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CONSUMPTION PREFERENCE OF CASSAVA (*MANIHOT ESCULENTA CRANTZ*) PRODUCTS AMONG RURAL HOUSEHOLD IN MUNICIPALITY OF CORCUERA, ROMBLON, PHILIPPINES

K. N. Falculan

Faculty of College of Agriculture, Romblon State University, Odiongan, Romblon

Corresponding author:*K. N. Falculan
Email: ken.falculan@lspu.edu.ph

ABSTRACT

Cassava has become more practical in recent years because of its resistance to drought, ease of cultivation with little effort required, and adaptability to a wide range of soil. With these numerous positive attributes, the cassava crop has several undesirable characteristics. The main consequence of this, it might result in poor cassava quality and contributes to a small market share, which can negatively impact the cassava sector resulting in finding out the degree of cassava quality attributes as parameters for consumer preference among various levels of the food chain. This study needs to evaluate the consumption preference of *Manihot esculenta Crantz* products among rural households. This study determined that the general preference of the respondents in cassava. Most respondents care less about the shape of the cassava, whether it is round, oval, or truncated, as well as the flesh color, whether white flesh, yellow flesh, and cream orange flesh. Respondents were less concerned about skin color as much. The majority preferred the variety that have a nutty and mid-earthly taste, a green and earthy aroma, and a mealy texture.

KEYWORDS

alternative source, beneficial inquiry, cassava, consumption, Corcuera, preferences, income



INTRODUCTION

Cassava is a crop that typically generates the most energy per hectare of any other kind of crop since it is a simple and inexpensive source of carbohydrates (starch) and a source of energy. It is likely that the significance of the cassava crop in ensuring food security will expand in the years to come, given the effects of climate change and the growing population throughout the globe (Long, S. P., 2017). Harvested cassava was 2.61 million metric tons in 2020. In 2017, the cassava output was the highest on record. Philippine Statistic Authority (2022) corroborates that the Philippine's per capita cassava output index dropped to about 93.1% in 2020 from its all-time high of 100% in 2018. Although the cassava sector has been generally steady, it is still minor compared to other major crops like rice and maize.

In communities, men and women may have different roles they see and interacting with a given crop (Bezner Kerr, 2017). The cassava crop's natural ability to bring significant yields even in less-than-ideal situations has made popular crop among smallholder farmers. It also grows well where other main crops would wither and die: marginal environments. Those attempting to develop novel cassava varieties that can meet the needs of all end users, including consumers, may get knowledge from this source (Acheampong, et al., 2018).

Rice and maize have been the primary crops targeted by agricultural initiatives in the Philippines for several years. The private sector has been the primary driving force behind the expansion of the cassava industry. Despite its numerous positive attributes, the cassava crop has several undesirable characteristics. One of its weaknesses is that its qualitative qualities are ones that cassava customers are likely to notice regularly. Poor cassava quality might result in a small market share, which would spring a negative impact on the cassava sector. Many food policy analysts assumed cassava has a minimum food supply because this might predict that per capita consumption declined with an increase in per capita income (Nweke et al., 2002). The decision on what range and types of food to consume has influenced by income and other factors such as socio-economic variables. It is, therefore, imperative to balance the consumption behavior of cassava products concerning this assumption.

LITERATURE REVIEW

Cassava Attributes

Massive amounts of cassava are among the most widely produced crops in the Philippines. In the past, farmers grew cassava only to turn it into animal feed. The term "working class food" was often used to describe this fare. The cassava plant, also known as *Manihot esculenta* Crantz, is a tiny perennial shrub that may grow up to three meters in height and produces swollen roots composed of starch. This crop is harvested to a significant extent of a variety of tropical and subtropical nations throughout Asia, Africa, and Latin America (Howeler, R. H., 2014). These days, you may get cassava presented in wide variety of ways in upscale grocery stores. Even the food crop was utilized in certain traditional ways this is no longer considered a dish for the working class; rather, it is considered a delicacy that is enjoyed by gourmets.

Users Quality Preference

Cassava that is intended for human consumption must conform to certain quality standards for both cooking and eating. Cooking time, texture, bitterness, and flavor are some of the most important factors that go into determining eating quality. Despite this, determining eating quality may be a difficult and complicated task. Because each of these characteristics is practically a function of many

other subcomponents, breeding for end-user quality is an incredibly difficult task, which influences the choice of customers or users of cassava.



Figure 1. The cooked cassava crop as consumers preference

MATERIALS AND METHOD

Research Design

The qualitative-descriptive approach is utilized in this research study regarding consumption preference of cassava (*Manihot esculenta crantz*) products among rural household in municipality of Corcuera. A formal, objective, and methodical approach to obtaining knowledge about variables through the use of numerical data is referred to as a quantitative research design. It is a tool for describing connections between and among variables as well as investigating those connections. Furthermore, a qualitative-descriptive approach is a behavioral assessment method that assesses a product's or service qualities using descriptive panels (Sandelowski, M., et.al., 2007). Descriptive involves characterizing, documenting, analyzing, and interpreting the present condition of the nature, composition, or dynamics of phenomena.

Subject of the Study

The population of the study was derived from 15 barangays of the Municipality of Corcuera, Romblon namely: Labnig, Mangansag, Gobon, Colong-Colong, Alegria, Mabini, Poblacion, Ambulong, San Roque, San Vicente, Ilijan, San Agustin, Tacasan, Guintiguiban, and Mahaba with a total of 110 respondents.

These respondents were chosen randomly where the total number of respondents will be equally divided to each barangay's accounting to 7 household families per barangays with an average of 605 total population. The highest populated barangay has higher allocated respondent of 12 households due to its population is much higher than the other barangays with a percentage of 16.20% of Corcuera's total population.

Sampling Technique

The non- scientific or non-probability sampling method was used in the study to find out the consumption preference of cassava (*Manihot esculenta crantz*) products among rural household in municipality of Corcuera. This was employed because in non-probability sampling, not all of the individuals in a population are given equal chance of being included in the sample (Falculan, 2021).

Sampling Procedure

Probability sampling method will be used to determine the sample size for the study. Probability sampling involves random selection, allowing you to make strong statistical inferences

about the whole group. Probability sampling means that every member of the population has a chance of being selected. It is mainly used in quantitative research. This sampling technique is suitable to use since the target respondents will be randomly selected from the 15 barangays of the Municipality of Corcuera, where the researcher will be selecting the best representative consumer per barangay.

RESULTS AND DISCUSSION

Demographic profile of the respondents in 15 barangays of the Municipality of Corcuera.

Shown in Table 1 that 62% of the respondents were male and 38% were female. This is due to the fact that 50.6% of the total population was male with a total of 5,114 a bit higher than the female population that accounts to 49.4% of the total population or a total of only 4,998. This proves that there is more male resident in the areas of this study than female that can fit as respondents (Source: Corcuera (Municipality, Philippines) - Population Statistics, Charts, Map and Location (citypopulation.de).

Table 1: Demographic profile of cassava respondents in Corcuera, Romblon

Category	Frequency	Percentage
Sex		
Male	68	62%
Female	42	38%
Total	110	100%
Age		
20-30	15	14%
31-40	21	19%
41-50	32	29%
51-60	20	18%
61-above	22	20%
Total	110	100%
Educational level of respondents		
Elementary degree	65	59%
High school degree	39	35%
College degree	6	5%
Total	110	100%
Household size		
1-3	39	35%
4-6	55	50%
7-10	16	15%
Total	110	100%
Respondent is the household head		
Yes	42	38%
No	68	62%

Total	110	100%
Main source of income		
Farming	78	71%
Fishing	18	16%
Poultry raising	14	13%
Total	110	100%
Salary Employment		
Yes	9	8%
No	101	92%
Total	110	100%
What status of employment		
Temporary	6	5%
Permanent	3	3%
Self-employment	101	92%
Total	110	100%

General Preference

Table 2 shows that respondents prefer to consume medium size cassava with 67%, followed by small size 25%, and least preferred was the bigger sizes with 8%. According to the respondents, they prefer the size of cassava that they can easily consume rather than the bigger size that might not easily consumed and there's a tendency that there will be left overs. While smaller sizes were not enough and very inconvenient to eat again and again.

Table also shows that they prefer the white colored cassava than the yellow with 75% and 25%, respectively. Contradicting with what Bechoff et al, (2016) cited that other consumers prefer the yellow colored cassava than the traditional white cassava, despite having carotenoids that alters the sweetness and softness of the yellow cassava.

Table 2. Consumers preferences on cassava crop.

Category	Frequency	Percentage
What size of cassava do you prefer to consume?		
Big	9	8
Medium	74	67
Small	27	25

What is the color of the cassava that you consume?		
White	83	75
Yellow	27	25
What taste of cassava do you prefer?		
Earthy	86	78
Slightly sweet	16	16
Nutty	8	7
What texture of cassava do you prefer?		
Dense	20	18
Soft	78	71
Creamy	12	11
Which aromatic characteristic of cassava do you prefer?		
White	79	72
Yellow	31	28

General Purpose of Cassava

Table 3 presents the general purpose of cassava in Simara and results shows that respondents highly agrees that cassava can be an alternative to rice with a weighted mean of 4.32. As cited by Arief, et al (2018), cassava has been known to have low glycaemic index (GI) recommended for diabetes. Furthermore, according to Kim Chin, RD (2021), cassava is a significant source of calories and carbohydrates for people in many countries. A cooked portion of 3.5 ounces (100 grams) of cassava root has 191 calories. Carbohydrates account for approximately 84% of them, with protein and fat accounting for the remainder. Furthermore, one serving contains some fiber as well as a few vitamins and minerals. Moreover, cassava root is high in vitamin C, an essential vitamin that promotes collagen development, boosts immunity, and has other beneficial effects. It is also rich in copper, a mineral required for neurotransmitter production, energy production, iron metabolism, and other processes. It is a viable rice substitute because of its abundance of nutrients and healthy components.

Table 3. General Purpose of Cassava

	WM	DI
Cassava can be an alternative to rice	4.32	HA
Cassava can be one of the sources of income for people in Simara	4.35	HA
Consumption of fresh cassava cooked is better than processed one	4.58	HA
Cassava leaves are also been eaten as food in Simara	2.63	FA

Simaranhon most prefer cassava rather than corn as an alternative for rice	4.09	A
Mean	4.00	A

SCALE	WEIGHTED MEAN	DESCRIPTIVE INTERPRETATION
5	4.21 - 5.00	Highly Agree (HA)
4	3.41 - 4.20	Agree (A)
3	2.61 - 3.40	Fairly Agree (FA)
2	1.81 - 2.60	Less Agree (LA)
1	1.00 - 1.80	Disagree (DA)

Questions determined by the criteria based on the parameter

In table 3, regarding the preferred shape of the respondents, table shows that majority 85% answered YES to whether respondents preferred the round shape cassava, and gained 15% NO. At the same time, table shows that 88% preferred the oval shape, NO answer gained 12%. Furthermore, truncated shape received the same response as the oval shape, with 88% YES and 12% NO. These results show that respondents eat cassava regardless of the shape. For them, shape is not much to concern, as long as the taste fits their preference.

In terms of flesh color, white flesh received 95% YES and 5% said NO, the same goes with the yellow flesh, with 91% YES and 9% NO, a 4% difference in response but results stayed the same for both yellow and white flesh. Lastly, cream orange flesh color received a 78% YES and 22% NO. Though there is a 14% difference between the creamy orange and yellow skin, result still show that creamy orange was still preferable to the respondents. Overall, we can assume that they would dislike any flesh color after tasting it and if the flavor was not to their liking. They will eat flesh of any color as long as the taste is acceptable to them.

In terms of skin color, red skin and brown skin both received 85% YES and 15% NO. Based on the statement of majority of the respondents, they were also less concerned with the skin color of the cassava. As for them, identifying the taste of the cassava based on the skin color does not have assurance. Since for them, cassava is cassava, whatever the color of the skin or the flesh, they were more concerned in cooking it well to avoid health problems caused by the cassava.

Moving on, when it comes to taste, the variety with nutty and mid earthy taste received a YES answer of 93%, with only 7% answered NO. While the variety with hardier and higher cyanide received more NO answer with 95% and a YES of only 5%. Hardier and higher cyanide variety, also referred to as the bitter cassava. According to an article, medically reviewed by Kim Chin, RD, (2021), raw cassava contains chemicals called cyanogenic glycosides. If eaten, these can release cyanide into your body. Regularly consuming cyanogenic glycosides or eating them in high amounts increases the risk of cyanide poisoning. Cyanide poisoning is associated with impaired thyroid and nerve function, paralysis, organ damage, and even death.

Table 4 Questions determined by the criteria based on the parameter

	FREQUENCY (N = 110)	PERCENTAGE (%)
Shape		
Does the round shape cassava fruit tastes better than other shapes		
Yes	93	85
No	17	15
Does the oval shape cassava fruit tastes better than other shapes		
Yes	97	88
No	13	12
Does the truncated shape cassava fruit tastes better than other shapes		
Yes	97	88
No	13	12
Color		
Do you prefer the taste of white flesh cassava variant		
Yes	104	95
No	6	5
Do you prefer the taste of the yellow flesh cassava variant		
Yes	100	91
No	10	9
Do you prefer the taste of cream orange flesh cassava variant		
Yes	86	78
No	24	22
Do you prefer the taste of red skin cassava variant		
Yes	93	85
No	17	15
Do you prefer the taste of brown skin cassava variant		
Yes	93	85
No	17	15
Taste		
Do you prefer the taste of the cassava variant with nutty and mid earthy		
Yes	102	93
No	8	7
Do you prefer the taste of the cassava variant with hardier and higher cyanide		
Yes	6	5
No	104	95
Aroma		

Do you prefer the taste of the cassava variant with a green, and earthy aroma		
Yes	106	96
No	4	4
Do you prefer the taste of the cassava variant with an artificial odor		
Yes	37	34
No	73	66
Do you prefer the taste of the cassava variant with a manioc scent		
Yes	95	86
No	15	14
Texture		
Do you prefer the taste of the cassava variant with a mealy texture		
Yes	104	95
No	6	5
Do you prefer the taste of the cassava variant with a lumpy texture		
Yes	97	88
No	13	12
Do you prefer the taste of the cassava variant with a raw texture		
Yes	42	38
No	68	62

Based on the data gathered, 62% of the respondents were male, with 29% were at the ages between 41 to 50. Majority of 59% reached elementary degree, and with 50% has the household size between 4-6. 62% of the respondent declared that they were not the household head. Main source of income in the municipality comes from farming with 71%, fishing comes second with 16% and 13% comes from the poultry raising. Majority of 92% were not a salaried employee with 92% were self-employed. Among the 8% the ones who were salaried employee, 6% were temporarily employed, and 2% were permanently employed.

General Preference

Findings show that general preference of the respondents in size was medium with 67%, and the common preference in color is white with 75%. In terms of taste, general preference was the earthy taste with 78%, along with a soft texture with 71% and white aromatic characteristics with 72%.

General Purpose of Cassava

Based on the data gathered, respondents highly agreed that cassava can be an alternative to rice gaining 4.32 weighted mean. In terms of whether cassava can be one of the sources of income for people in Simara, responses gained the weighted mean of 4.35 indicating that respondents highly agreed to the idea. Consumption of fresh cassava cooked is better than processed one, gained a response with weighted mean of 4.58, also indicating that respondents highly agreed to the statement. Weighted mean of 2.63 was gained in terms of whether cassava leaves are also been eaten as food in

Simara, and low weighted mean indicate that respondents fairly agree to the idea. In terms of whether cassava is better than corn as an alternative for rice, the response gained a weighted mean of 4.09 indicating that respondents agreed to the statement that cassava is better than corn as alternative for rice in Simara.

Questions determined by the criteria based on the parameter

In terms of criteria's such as shape, flesh color and skin color, taste, aroma, and texture, data shows that truncated shape and oval shape received the highest answer of YES with 88%. For the flesh color and skin color, white flesh received the highest YES with 95% and red skinned variant received 88% YES. In terms of taste, majority of 93% answered YES to the nutty and mid earthy taste with 96% of the respondents preferred the green and earthy aroma. For the texture, majority of 95% answered YES to mealy texture.

CONCLUSION

Based on the results, observations, and personal insights of the respondents, a conclusion was drawn by the researcher. Identification of cassava quality attributes preferred by Simaranhon users was not specific. Random choices and qualities were favored by the respondents. Varieties of cassava were majorly unknown as well as the different characteristics of these varieties. Respondents strongly relies on how to properly cook the cassava and avoid the worse possible result of consuming it raw.

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Conflict of Interest

The author declares that he has no competing interests.

Author Contributions

The author undergoes the sole conception and design of the study.

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