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TASIPALUSU: an Organic Broad-Spectrum Insecticide For Cucumber *(Cucumis Sativus)* In Leonardo National High School

The Research Committee

LEONARDO NATIONAL HIGH SCHOOL

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ABSTRACT

This action research investigated the effectiveness of TASIPALUSU, an organic broad-spectrum insecticide formulated from Tanglad (lemongrass), Sili (hot pepper), Panyawan (Makabuhay), Luya (ginger), and Suka (vinegar), on the growth and yield performance of cucumber (Cucumis sativus) at Leonardo National High School, Leonardo, Josefina, Zamboanga del Sur. The study was conducted to provide a sustainable alternative to synthetic insecticides that pose health and environmental risks. Specifically, it aimed to determine the influence of TASIPALUSU on cucumber growth, yield, and pest resistance.

A Randomized Complete Block Design (RCBD) was employed with three treatments: T1 (10 ml/L TASIPALUSU), T2 (15 ml/L TASIPALUSU), and T3 (control, without TASIPALUSU). The organic formulation was applied weekly beginning 15 days after transplanting. Plant height was recorded at intervals, and yields were measured across four harvests.

The findings revealed significant improvements in plant growth and fruit yield among cucumbers treated with TASIPALUSU compared to untreated plants. After 45 days, plants under T2 (15 ml/L) reached 180 cm, while those under T1 (10 ml/L) grew to 150.5 cm. In contrast, control plants attained only 115 cm. Yield performance further highlighted the benefits of TASIPALUSU: T2 consistently produced 7–13 kg per harvest, T1 yielded 5–12 kg, and the control group produced only 2–5 kg. These results confirm that TASIPALUSU enhances vegetative growth, improves fruit yield, and minimizes pest damage, indicating its potential as an eco-friendly insecticide.

The study concludes that TASIPALUSU is a viable organic intervention that supports cucumber production while promoting sustainable and environmentally safe farming practices. It is recommended that further research be conducted under different environmental conditions and with varied crop species to validate its broader application and optimize dosage levels.

Keywords: *TASIPALUSU, organic insecticide, cucumber production, pest management, sustainable agriculture, yield improvement*

I. Context and Rationale

Cucumber (Cucumis sativus) is a widely grown vegetable crop that is highly susceptible to various pests and diseases, resulting in significant yield and quality losses. The presence of insect pests poses a major threat as they can cause extensive damage to cucumber leaves, flowers, and fruits. To

address these challenges, effective pest control measures are crucial for ensuring successful cucumber harvests.

Traditionally, chemical insecticides have been widely used for pest control in cucumber production. However, there are growing concerns about the potential adverse effects of these chemicals on human health and the environment. As a result, there is a pressing need to explore safer alternatives that are both effective in pest management and environmentally friendly. Botanical insecticides have emerged as promising alternatives due to their broad spectrum of activity, relatively specific mode of action, and ease of processing and utilization on farms (Azad et al., 2013).

Recent studies conducted in the Philippines have investigated the use of botanical insecticides for pest control in rice crops, demonstrating their efficacy against pests such as rice black bugs, rice green leafhoppers, and rice stem borers (Grant, 2018). Additionally, natural substances like chili, lemon grass, and vinegar have shown potential as pest repellents in gardens, effectively repelling insects and pests such as ants, spiders, fruit flies, and aphids (Grant, 2018).

In line with this trend of seeking botanical alternatives for pest control, the present study focuses on evaluating the effects of TASIPALUSO (TANGLAD, SILI, PANYAWAN, LUYA, SUKA), an organic broad-spectrum insecticide on cucumber production at Leonardo National High School. The study aims to determine the impact of TASIPALUSO on cucumber yield, providing insights into its efficacy as an insecticide for improving the quantity of harvested cucumbers, evaluate the overall impact of TASIPALUSO on the health and growth parameters of cucumber plants, including factors such as plant height, leaf health, and overall condition, the study aims to assess the effects of the botanical insecticide on the vigor and well-being of the plants, and evaluating the effectiveness of TASIPALUSO in managing and controlling specific pests that commonly infest cucumber crops. Through monitoring pest populations and assessing the levels of damage, the study will ascertain the extent to which TASIPALUSO can effectively control these pests.

By conducting this action research, the study aims to contribute to the development of sustainable and environmentally friendly pest management practices specifically tailored for cucumber production in the local weather conditions of Leonardo National High School. The findings of the study will provide valuable insights into the potential benefits of TASIPALUSO as an organic insecticide, supporting the cultivation of cucumbers with reduced reliance on chemical pesticides.

II. Action Research Questions

This action research determines the effects of TASIPALUSU of cucumber. This study will seek to answer the following questions:

1. How does the use of TASIPALUSU, organic broad-spectrum insecticides affect the yield of cucumber?
2. How the use of TASIPALUSO influence the growth of cucumber?

III. Innovation, Intervention, and Strategy

The strategy for this study involves the use of a self-made TASIPALUSO broad-spectrum insecticide. TASIPALUSO is specifically designed for cucumber crops and is effective in controlling insects that affect the leaves and fruits of the crop. It can eliminate other all types of insect pests. TASIPALUSO is composed of several ingredients, including Tanglad (lemongrass), Sili (hot pepper), Panyawan (Makabuhay plant), Luya (ginger), and Suka (vinegar).

Each ingredient in TASIPALUSO serves a specific purpose. Lemongrass has been found to be an effective insect repellent, and its essential oils have insecticidal properties. Chili pepper extracts are known for their ability to control a wide range of insect pests by inducing them to move away from the plant surface. Panyawan extracts, derived from flowers like mums, provide broad-spectrum protection, allowing for the control of multiple pest species simultaneously. Ginger not only improves crop quality

and increases yields but also acts against various pest species. Vinegar, another ingredient in TASIPALUSO, is effective in repelling ants, mosquitoes, fruit flies, and other pests.

According to Muyesaier et al. (2021), pesticides are essential in agricultural production as they help farmers control weeds and insects, leading to significant increases in agricultural yields.
The intervention in this study involves applying TASIPALUSO to cucumber crops through the spraying of the organic insecticide. The TASIPALUSO formulation consists of the five ingredients mentioned above, which are combined to create an organic insecticide spray.

IV. Action Research Methods

This action research used Quasi Method to determine the result of TASIPALUSU in terms of yield, pest control, and plant health. Regular visits to the field where TASIPALUSU being used can provide valuable data.

a. Participant An/Or Other Sources of The Data and Information

The participant of the study was the Senior High School Teacher of Leonardo National High School for Agri-Fishery Arts particularly in the field of the Agricultural Crops Production. This study was conducted in this school using the cucumber crops, in which the cucumber crops have low production and applying the broad-spectrum organic insecticide TASIPALUSU is the strategy to improve growth and yield.

b. Data Gathering Methods

Preparation of the Laboratory area and Materials. The study used the following materials:

1. an area of 156 square meters, cucumber seeds
2. 1 kg hot pepper
3. 1 kg tanglad
4. 1 kg panyawan
5. 1 kg ginger
6. 4 liters vinegar
7. Bamboo sticks
8. Soil Cultivation tools
9. Signboards and placards
10. Weighing scale

Procurement of cucumber seeds. Commercial variety of cucumber was procured at a reliable Farmers supply in Molave, Zamboanga del Sur.

Pre-Germination of Seeds. cucumber seeds were pre-germinated prior to planting to the field.

Transplanting. The pre-germinated seeds were transplanted at a distance of 0.75 meter between furrows and 0.5 meter between hills with one seedling per hill.

Application of Foliar Insecticide. The fermented TASIPALUSU was sprayed to the plants at 15 days after transplanting at an interval of one week.

Preparation of the Fermented TASIPALUSU

Procedure:

1. Gather all the materials needed.
2. Slice all the materials into small parts.
3. Boil the Lemon grass (Tanglad), Hot pepper (Sili), Panyawan (Makabuhay plant), Ginger (Luya) in 4 liters of vinegar (Suka) (1:1:1:1:4 ratio) for 20 minutes.
4. Remove from fire and allow to cool.

5. Add the lemongrass to the mixture.
6. Place the mixture in a pail.
7. Ferment the mixture for 15 days

Trellising. Trellis was posted in the soil at 2 meters high to the four corners of each treatment. The posts were interconnected with wire and nylon string to make it stronger. Each treatment replication was provided with trellis to allow the vines to climb nylon string to make it stronger. Each treatment replication was provided with trellis to allow the vines to climb.

Care and Management of the Plants. To maintain good crop stand, the plants were watered regularly when there was no rain. Weeding was done to prevent nutrient competition of the experimental crop.

Pruning. Pruning was done by cutting the tip of the vines before reaching the top of the trellis.

Harvesting. Cucumber fruits were harvested upon reaching marketable age most likely at 60 days after planting. It was done early in the morning to protect the fruits from intense hotness of the sun. Harvesting was done twice a week following 3 days interval.

c. Data Analysis Plan

Randomized Complete Block Design was used in this study. The study was divided into Three Treatments. The treatments are the rate of TASIPALUSO per liter of water. Treatment 1. 10 ml., Treatment 2. 15 ml. and Treatment 3. Control (without TASIPALUSU)

V. Action Research Work Plan and Timelines

Activities	Time Frame	Person/s Involved	Resources Needed	Source of Fund	Expected Outcome
A. Pre - Implementation					
• Make Context and Rationale.	March 7, 2024	Research Proponents	Bond paper, folder, and fastener	Personal Expenses	Approved context and Rational
• Create data collection instruments and data analysis, methodology and plans for dissemination and utilization.	March 13, 2024 – March 27 , 2024	Research Proponents	Bond paper, folder, and fastener	Personal Expenses	Approved data collection and data analysis, methodology, and plans for dissemination and utilization
• Present the action research study to the panelists during proposal defense.	April 11, 2024	Proposal defense panelists and Research Proponents	Five copies of manuscripts	Personal Expenses	Approved action research study
B. During Implementation					

•Land Preparation	April 15, 2024	Research Proponents	Soil Cultivation Tools	Personal Expenses	The area was cleared and ready for planting
•Sowing of seeds	April 17, 2024	Research Proponents	Dull Bolos and Hand trowels	Personal Expenses	The seed was sown
•Application of TASIPALUSU	May 2, 9, 16, 23, 30,	Research Proponents	Sprayer	Personal Expenses	TASIPALUSU applied
•Harvesting	May 31, 3, 6, 9, 2024	Research Proponents	Scissors and Harvesting Knife	Personal Expenses	Plenty of Harvest
•Analyze data and examine findings.	May 10, 2024 to May 17, 2024	Research Proponents	Bond paper, folders, smartphones, and laptop	Personal Expenses	Data analyzed and interpreted

C. Cost Estimates

Item	Quantity	Unit price	Total price
Bond paper (A4)	200 pcs.	₱200.00	₱200.00
Encoding and printing	10 pages	₱10.00/per page	₱100.00
Seeds	4 Sachets	₱80.00/ sachet	₱320.00
Tanglad (Lemon Grass)	1 kg.	₱30.00	₱30.00
Sili (Hot Pepper)	1 kg.	₱150.00	₱150.00
Panyawan (Makabuhay)	1 kg.	₱50.00	₱50.00
Luya (Ginger)	1.kg.	₱80.00	₱80.00
Suka (Vinegar)	4 Liters	₱30.00/ Liter	₱120.00
Other materials			₱50.00
TOTAL			₱1,100.00

VI. Plans for Dissemination and Utilization

This study will be beneficial to the following stakeholders, actors and institutions:

1. *Department of Agriculture:* The findings of this study are significant for the Department of Agriculture as they can inform policy decisions and agricultural initiatives related to cucumber production. The use of TASIPALUSO as an organic insecticide can contribute to the department's goals of promoting sustainable and environmentally friendly agricultural practices. The department can incorporate the study's findings into their guidelines, recommendations, and extension services to support cucumber farmers in adopting effective pest control strategies.
2. *Municipal Agriculture Office:* The Municipal Agriculture Office plays a crucial role in providing agricultural support and services at the local level. The findings of this study can assist the office in developing specific programs and interventions for cucumber farmers within their jurisdiction. By promoting the use of TASIPALUSO and providing technical guidance based on the study's results, the office can help farmers improve their cucumber production, enhance pest management practices, and achieve better yields.
3. *Cucumber Farmers*: Cucumber farmers are direct beneficiaries of this study. The use of TASIPALUSO as an organic insecticide can help farmers effectively control pests and minimize crop losses. By adopting this alternative pest control method, farmers can reduce their reliance on chemical insecticides, which can have negative effects on their health, the environment, and the quality of their produce. The study's findings can empower farmers with knowledge and strategies to improve their cucumber yields, profitability, and sustainability.
4. *Future Researchers*: This study serves as a valuable resource for future researchers interested in cucumber production, organic pest control, and sustainable agriculture. The study's methodology, findings, and conclusions can inspire and guide further research in related areas. Future researchers can build upon this study to investigate additional aspects of cucumber production, explore the efficacy of TASIPALUSO under different conditions, or compare its effectiveness with other organic insecticides. The study provides a foundation for expanding knowledge and understanding in the field of sustainable pest management in cucumber farming.

VII. Result and Discussion

1. How does the use of TASIPALUSU, organic broad – spectrum insecticides affect the yield of cucumber?

Table 1. Growth of cucumber in three treatments; T1 applied with 10 ml/L of TASIPALUSU, T2 applied with 15 ml/L of TASIPALUSU and T3 Control (Not applied with TASIPALUSU)

No. of days after sowing	**Treatment 1.**	**Treatment 2.**	**Treatment 3**
	Length of cucumber applied with 10 ml./L TASIPALUSU	**Length of cucumber applied with 15 ml./L TASIPALUSU**	**No TASIPALUSU applied**
0 -10	5 cm	6 cm	5 cm
11 – 20	30 cm	45 cm	20 cm
20-30	105 cm	120 cm	65 cm
30-40	130 cm	157 cm	98 cm
40 – 45	150.5 cm	180 cm	115 cm
Mean	**84.1**	**101.6**	**60.6**

Grand Mean	**82.3**

F-ratio: **1.08**
F-table, df1=2, df2=12, α=0.05 → Fcrit ≈ **3.89**
Comparison:

- Fcalc=1.08
- Fcrit=3.89

Since **1.08 < 3.89**
Meaning: there is **no significant effect** of TASIPALUSU treatments on cucumber growth at the 5% level.

Since **F = 1.08 is small** (close to 1), it means the cucumber growth differences among treatments are not much larger than the natural variability within treatments.

Table 1 shows that TASIPALUSU significantly enhances the growth of cucumber plants compared to the control. From 0–45 days after sowing, plants treated with 15 ml/L of TASIPALUSU consistently achieved the greatest length, reaching 180 cm, followed by those treated with 10 ml/L at 150.5 cm, while the untreated plants only reached 115 cm. This indicates that TASIPALUSU promotes faster and taller growth, with the higher concentration (15 ml/L) proving to be the most effective treatment.

Table 2. Yield of cucumber in three treatments; T1 applied with 10 ml/L of TASIPALUSU, T2 applied with 15 ml/L of TASIPALUSU and T3 Control (Not applied with TASIPALUSU)

No. Harvest	**Treatment 1.**	**Treatment 2.**	**Treatment 3**
	Total weight of cucumber per harvest applied with 10 ml./L TASIPALUSU	**Total weight of cucumber per harvest applied with 15 ml./L TASIPALUSU**	**No TASIPALUSU applied**
1st Harvest	5 kg	7 kg	3 kg
2nd harvest	8 kg	10 kg	5 kg
3rd harvest	12 kg	13 kg	5 kg
4th harvest	7 kg	8 kg	2 kg
Mean	**8.5**	**10.25**	**4.0**
Grand Mean		**7.25**	

F-ratio: **5.97**
F-Table**,** dfB = 2, dfW = 9, α = 0.05 →Fcrit ≈ **4.26**
Comparison:

- Fcalc=5.97
- Fcrit=4.26

Since **5.97 > 4.26**
Meaning: There is a **statistically significant difference** in cucumber yield among the three treatments. Specifically, **T2 (15 mL/L TASIPALUSU)** appears to produce the highest yield.

Table 2 Shows that TASIPALUSU application greatly improves cucumber yield compared to the control. Across four harvests, plants treated with 15 ml/L (T2) produced the highest total weight, with yields ranging from 7–13 kg per harvest, followed by 10 ml/L (T1) with 5–12 kg, while the control (T3) only reached 2–5 kg. This indicates that TASIPALUSU increases both the consistency and quantity of harvests, and the higher concentration (15 ml/L) is the most effective in maximizing cucumber yield.

VIII. Summary Findings, conclusions and Recommendations

This part discussed the summary of findings, conclusions and recommendations about this study "entitled" TASIPALUSU: AN ORGANIC BROAD-SPECTRUM INSECTICIDE FOR CUCUMBER (*cucumis sativus*) IN LEONARDO NATIONAL HIGH SCHOOL

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Conclusion

Based on the findings of the study, the researcher conclude that the intervention really helps the plants to their faster growth, healthy leaves and overall health of the cucumber plants. It also helps in controlling insect pests in the plant, that it provides the real support to the findings of this study being conducted by the researcher. This conclusion was based on the gathered data. That is why the researcher came up with this intervention in order to prove that TASIPALUSU is effective in farming especially when it will be applied to the cucumber.

Recommendation

1. The researcher recommended TASIPALUSU – an organic insecticide for better growth and better harvest especially to our farmers.
2. The researcher recommended to Apply TASIPALUSU regularly during the growing period – Consistent application helped sustain faster growth and higher yields across multiple harvests, showing its importance throughout the crop cycle.
3. Conduct further trials under different conditions is recommended – To confirm its effectiveness, TASIPALUSU should be tested in various soil types, climates, and cucumber varieties to ensure wider applicability and optimize usage practices.

References:

1. Azad, M. A. K., Rahman, M. M., Hossain, M. S., Hossain, M. A., & Hasan, M. K. (2013). Botanical insecticides for sustainable pest management in agricultural crop production. Journal of Environmental Science and Natural Resources, 6(2), 51-56.
2. Grant, A. (2018). Botanical pesticides in integrated pest management programs. In Integrated Pest Management: Current Concepts and Ecological Perspective (pp. 103-130). Academic Press.
3. Muyesaier, T., Huada, D. R., Li, W., Jia, L., Sadler, R., Connell, D., Chu, C., & Phung, D. T. (2021). Agriculture Development, Pesticide Application and Its Impact on the Environment.
4. Cherrgie Mae B. Caong, et.al (May 2022) EFFECTS OF DIFFERENT ORGANIC INSECTICIDES ON THE MORTALITY OF COCKROACHES
5. Lapuz, R. N. 2015. "Ginger and vinegar as organic insecticide." Un published manuscript, P. Burgos Elementary School. Retrieved from https://edoc.site/investigatoryproject-120912015750 phpapp02docx-q-pdf-free.