

YRF Summary Report

PRESERVED PRODUCTS FROM ORGANIC PRODUCE IN THE CAMPUS: A FEASIBILITY STUDY

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Students (with prog, semester and roll no)

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Introduction

The raw material and processed food available in the market are more or less polluted and contaminated due to faulty agriculture practices which are mostly dependent on chemical fertilizers, insecticides and pesticides. Consumption of such food products, medicines or cosmetics leads various severe to moderate health problems such as cancer, hepatic disorders etc. (Oi et al., 2013). Thus to overcome from such serious health issues organic farming started which is based on the concept of application of chemical free organic manure and bio pesticides. Organic products are grown under a system of agriculture without the use of chemical fertilizers and pesticides with an environmentally and socially responsible approach. Organic farming increases the nutritive value of the raw materials and final product along with the high economic benefit to the farmer (Fachrista, I.A. and Suryantini, A., 2021). That is why Organic produce are in high demand (Cicia et al., 2009). Previous researchers also tried to study feasibility of production of different produces and preservation of their nutritive values such as green banana flour was made using dryer technology and the study was found very feasible (Oi et al., (2013). But many of the plant products such as Tangerin (*Citrus reticulata*) were not yet studied with this perspective yet because of its very sour taste and fragrance.

Hence, this pilot project aimed at assessment of feasibility of establishment of natural chemical free preserved organic product venture made from the plant parts present in the college campus. Initially one plant product fruit of Tangerin has been converted to three organic products. Many more are in the list of future project. Thus the major objectives of the study are:

OBJECTIVES

- To identify the plants of the college campus for the development of the processed products.
- To conduct environmental audit of the flora of college campus with food processing objectives.
- To develop and standardised value based preserved products from identified plants along with packaging and labelling them.
- To inculcate entrepreneurial skills in the students.

Methodology :

This designed study consists of two phases:

The first phase involves survey, identification and documentation of such plant species which can give products of high value.

The second phase incorporate well established food processing and other techniques for production of value based products.

1. Study site : Campus of Lakshmbai College
2. Materials : Tangerine ; Botanical Name –*Citrus reticulata* (Fig 1)
3. Methods :

3.1 Environmental Audit:

Environmental auditing is a systematic, documented, periodic and objective process in assessing an organization's activities and services in relation to: Assessing compliance with relevant statutory and internal requirements. It facilitates management control of environmental practices.

It is the assessment of all environmental assets of the organisation for its environmental and financial worth. Only one of the asset plant biodiversity was assessed in this project.

Process of Environmental audit:

- Planning
- Choosing audit team
- Inspecting site/collection of data (Field work)
- Analysing results of the data
- Evaluating audit

3.2 Biodiversity Assessment:

Flora of the campus was evaluated for its miscellaneous usage. Audit was done to get the information about all kind of natural resources which can be utilized for food, medicine or cosmetics product formation.

Biodiversity evaluation is the basic work and an important means to objectively know the status and trend changes in biodiversity. This scientific information helps in the protection of biodiversity. Plant diversity assessed by the students concluded with 32 economically useful plants in the campus which will give various useful organic produce of commercial values.

1.3 *Food technology*

1.3.1 *Preservation :*

The main aim of preservation is to prevent undesirable changes in the wholesomeness, nutritive value or sensory quality of food/ product and reduce chemical, physical and microbial changes. Preservation increases the shelf life of a food or product while keeping it safe. It ensures food or any other commodity supply during times of scarcity and natural drought.

Food preservation includes food processing practices which prevent the growth of microorganisms, such as yeasts (although some methods work by introducing benign bacteria or fungi to the food), and slow the oxidation of fats that cause rancidity. Food preservation may also include processes that inhibit visual deterioration. By preserving food, food waste can be reduced, which is an important way to decrease production costs and increase the efficiency of food systems, improve food security and nutrition and contribute towards environmental sustainability.

For the preservation of different products various preservation techniques are applied using a range of chemical preservative to natural preservatives. In the project only natural preservatives were used. No chemical Preservatives have been added.

There are nine principles/ methods of preservation:

1. Asepsis
2. Use of High Temperature
3. Use of Low Temperature
4. Moisture Exclusion
5. Removal of Air
6. Increasing Acidity
7. Use of Preservatives/ Mild Antiseptics
8. Gas Preservation
9. Irradiation

Data Analysis and Results:

All the three products were assessed against specific parameters and the results were quite interesting. Which are explained bellow:

1. TANGERINE MARMALADE

2. TANGERINE MARMALADE

1-Average,2-Fair,3-Good,4-Very Good,5-Excellent. 10 People evaluated Tangerine Marmalade on the basis of 13 Parameters. Out of 13 parameters 90 % volunteer subjects gave excellent grading to the product for 4 parameters. 60-70% volunteers graded 8 parameters excellent grades

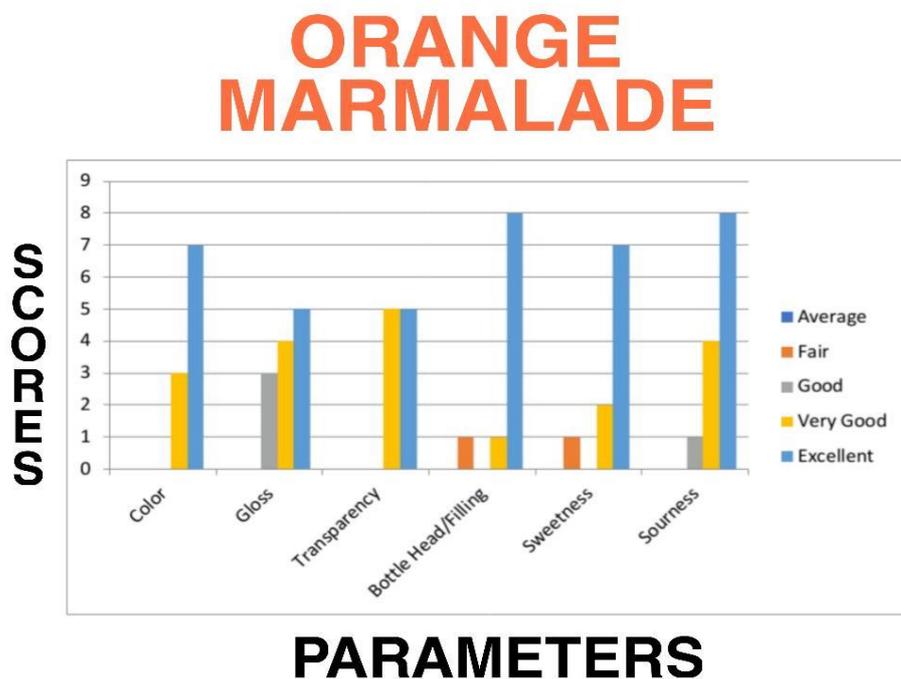


Figure 1 Score graph for different tests of parameters for Tangerin Marmalade

3. TANGERINE JAM

Tangerin Jam was evaluated against 11 specified parameters.

ORANGE JAM

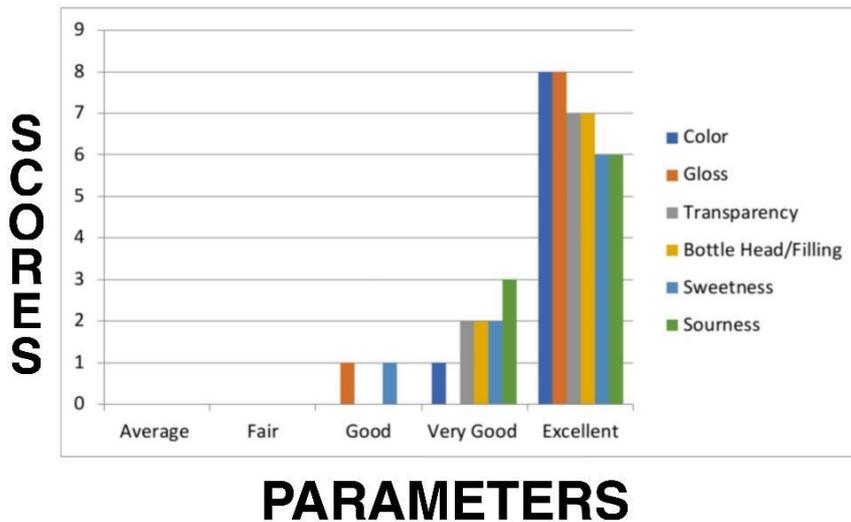


Figure 2 Score graph for different tests of parameters for Tangerin Jam

Tangerin Jam was evaluated against 11 specified parameters. The Graph shows the results of the scores received by each parameter for 1-Average,2-Fair,3-Good,4-Very Good,5-Excellent (Fig 6 and 7).

Out of 13 parameters 8 parameters were rated excellent by 90 per cent of volunteers subjects. Food preservation includes food processing practices which prevent the growth of microorganisms, such as yeasts (although some methods work by introducing benign bacteria or fungi to the food), and slow the oxidation of fats that cause rancidity. Food preservation may also include processes that inhibit visual deterioration. By preserving food, food waste can be reduced, which is an important way to decrease production costs and increase the efficiency of food systems, improve food security and nutrition and contribute towards environmental sustainability.

4. TATVA FACE PACK

6 parameters were tested for Tatva face pack.

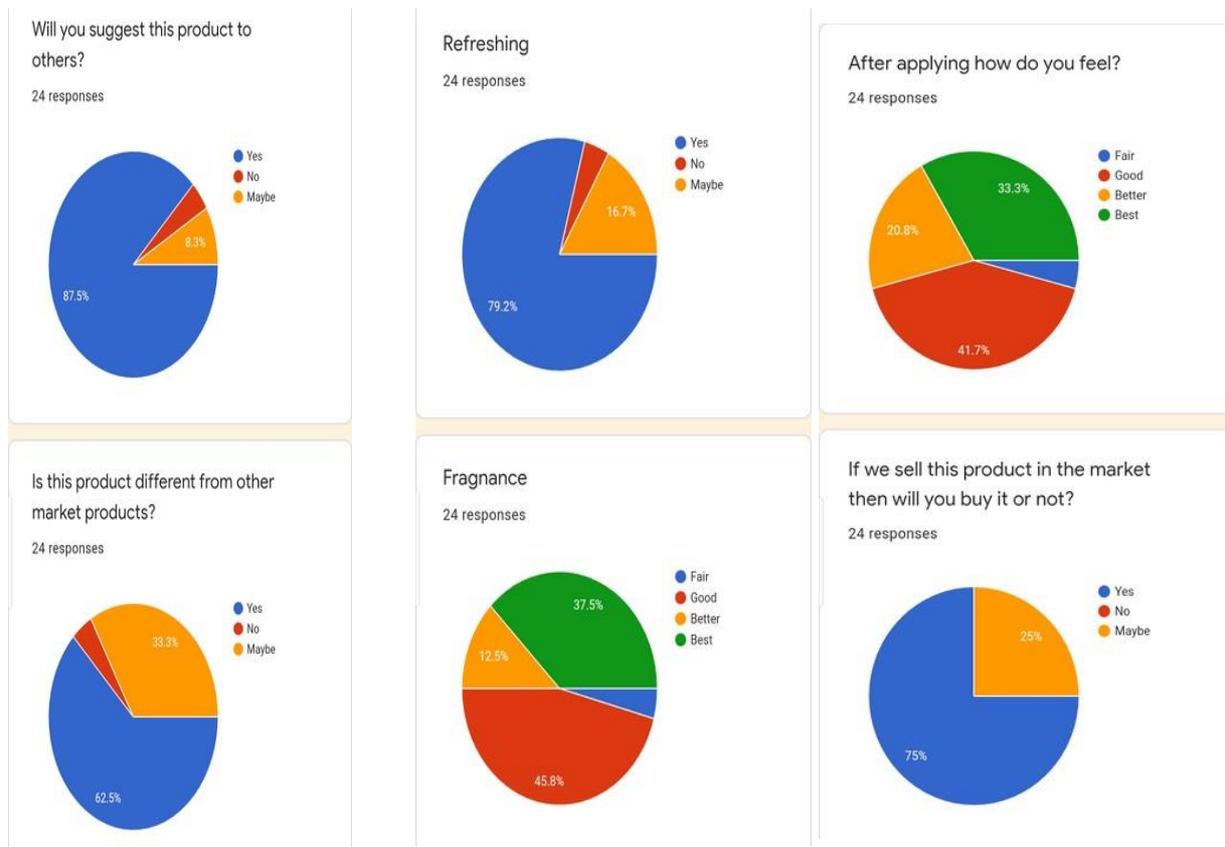


Figure 3 Percentage of volunteers with different responses for different parameters of Tatva Face Pack

- 1) **Refreshing** - Out of 25 people 19 people felt refreshing, 4 people felt it was okay, and 2 didn't feel refreshing.
- 2) **Fragrance** - Out of 25 people 9 people rated Best, 3 people rated Better, 12 people rated Good, and 1 person rated Fair.
- 3) **After applying effects** - Out of 25 people 9 people rated Best, 5 people rated Better, 10 people rated Good, and 1 person rated Fair.
- 4) **If we sell this product will people take it?** - Out of 25 people 19 people said yes and 6 people said No.
- 5) **Will you suggest this product to anyone?** - Out of 25 people 21 will suggest, 2 people are not sure about it and 2 people are saying no.
- 6) **Is this product different?** - Out of 25 people 17 people rated yes, 7 people rated Maybe, and 1 person rated No.

Cost Benefit Ratio: Cost benefit ratio was also calculated for the three products in the project and the results were quite encouraging. Cost benefit ratio for the three products were 1.14, 1.14, 1.6 respectively for tangerine marmalade, tangerine jam and tatva face pack.

Conclusion and Suggestions:

The study finally proved that the preservation of plant products organically chemical free is quite feasible and helps in making very useful healthy products. Also it minimises the waste generation in the campus as peels of the fruits are also used in face pack production. The project also empowers the students by inculcating the entrepreneurial skills and brings some new innovative value based products. Exploring and Making new venture of feasible organic produces developed without any chemical from the college campus.

FUTURE PLANS

There's a future planning to propose the another project with the following objectives..

- Replication of the same or products from the other fruits and plants present in the college campus such as:- Aegle marmelos (Bael), Chiku (Sapota), Mulberry (Shehtoot), Lemon, Mosambi, Oranges , Guava , Mango.
- Assessment of Nutritional value and health impact of these products.