00
Average Shelf Life	
Less than 1 day	26.67
3 days	66.66
10 days	6.67
Size	
Large size	60.00
Medium size	26.67
Small size	13.33
Production Method	
Wild caught	53.33
Cultured	46.67

Note: n=15.

Table 3
Relationship with Oyster Suppliers

Duration	Main Supplier	Secondary Supplier
More than 3 Years	46%	18%
1 to 3 Years	27%	27%
6 to 12 Months	18%	37%
Less than 6 Months	9%	18%

Note: n=15.

Table 4
Consumer Preferences for Oysters

Attributes	Strongly Agree	Agree	Disagree	Strongly Disagree
Prefer Local	37%	9%	18%	36%
Price is Important	91%	9%	0%	0%
Prefer Live, Shell-on	100%	0%	0%	0%
Harvesting Date is Important	73%	9%	18%	0%

Note: n=15.

Perhaps BSM producers may consider tailoring their production towards the preferred physical attributes and adopting best sanitation management practices, such as handling and storage procedures to ensure a minimum three-day shelf life. Producers may also consider working with a third party to develop a water quality certification program. They may also start cultivating long-term relationships with potential buyers before harvest.

With regard to price, although this variable is not as important as other attributes of oyster quality (table 1), the average relevance score for price is 9.64, which indicates that price paid still has a very important role in the respondent's purchase decision-making process. This is natural, since price paid is a cost to a profit-motivated entity. This may also stem from respondent's perception that their customers (oyster consumers) are sensitive to price; thus they cannot pass on higher cost to their customers.

Finally, an anecdotal open-ended question was posted, "Are you willing to pay a little more for an oyster of better quality, larger size, or more consistent availability throughout the year? If so, how much?" Interestingly, all 15 respondents responded affirmatively, with eight stating that they would pay 0.5 pesos more, five stated 1 peso more, and one respondent each for 2 and 3 pesos more per oyster, respectively. This shows that the small sample of respondents is not entirely satisfied with their current supply conditions. BSM producers have the potential to penetrate existing markets by producing oysters with attributes specified by respondents. Further, they have the potential to realize greater profits if potential buyers are willing to pay higher prices.

Given this research was conducted in only one city and with a small sample size (15), will these results hold with the entire state of Sinaloa? If not, are there regional differences in preferences for oysters, whether it is product form, price, perception of quality, etc.? Further, only one market segment, small-scale individually owned restaurants, are surveyed in this study. What about the preference structure for wholesalers, large-scale food service buyers, and retail operations? Many questions and many hypotheses remain to be tested to understand the oyster market in Mexico. This research is only the first step.

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