

Production and marketability of salt in varying weather conditions in San Jose, Occidental Mindoro

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Abstract

Occidental Mindoro is one of the Philippines' largest salt producers and the province was surrounded by salt water, which is one of the primary elements in the production of salt. The purpose of this study was to determine salt production and marketability in San Jose, Occidental Mindoro, under various weather conditions. Data were collected from 30 salt farmers and owners using a questionnaire guide. It illustrates the producer's profile, and the majority of them used traditional methods like solar evaporation with 36-50 salt beds made of Vigan clay. They manufacture salt for human use, food processing, and industrial use. Salt is utilized in food processing during the dry season, such as drying fish, fish paste (bagoong), fish sauce (patis), canned items or preserved meats, ice or ice cream, and so on. The investigation also discovered that the majority of salt farmers didn't have a warehouse to keep their salt and simply packed it in sacks. Changes in the climate also have an effect on market dynamics, influencing changes in consumer demand, supply, pricing, and distribution networks. The researcher also suggests that an agency of the government be established to support salt farmers and processors by providing training on how to harvest salt in an efficient and effective manner. The agency acquires harvested salt at a reasonable price and can offer a warehouse or storage facility for the salt to ensure that the price does not rise due to limited output during the rainy season.

Keywords: salt production, marketability, traditional methods, Vigan clay, Occidental Mindoro

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1. Introduction

Sodium chloride (NaCl) is a mineral component important for human and animal health and business. To distinguish it from a family of chemical compounds known as salts, the mineral form halite, or rock salt, is sometimes termed common salt (Hills et. al., 2023). Salt is a sodium chloride-based chemical molecule (electrolyte). It is the primary source of salt in our diet and is widely used to preserve and flavor foods. A modest quantity of sodium is necessary for optimal health because it aids in the maintenance of the proper volume of circulating blood and tissue fluids in the body (Better Health Channel). With 64 million metric tons of salt produced as of 2022, China is the world leader in salt production. In 2022, the United States had 42 million metric tons of salt. The most significant single application for salt is as a raw material in manufacturing industrial chemicals. Garside (Garside, 2023). According to the report, the average adult salt intake equivalent in China was 10.9 grams per day, while adults in the United States consumed 9 grams in 2019 (Wunsch, 2020).

The Philippines has 7,100 islands where the sun shines almost every day. We have 36,000 kilometers of shoreline, the fifth longest in the world, and we need 6,000 kilometers, or one-sixth, to be self-sufficient in salt. In the 1990s, salt manufacturing in the Philippines was successful, providing 85 percent of the country's salt requirements with just 15 percent imported. However, salt farms around Manila, such as those in Bulacan, Cavite, and Las Pinas, have ceased production owing to land development giving greater profits. Due to climatic change patterns and inefficient production practices, Pangasinan and Occidental Mindoro continued at a significantly decreased rate (Tarriela, 2022). Occidental Mindoro is surrounded by salt water, making it one of the country's largest salt-producing provinces. At its peak in 1990, it produced and supplied approximately 60,000 metric tons (MT) of 338,000 MT or 18% of the country's annual salt need. While Occidental Mindoro continues providing to surrounding provinces in Southern Luzon, Visayas, and Mindanao and now only contributes 12% of the national salt needs, or almost 75,000 MT out of 590,000 MT (DOST, 2017). During the salt production phase, specific times of product monitoring are carried out. This research gathered information from salt producers and salt owners in the province regarding the production and marketability of salt under various weather conditions. The Philippines was formerly self-sufficient in salt. It is now an importer of salt. On an annual basis, around 550,000 metric tons of imported salt, accounting for approximately 93 percent of the country's salt requirements. It is paradoxical given that the Philippines has 36,000 kilometers of shoreline—the world's fifth longest— significant that might be for salt production (Department of Agriculture, 2022).

Research Objectives - The purpose of this study was to determine the productivity and marketability of salt in varying weather conditions in San Jose, Occidental Mindoro so that procedures to help revitalize the production of salt industry in different weather conditions. Specifically, this required to: Determine the salt farmers' profile in terms of age, sex, marital status, and household size. Determine the salt production characteristics as follows: land area used in salt production; the number of salt beds; average salt yield per salt bed; method of producing salt and storage or warehouse and practices. Determine the production and marketability of salt in varying weather conditions.

Significance of the Study - The researcher anticipates that the findings of this study will have a significant impact on the following: customers will have an adequate supply of local salt on the market. They may obtain high-quality salt. Concerned government agencies may find the study's findings useful such as the Department of Agriculture (DA), the Department of Science and Technology (DOST), etc. This could help them in establishing initiatives to benefit and sustain the salt industry in the Philippines, particularly in Occidental Mindoro. This research will highlight the help required by salt producers and their salt farms that can be provided especially during the dry season when the production and marketability of salt has high demand and also to have sufficient

supply during rainy seasons. Finally, this work might be used as a resource for future academics who desire to undertake a similar project.

Scope and Delimitation of the Study - This study aimed to determine salt production and marketability in varying weather conditions in San Jose, Occidental Mindoro. The scope of this study was delimited to top salt producers of San Jose, Occidental Mindoro for the year 2023. This study was delimited to salt farmers and salt owners in the said municipalities. The possible limitation encountered by this study will be the rejection and unavailability of prospective respondents to participate in the study.

2. Methodology

Research Design - Descriptive research was applied in this study using the quantitative survey questionnaire approach in order to determine salt production and marketability in varying weather conditions in San Jose, Occidental Mindoro.

Sampling Procedure and Respondents of the Study - The researcher used a non-random sampling (convenience sampling) technique to identify the respondent because of the short period of time spent conducting the study. The researcher is taking a survey of the salt farmers and salt owners in Barrio Site, Labangan, and Bubog, who easily access the researcher's location and their willingness to participate in the study. A total of 30 salt farm owners and farmers agreed to answer survey questionnaires, whose families are chiefly involved in salt production.

In this study, there are 12 or 40% female, while male respondents are 18 or 60%. Based on the data gathered, salt harvesting is an extremely labor-intensive process in salt production. Most of their family members help in salt harvesting, and males are assigned to haul the harvest from the crystallizing ponds. This result was in line with that of Cheng et. al. (2022), who discovered that among salt farming activities, the activities that contributed most to the physical discomfort felt by salt workers were harvesting, carrying, and putting the harvested salt in salt baskets. In addition, 36.7% of the respondents aged 29-39 with a frequency of 11 answered the questionnaire, 7 or 23.3% from the age of 18-28 and 40-50, and 5 or 16.7% from the age of 51-61. Therefore, most of the respondents came from 29-39 of age and answered our questionnaire. This is consistent with the findings of Muyot & Asuncion's (2022) group discussions show that younger generations of salt farmers or their young relatives are hesitant to enter the salt manufacturing industry.

For the length of service of the respondent salt farmers/salt owners who answered our questionnaire is, 0-9 years- 50%, which is the majority of the respondent is newbies in the operation. While 33.3% in 10-19 years, 10% in 20-29 years, and 6.7% in 30-39 years in operations. This is consistent with the findings of Cheng et al. (2022) that the more time salt farmers spend working in the industry and the older they get, the more pain they will experience across their bodies, especially in the upper back, lower back, and wrists. Lastly, for the civil status of this study, 17 or 56.7% of the respondents who answered our questionnaire are married, 12 or 40% are single, and 1 or 3.3% are separated. The majority of respondents are single with siblings but they are not officially married due to poverty. This is in line with the findings of Muyot & Asuncion (2022) and Lagare (2022) that the majority of respondents, make salt as both a way of life and a significant source of income. Some have brought their families to the salt farms, especially during the dry or harvest season.

Research Instrument - The researcher used an adapted questionnaire based on the study conducted by Saulong et. al. (2023), The salt industry in Occidental Mindoro: Improving the Production (2023) and Muyot & Asuncion (2022), Constraints and Challenges of salt farming in Occidental Mindoro (2022) the main research instrument used in this study. A survey questionnaire was used as the research tool for the quantitative phase. The first section created the respondents' profiles by identifying their age, gender, civil status, and number of years in business. The second portion of the questionnaire helped assess the present salt production, storage, packaging, marketing, and distribution. In the last section, respondents were asked to determine the production and marketability of various weather conditions in the Occidental Mindoro municipality.

Data Collection Technique - The researcher used primary data by distributing survey questionnaires and visiting salt producers' homes or farms. When permitted to visit the salt fields, the researcher took advantage of the occasion and interviewed the salt workers. On the same day, all verified questionnaires with salt manufacturers' responses were recovered.

Statistical Treatment of the Data - The weighted mean and percentage were applied to describe the production and marketability of salt in varying weather conditions in San Jose, Occidental Mindoro. The results of the computations for the descriptive problems were generated by the statistical software, SPSS version 23.

3. Results and Discussions

Table 1

Number of salt beds used in production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21-35 salt beds	4	13.3	13.3	13.3
	36-50 salt beds	21	70.0	70.0	83.3
	51-65 salt beds	4	13.3	13.3	96.7
	66 or more salt beds	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

Table 1 shows the number of salt beds used in production, most of the respondents used 36–50 salt beds with a frequency of 21 or 70%, 13.3% used 21–35 salt beds, and 51–65 salt beds with a frequency of 4, and 1 of the respondents used 66 or more salt beds with a percentage of 3.3 in salt production in San Jose, Occidental Mindoro. This is supported by the findings of Saulong et. al. (2023) that most of the salt farmers used Vigan clay salt beds which is the old method of producing salts.

Table 2

Prices of salt per kilogram

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	P1.00-P3.00	6	20.0	20.0	20.0
	P3.01-P5.00	21	70.0	70.0	90.0
	P5.01-P7.00	3	10.0	10.0	100.0
	Total	30	100.0	100.0	

The above table shows that 21 respondents answered P3.01–P5.00 for the price per kilogram of salt, with a percentage of 70%, while 20% answered P1.00–P3.00 and 10% answered P5.01–P7.00 with a frequency of three respondents. According to them, this year's buyers paid P5.00 for their salt output, compared to P3.00 the previous year which is similar to the findings of Saulong et. al. (2023). Only 26 salt farmers, or 86.7%, have storage or a warehouse to keep their salts, and only 4 respondents, or 13.3%, have storage or a warehouse. They all use sacks to store and sell their salt output.

Table 3

Challenges affecting the salt production

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weather conditions/ climate change	25	83.3	83.3	83.3
	Lack of support from the government	4	13.3	13.3	96.7
	Technology	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

Table 3 shows the three challenges affecting salt production, 30 respondents (100%) stated that the most significant challenges to salt production are the current weather conditions and climate change, whereas 4 salt farmers (13.3%) also stated a lack of government support, and 1 of the 30 also encircled the technology. This is

congruent with the findings of the Muyot and Asuncion (2022) and Saulong et. al. (2023) studies, which found that the biggest obstacles for salt producers and farmers are climate change, a lack of government assistance, and the use of technology in salt production. Because solar salt evaporation is largely reliant on temperature, humidity, sun radiation, and other climatological parameters, the answers showed that unpredictable weather patterns brought on by climate change caused a significant blow to the salt sector in Occidental Mindoro. Intermittent rain has also had a significant impact on the salt-producing season. Aside from rivalry, the most significant challenge that salt farmers confront in salt production is climate change. Summer rains and a protracted rainy season have a negative impact on productivity. Long dry spells and lengthy wet seasons have a significant impact on some respondents' seasonal salt output (Muyot & Asuncion, 2022).

In the face of weather monitoring issues, salt producers and farmers must take steps such as listening to the radio or watching television for weather updates. While addressing the obstacles brought on by the government's lack of support, the researcher proposes that salt producers and farmers push the government to halt salt imports, mangrove destruction, and the conversion of salt farms into residential and commercial property. Planting additional mangrove trees can help increase salt production and act as a natural filter (Lagare, 2022 & Saulong et al., 2023). According to the researcher's respondents, a lack of government support has an effect on their salt production because the majority of them labor in the salt bed of the salt farm's owner. They also have an agreement in place for the salt they collect, which states that the owner will receive 70% of their crop and only 30% will be sold to them. This is consistent with the result of the study of the Nutrition Center of the Philippines (2010). As a result, respondents want the government to intervene in salt prices. Their goal is to standardize salt pricing in order to avoid losses. Suppliers want to limit salt importation since it competes with the local salt market. Respondents believe the government should take action to express its support for the local salt sector (Nutrition Center of the Philippines, 2010).

4. Conclusions

Based on the study's findings, the salt farm owners/farmers in Occidental Mindoro are male, married, and belong to big families, and the majority of family members work in salt harvesting to assist their parents in salt production. The majority of them used traditional methods such as solar evaporation with 36-50 salt beds made of Vigan clay. They manufacture salt for human consumption, food processing, and industrial purposes. During the dry season, salt is in great demand since most Filipinos utilize salt in food processing such as drying fish, fish paste ("bagoong"), fish sauce ("patis"), canned goods or preserved meats, ice or ice cream, and so on. The inconsistent rain pattern and temperature change are two of the climate change reasons that impact salt production.

Recommendations - All of us should be conscious of changes in our environment, particularly climate change, which affects the manufacturing of many different products and may also have an impact on Mother Earth. The government should limit salt imports since they impact the price of salt for small farmers and salt farm employees. Appointing a salt farmer assistance agency can assist them in providing training to educate them on how to collect salt in an efficient and effective manner. The agency buys harvested salt at a reasonable price and can offer a warehouse or storage for the salt to guarantee that the price of it does not increase during the rainy season due to limited output, like the National Food Authority does with palay producers. The government should provide them with funds to start small enterprises, especially during the wet season, because they claim that they do not have salt harvest during that period, save for farm owners with their own storage or warehouses.

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