



## Strengthening the Safety of Processed Corn Ice Cream

Food Science & Chemistry



**Christina Alfiler\* and Cristina Natividad**

Cagayan State University, College of Teacher Education, Andrews Campus, Tuguegarao City, Philippines

Corresponding Author: [christinaalfiler3@gmail.com](mailto:christinaalfiler3@gmail.com)

### Key Findings and Policy Implications

- The Corn-based ice cream underwent microbial and sensory evaluation to ensure its safety and quality. Results showed that the product is microbiologically safe, with total plate counts well within acceptable limits and no harmful microorganisms detected. Over a 90-day period, no significant changes were observed in color, odor, sweetness, or flavor, proving its stability and shelf-life. Consumers rated the product from moderately acceptable to very much acceptable.
- The findings support the safe and stable quality of corn-based ice cream, making it a viable product for local livelihood initiatives. Policymakers are encouraged to promote its commercialization by supporting community-based production, providing food safety training, and ensuring adherence to standards like GMP and HACCP.

With proper guidance and certification, corn ice cream can boost local entrepreneurship and add value to corn harvests.

### Background

Corn is a staple crop in many Filipino communities and plays a vital role in local livelihoods. To make better use of this abundant resource, a unique product—corn-based ice cream was developed as a nutritious and affordable treat. This innovation not only offers a new way to enjoy corn but also opens opportunities for small-scale businesses. Ensuring its safety and quality through proper testing is key to helping local producers bring it to market and turn it into a sustainable source of income.

## Research Objectives

The rising demand for safe, healthy, and innovative food products challenges us to make better use of local crops. Corn, as one of the country’s staple harvests, holds great promise for creating value-added products that not only support farmers but also promote sustainable livelihoods. By turning this staple into Sweet Pearl F1 corn ice cream, the study explored a unique and marketable product that could blend nutrition, innovation, and entrepreneurship.

The research looked into how long the formulated corn ice cream could remain safe and appealing for consumption as a basis for possible commercialization. It examined the product’s microbial safety and evaluated its sensory qualities –appearance, color, odor, texture, sweetness, and its distinct corn-and-cream flavor—to determine its overall acceptability to consumers.

## Methodology

The corn-based ice cream was prepared using locally sourced ingredients. It underwent laboratory testing to assess microbial safety and sensory stability. Microbial analysis included total plate count and detection of harmful bacteria such as coliforms, Salmonella, Staphylococcus aureus, and Listeria monocytogenes. Sensory evaluation was conducted over 90 days to observe changes in color, odor, sweetness, and flavor. Panelists also rated overall acceptability.

Below is a simplified visual of the process:

Table 1. Process Flow of ice cream Product Development.

<b>Fomulation</b>	Corn ice cream prepared using local corn standard recipe
<b>Microbial Testing</b>	Total plate count, coliform, Salmonella, S. aureus, Listeria
<b>Sensory Evaluation</b>	Monitored for changes in color, odor, sweetness, flavor over 90 days
<b>Acceptabliity Rating</b>	Panelists scored product from moderate to very much acceptable.

## Key Findings

The study found that Sweet Pearl F1 corn ice cream is safe to eat, enjoyable in taste and texture, and well-liked by consumers.



Figure 1. Key findings on the safety, taste, and consumer acceptability of Sweet Pearl F1 corn ice cream.

## Conclusions

The microbial analysis and sensory evaluation confirm that the formulated corn-based ice cream meets food safety standards and maintains its quality over a 90-day shelf-life

period. With proper regulatory approval, the product is ready for commercial launch, offering new opportunity for local food entrepreneurs and corn farmers.

## Recommendations

1. **Regulatory Approval** - Seek certification from food safety regulatory agencies (FDA, DOST- FNRI, BFAD).
2. **Product Commercialization** - Partner with local and national food manufacturers to scale up production.
3. **Market Expansion** - Introduce the product into retail and institutional markets such as school and restaurants.
4. **Ongoing Quality Monitoring** - Establish a post- market surveillance system to ensure sustained product safety and quality.

## Target Policy Actors and Beneficiaries



## Reference

Christina T. Alfiler and Cristina B. Natividad (2024) Microbial analysis of corn-based ice cream; IJB,V25,N5,November,P27-37; <https://innspub.net/microbial-analysis-of-corn-based-ice-cream/>

## Editor's Note

This policy brief is based on results of the CSU-funded project "Microbial analysis of corn-based ice cream" The project was implemented by the Cagayan State University - Andrews Campus, Special Order number OP -5005-50-2003-02-892. The researchers are Dr. Christina Alfiler and Dr. Cristina Natividad.

## About Policy Brief

The policy brief offers an in-depth analysis of contemporary challenges and opportunities within higher education, with a special focus on the unique context of Cagayan State University. Through rigorous research and stakeholder engagement, we examine key areas such as academic innovation, research advancement, community engagement, and administrative excellence. Each recommendation is carefully developed to foster an environment of growth, equity, and sustainability. **This policy brief series is published bi-annually.**

The approach is built on transparency and inclusiveness. By integrating comprehensive data analysis with practical insights from experts and the broader university community, we ensure that our policy recommendations are not only academically robust but also practically implementable. This process underscores our commitment to creating a positive and lasting impact on the university's future.

The series also serves as a platform for translating research outputs into practical policy insights across six strategic thematic areas including Science and Technology in Agriculture, Natural Resources, Education, Food Science and Chemistry, Public Health and Medicine, and Behavioral and Social Sciences. These areas reflect the university's research priorities and address emerging concerns related to agriculture and livestock, environmental management, teaching and learning, food innovation, clinical diagnostics, and community resilience.

While these publications provide science-based interventions for regional and national development, the analyses and recommendations are those of the authors and do not necessarily represent the official positions of Cagayan State University. Any reproduction, distribution, or citation of this work must acknowledge the author and the CSU RDE Policy Brief Series.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without prior permission from Cagayan State University. This Policy Brief is part of the CSU Policy Brief Series.



### Get in touch with us via:

 [facebook.com/csuktmpo](https://facebook.com/csuktmpo)

 [csu\\_ktmoffice@csu.edu.ph](mailto:csu_ktmoffice@csu.edu.ph)

 [csu.org.ph/policybrief](https://csu.org.ph/policybrief)



**Cagayan State University**

Knowledge & Technology Management and Publication Office

RDE Bldg., CSU- Andrews Campus Caritan Sur, Tuguegarao City, Cagayan

## Editorial Board

**Gilbert C. Magulod Jr., PhD**

Editor-in-Chief

**Patianne M. Padua, PhD**

Associate Editor-in-Chief

## Interagency Local Advisory Board

**Florentina S. Dumlao, PhD**

University Consultant, Cagayan State University

**Maria Mercedes Arzadon, PhD**

University of the Philippines

**Atty. Norman Clarence T. Lasam**

Cagayan State University

**Engr. Gil Mark S. Hizon**

Department of Science and Technology Region II

**Emma L. Ballad, PhD**

Bureau of Fisheries and Aquatic Resources Region II

**Arthur G. Ibañez, PhD, ASEAN Engr.**

OIC, Office of the University President

## Peer Reviewers

**Junel B. Guzman, PhD**

**Josie Y. Bas-Ong, PhD**

**Danica B. Ibañez**

**Arianne Faye D. Perucho, MD**

## Editorial Staff

**Jamaica C. Pedro**

Managing Editor

**Marcel W. Visitacion**

Layout Artist

## Technical Staff

**Christian Dave E. Columna**

IT Technician



# POLICY BRIEF

Cagayan State University  
Knowledge & Technology Management and Publication Office



[csu.org.ph/policybrief](https://csu.org.ph/policybrief)