ECONOMICS

MAJOR PROJECT REPORT

SOCIAL INNOVATION

SEMESTER-3

FOUR-YEAR UNDERGRADUATE PROGRAMME

(DESIGN YOUR DEGREE)

SUBMITTED TO UNIVERSITY OF JAMMU, JAMMU

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CERTIFICATE

The report titled **“Waste to Weath”** was done by team members including Adil Mahajan, Avichal Badyal, Ishaan Uppal and Raghav Sharma. This project served as a significant undertaking for Semester 3 of their academic program. Under the supervision and guidance of **Prof. Anil Gupta and Dr. Shallu Sehgal** for the partial fulfillment of the Design Your Degree, Four Year Undergraduate Programme at the University of Jammu, Jammu, and Kashmir. This original project report has not been submitted elsewhere for academic recognition.

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ACKNOWLEDGMENT

We can acknowledge all those who helped and guided us during our research work. First and foremost, we thank almighty god from the depth of our hearts for generating enthusiasm and granting us spiritual strength to pass through this challenge successfully.

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ABSTRACT

This research paper explores innovative strategies for transforming agricultural waste into valuable economic resources, with a dual focus on mushroom production and rice husk utilization. The study offers a comparative analysis of national mushroom production trends against the rapidly growing industry in Jammu & Kashmir, examining key performance indicators. Detailed economic evaluations, including labour and cost analyses for both oyster mushroom production and rice husk packaging, underscore the critical role of optimized input utilization and strategic government support in enhancing profitability. Additionally, the paper investigates the LIFE97 Rice Husk Project, which converts rice husks into biofuels and industrial packaging materials, thereby promoting environmental sustainability and fostering a circular economy. The findings highlight the potential for social innovation to drive rural economic development, improve operational efficiencies, and reduce environmental impacts, offering a replicable model for sustainable practices in agriculture and waste management.

INDEX

Comparative Analysis of Mushroom Production in India:

National Perspective vs. Jammu & Kashmir

1. Introduction

Mushroom cultivation in India has witnessed significant growth, offering an economically viable and sustainable agricultural enterprise. This report compares national production trends with Jammu & Kashmir's mushroom industry, highlighting production statistics, economic metrics, government support, and key challenges. [1] (Kumar,Ranjit,et.al.,2022)

2. National Overview

India's mushroom production surged from **1.00 lakh metric tons in 2010 to 487 thousand tonnes in 2017–18**, growing at an average **annual rate of 4.3%**. The industry is dominated by **button mushrooms (73%)**, followed by **oyster mushrooms (16%)**. The economic viability is reflected in a **national benefit-cost ratio (BCR) of 1.31:1**, with variations based on farm size: **small farms (1.19:1), medium farms (1.40:1), and large farms (1.31:1)**. Yield ranges from **15.16 to 18.48 kg/m²**, with net incomes between **₹260 and ₹510 per m²**, depending on farm size. [1] (Kumar,Ranjit,et.al.,2022)

3. Jammu & Kashmir Perspective

Mushroom production in Jammu & Kashmir expanded from **40–50 units to 1,500 units** within two years, covering **40–50% of regional consumption**, up from **15%**. The region primarily cultivates **button, milky, and dhingri mushrooms**. A **50% subsidy under the Rashtriya Krishi Vikas Yojna**, along with technical training and input support, has boosted local production and employment. [1] (Kumar,Ranjit,et.al.,2022)

4. Challenges and Opportunities

The sector faces constraints such as **limited processing infrastructure, supply chain inefficiencies, and climate variability**. However, low investment requirements, agro-waste utilization, and value-added products like **dried mushrooms and powders** create lucrative opportunities. [1] (Kumar,Ranjit,et.al.,2022)

5. Key Takeaways

India's mushroom industry is growing steadily, while **Jammu & Kashmir's rapid expansion and strong government support** highlight its potential for rural economic development. Addressing supply chain gaps and processing limitations can further enhance profitability and market sustainability.[1] (Kumar,Ranjit,et.al.,2022)

Economic Metrics in Oyster Mushroom Production:

<u>A Contextual Analysis for Jammu</u>

- This report explores key economic metrics in oyster mushroom production, focusing on the Benefit-Cost Ratio (BCR), Resource Use Efficiency, and Input Utilization. The findings are derived from the study "Economics and Resource-Use Efficiency Analysis of Oyster Mushroom Production in the Bhagalpur District of Bihar, India" and contextualized for application in Jammu. [2] (Anand,Abhishek,et.al.,2023)
- A BCR greater than 1 indicates profitability, with an average return of ₹1.62 for every rupee invested. Larger farms benefit from economies of scale, resulting in higher BCRs. The study found that small farms had a BCR of 1.53:1, medium farms had 1.60:1, and large farms had 1.69:1. Mushroom cultivators in Jammu should aim for a BCR of 1.62 or higher by optimizing resource use, managing costs, and scaling operations effectively. [2] (Anand,Abhishek,et.al.,2023)
- Resource use efficiency is crucial in determining yield. The study indicated that a 1% increase in human labour led to a 1.22% rise in production, while a 1% increase in chopped dry straw resulted in a 1.503% increase in production. This highlights the significant impact of both factors, with chopped dry straw playing a more crucial role. Efficient utilization of labour and substrate materials in Jammu is essential. Training programs can enhance labour efficiency, while controlled substrate use can optimize yields. [2] (Anand,Abhishek,et.al.,2023)
- Input utilization plays a vital role in profitability. The study found that human labour, spawn, plant protection expenses, polythene bags, fuel, and power were underutilized, while chopped dry straw was overutilized, leading to inefficiency. Underutilization suggests opportunities for increased production, whereas excessive use of chopped dry straw indicates inefficiency. To optimize profitability, Jammu's cultivators should focus on improving the use of underutilized inputs while reducing excessive substrate use.

Monitoring input-output ratios can support better resource allocation. [2] (Anand,Abhishek,et.al.,2023)

- By focusing on improving BCR, resource efficiency, and input utilization, oyster mushroom cultivators in Jammu can enhance profitability and sustainability. Regular assessment and adaptation of practices based on these metrics are essential for long-term success.[2] (Anand,Abhishek,et.al.,2023)

Yield Per Bag of Oyster Mushroom

1) In regions like Jammu, where the climate is conducive to mushroom cultivation, the yield per bag can vary based on factors such as mushroom strain, cultivation practices, and environmental conditions. For instance, the Department of Agriculture in Jammu has introduced a new hybrid strain of mushroom spawn with a yield potential of up to 3 kilograms per 10-kilogram bag of pre-spawned pasteurized compost.[3]

2) Additionally, a guide from the Jammu and Kashmir Entrepreneurship Development Institute indicates that with proper cultivation techniques, each tray (or bag) can yield approximately 4 kilograms of mushrooms per batch. [3]

-It's important to note that actual yields can vary based on specific cultivation methods, the type of mushrooms grown, and local environmental conditions. Implementing best practices in mushroom farming and maintaining optimal growing conditions are crucial for achieving high yields.[3]

Detailed labour and cost analysis for producing Mushroom in Jammu:

- Labor cost: ₹600/day for 8 hours (₹75/hour).

- Selling price: ₹60/kg.

- Bag sizes: 5 kg and 10 kg.

1. Labor Time per Bag:

   - 5 kg bag: 40 minutes (substrate prep, filling, sterilization, spawning, etc.).

   - 10 kg bag: 60 minutes (larger bags take more time to handle).

2. Other Costs (substrate, spawn, packaging, sterilization, overheads):

- 5 kg bag: ₹50.

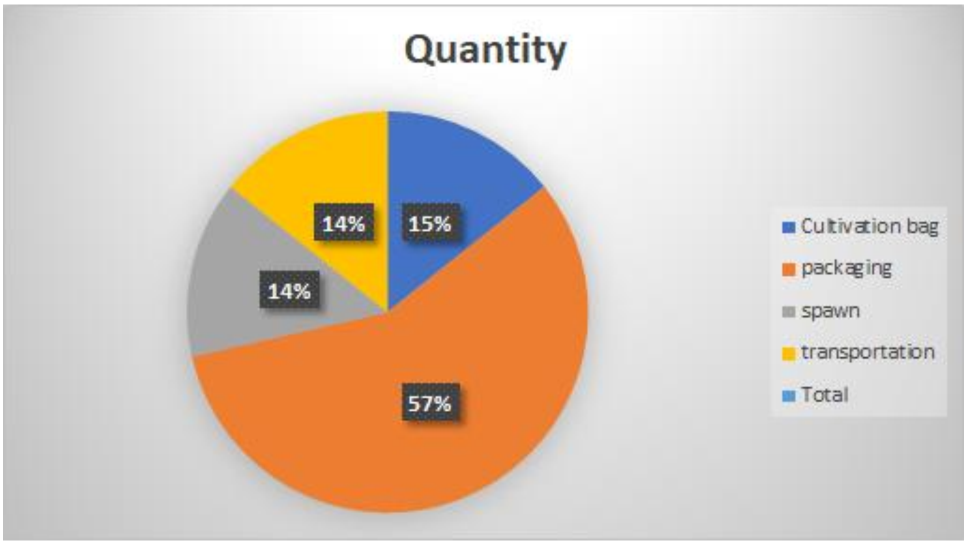
- 10 kg bag: ₹100 (double the substrate and materials[4]

Table 1-Labour cost analysis

metric	5kg bag	10 kg bag
Labour time per bag	40 minutes	60 minutes
Bags produced/day/worker	$\frac{480}{40} = 12$	$\frac{480}{60} = 8$
Labour cost per bag	$\frac{600}{12} = 50$	$\frac{600}{8} = 75$

Table 2-Other cost

Item	**cost**	**quantity**	**Total cost**
Cultivation bag	3Rs	1	3Rs
packaging	1Rs	4	4Rs
spawn	20Rs	1	20Rs
transportation	23Rs	1	23Rs
Total			50Rs



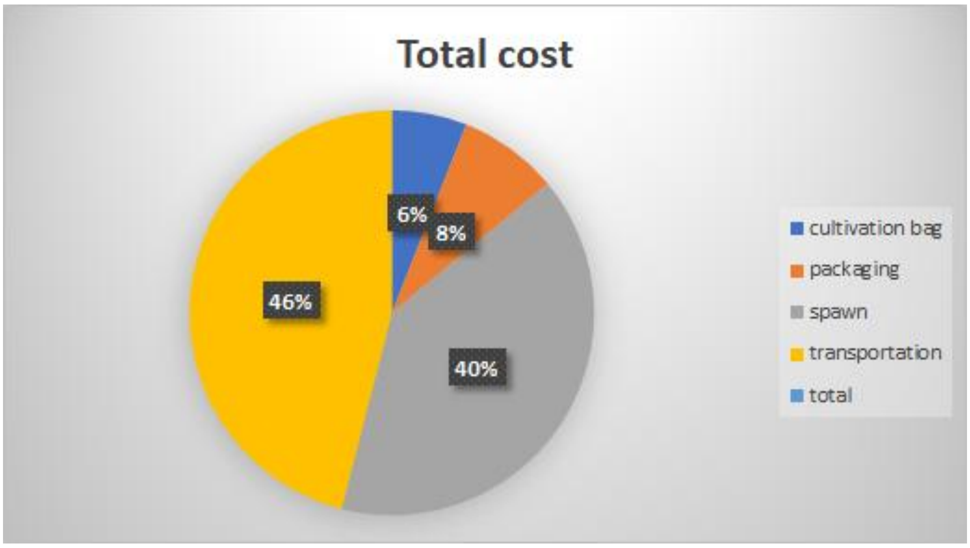


Table 3-Total cost and profitability

metric	5 kg	10 kg
Labour cost	Rs 50	Rs 75
Other costs	Rs 50	Rs 100
Total cost	Rs 100	Rs 175
Revenue (Rs 60/kg)	2*60 = 120Rs	4*60 = 240Rs
Profit per bag	Rs 120 – Rs 100 = Rs 20	Rs 240 – Rs 175 = Rs 65

Table 4-Daily output and profit comparison

metric	5kg bag	10 kg bag
Bags produced/day	12	8
Total daily revenue	12*120 = 1440Rs	8*240 = 1920Rs
Total daily cost	12*100 = 1200Rs	8*175 = 1400Rs
Daily profit	240Rs	520Rs

Table 5-Jammu farmer cost analysis

Item	**cost**	**quantity**	**Total cost**
Cultivation bag	3	1	3
packaging	1	4	4
spawn	20	1	20
transportation	15	1	15
Compost substrate	40	1	40
Total			82

Table 6-Profit per bag

metric	5 kg	10 kg
Labour cost	Rs 50	Rs 75
Other costs	Rs 82	Rs 150
Total cost	Rs 132	Rs 225
Revenue (Rs 60/kg)	2*60 = 120	4*60 = 240
Profit per bag	Rs 120 – Rs 132 = Rs -12	Rs 240 – Rs 225 = Rs 15

Table 7-Daily profit

metric	5kg bag	10 kg bag
Bags produced/day	12	8
Total daily revenue	12*120 = 1440Rs	8*240 = 1920Rs
Total daily cost	12*132 = 1584Rs	8*225 = 1800Rs
Daily profit	-144Rs	120Rs

Key Takeaways: -

1. Higher Profit with 10 kg Bags:

   - Despite higher labour and material costs, 10 kg bags yield ₹1120 daily profit vs. ₹840 for 5kg bags.

2. Labor Efficiency:

   - Workers produce fewer 10 kg bags/day, but revenue per bag doubles.

3. Market Demand:

   - 10 kg bags suit bulk buyers (restaurants, wholesalers).

   - 5 kg bags are better for retail consumers.[4]

Table 8-Our cost analysis

Item	5kg	10kg
Other cost	50 Rs	100 Rs
Labor cost	0	0
revenue	2* 60 =120 Rs	4*60 = 240 Rs
Profit per bag	120 – 50 = 70 Rs	240-100 – 140 Rs

RICE HUSK PACKAGING

Analysis Report:

Economic, Social, and Environmental Viability of the LIFE97 Rice Husk Project

Introduction

The LIFE97 project, initiated in the Ebro Delta, addresses the underutilization of rice husks—a by-product constituting about 20% of the rice grain weight. Traditionally, these husks are burned or disposed of inefficiently, causing environmental pollution and representing a lost opportunity for value creation. The project's primary goal was to develop a pilot plant that processes rice husks into valuable products for the automotive and packaging sectors, thereby promoting a circular economy with significant environmental, social, and economic benefits.

Project Overview

Background and Objectives

Rice husks, which are generated in large quantities during the milling process, are typically considered waste. In the Ebro Delta, only about 30% of these husks are recycled, while the remainder is disposed of in ways that contribute to energy inefficiency and environmental degradation. The project set out to develop a process that converts rice husks into biofuels—bio-oil, biogas, and biochar—using pyrolysis. In doing so, the project aimed to demonstrate that rice husks could serve as a renewable energy source and as a feedstock for producing high-value materials in the automotive and packaging industries. This initiative was also designed to foster local economic development and community engagement.

Process Description

The process begins with the collection, drying, and shredding of rice husks. These pre-treated husks are then fed into a pyrolysis reactor operating at approximately 400 °C. During pyrolysis, the rice husks are thermally degraded, producing biochar, bio-oil, and biogas. The process includes an efficient heat recovery system that recirculates energy, thereby enhancing overall thermal efficiency. The outputs are integrated into manufacturing and energy recovery systems, thus closing the loop in a circular production model.

Economic Analysis

Capital and Operational Investments

The project required an initial capital investment of roughly US$200,810, which covers the cost of essential equipment and infrastructure such as silos, dryers, shredders, the pyrolysis reactor, and ancillary systems. Annual operating expenses, including raw material costs (with rice husk priced at around $0.31–$0.35 per kilogram), labour, and lease payments, are carefully forecasted. Revenue projections indicate that the plant is expected to generate stable annual income of approximately US$209,425 from the sale of its biofuel products.

Financial Indicators

Key financial metrics derived from the techno-economic model are highly favourable. The project has a positive Net Present Value (NPV) of about US$17,660, indicating that the investment will add value over its lifetime. Moreover, the Internal Rate of Return (IRR) is estimated at 26%, exceeding the opportunity interest rate (OIR) of 20%. These indicators collectively confirm that the project is economically viable and profitable.

Social and Environmental Impacts

Social Impact

The project is expected to generate substantial local benefits, primarily through job creation across various stages, including construction, plant operation, and maintenance. Local stakeholder surveys demonstrated strong community support—with nearly 97% of respondents expressing interest in the project—which reflects its potential to diversify income for rice producers and stimulate local entrepreneurship. This level of community involvement not only enhances economic development but also strengthens social cohesion and local capacity building.

Environmental Impact

Environmentally, the conversion of rice husks into renewable energy and value-added products dramatically reduces the waste and pollution associated with traditional disposal methods. By repurposing agricultural residues, the project minimizes greenhouse gas emissions and aligns with circular economy principles. The sustainable energy produced from the husks contributes to energy security while conserving raw materials and reducing the reliance on fossil fuels. These environmental benefits support broader regional and global sustainability goals.

Summary and Conclusions

In summary, the LIFE97 project effectively demonstrates how rice husks—an abundant agricultural by-product—can be transformed into valuable biofuels and other products. The project's technical design, based on an efficient pyrolysis process, is supported by robust economic analysis showing a positive NPV and an IRR of 26%, which together indicate strong economic viability. Socially, the project promises to create local employment and stimulate community economic development, while environmentally, it reduces waste and lowers carbon emissions by converting biomass into clean energy. Overall, the LIFE97 project provides a replicable model for the circular reuse of agricultural by-products, aligning with contemporary sustainability trends and offering a pathway toward a more resilient and sustainable local economy.[5]

<u>Detailed labour and cost analysis for producing Rice husk packaging in Jammu:</u>

- Labor cost: ₹600/day for 8 hours/480 Minutes (₹75/hour).

- Bag sizes: 5 kg.

1. Labor Time per Bag:

   - 5 kg bag: 5 minutes (Moulding).

   - Baking: 60 minutes whole batch.

   - Dough Making: 60 minutes whole batch.

   - Miscellaneous: 60 minutes whole batch.

   - Total Time used: 180 minutes.

   - Time Remaining: 300 minutes.

Table 9-Labour Cost per piece

metric	5kg bag
Labour time per pieces	5 minutes
Pieces produced/day/worker	$\frac{300}{5} = 60$
Labour cost per pieces	$\frac{600}{60} = 10Rs$

Table 10-Cost per Piece of Rice Husk Packaging

metric	5 kg
Labour cost	Rs 1200
Other costs	Rs 300
Total cost	Rs 1500
Cost per piece (Total cost/no. of pieces)	1500/60 = 25Rs

Table 11-Other cost analysis

Item	**cost**	**quantity**	**Total cost**
Rice Husk	10Rs/kg	5kg	50Rs
Maida	50Rs/kg	5Kg	250Rs
Labour cost	600Rs/day	2	1200Rs
Total			1500Rs

Summary

The cost analysis outlines the expenses involved in producing a 5 kg bag of rice husk packaging. Each worker, spending 5 minutes per piece, produces 60 pieces a day at a daily labour cost of Rs 600, which translates to a labour cost of Rs 10 per piece. When additional costs are factored in—namely, Rs 50 for 5 kg of rice husk (at Rs 10/kg) and Rs 250 for 5 kg of Maida (at Rs 50/kg)—the total cost per bag comes to Rs 1500. Dividing this total by the 60 pieces produced results in an overall cost of Rs 25 per piece, demonstrating a balanced integration of labour and material expenses in the production process.

The analysis approximates that each 5 kg bag of rice husk packaging costs about Rs 25 per piece, derived from Rs 10 per piece in labour and the remaining expense from materials to achieve a daily total of Rs 1500 for 60 pieces. However, this estimate is a simplified calculation that primarily focuses on direct labour and material costs. In a practical manufacturing setting, additional miscellaneous expenses—such as utilities, transportation, maintenance, and administrative costs—can incrementally increase the overall per-piece cost. Therefore, while Rs 25 per piece provides a useful benchmark, manufacturers should factor in these extra costs to develop a more comprehensive pricing strategy that reflects the full spectrum of production expenses.

Conclusion

The comprehensive analysis presented in this report underscores the transformative potential of innovative agricultural practices in converting waste into wealth. By examining both the mushroom cultivation sector and the rice husk packaging initiative, several key insights have emerged that not only highlight economic viability but also underscore significant social and environmental benefits.

Economic Viability and Profitability

Mushroom cultivation in India has evolved into a robust sector, driven by growing domestic and international demand. National trends indicate a steady increase in production volume with competitive benefit-cost ratios that vary by farm size. In Jammu & Kashmir, the rapid expansion—from a handful of production units to over 1,500—coupled with strong governmental support via subsidies and technical training, has positioned the region as a promising hub for sustainable mushroom farming. Detailed economic metrics in oyster mushroom production further reveal that optimized resource utilization, particularly in labor and substrate management, can significantly enhance profitability. Similarly, the cost analysis for rice husk packaging illustrates that converting agricultural by-products into high-value industrial inputs is not only feasible but also economically competitive when factoring in both direct and ancillary production costs.

Social Impact and Community Empowerment

Beyond the numbers, these projects serve as potent examples of social innovation. The mushroom production initiatives have created employment opportunities, facilitated skill development, and contributed to rural economic development by integrating small, medium, and large-scale farming operations. The rice husk project, with its focus on repurposing an underutilized by-product, has further demonstrated how community-driven approaches can stimulate local entrepreneurship, foster community participation, and strengthen social cohesion. High levels of stakeholder engagement and community support signal that such projects have far-reaching implications for local development and poverty alleviation.

Environmental Sustainability and Resource Efficiency

Both case studies align with broader sustainability goals by promoting practices that reduce waste and enhance resource efficiency. Mushroom cultivation not only offers a low-investment, high-return enterprise but also leverages agricultural residues as substrates, thereby contributing to a circular economy. The LIFE97 Rice Husk Project, in particular, embodies this principle by converting rice husks into renewable energy sources and value-added products, reducing environmental pollution and the reliance on fossil fuels. The efficient use of raw materials and energy recovery mechanisms in these processes underscores a commitment to environmental stewardship, ensuring that economic progress does not come at the cost of ecological degradation.

Path Forward for Scaling and Innovation

The integrated insights from this report highlight a clear pathway for future developments. Addressing supply chain gaps, investing in processing infrastructure, and refining input utilization practices are critical steps that can further enhance the profitability and sustainability of these ventures. By scaling best practices and investing in continued research and development, policymakers and industry stakeholders can amplify the socio-economic and environmental benefits demonstrated here. Moreover, fostering an ecosystem of innovation and community collaboration will be key to unlocking additional opportunities in waste-to-wealth transformations.

In summary, the projects examined in this report illustrate how waste materials—whether agricultural residues like mushroom substrates or rice husks—can be effectively transformed into economically valuable products. This holistic approach not only bolsters rural economies and creates jobs but also contributes significantly to environmental sustainability. As these models are refined and scaled, they promise to play an increasingly pivotal role in the transition toward a more resilient and sustainable economic future.

References

[1]https://www.researchgate.net/publication/368365013_Waste_to_Wealth_India's_case_of_Growing_Consumption_Demand_for_Mushrooms_in_Post_Pandemic_Era

Kumar, Ranjit & Singh, Ritambhara & Somashekar, G. (2022). Waste to Wealth: India's case of Growing Consumption Demand for Mushrooms in Post Pandemic Era. Ama, Agricultural Mechanization in Asia, Africa & Latin America. 53. 11385-11401.

[2]**https://www.researchgate.net/publication/376184376_Economics_and_Resource-Use_Efficiency_Analysis_of_Oyster_Mushroom_Production_in_the_Bhagalpur_District_of_Bihar_India**

Anand, Abhishek & Kumar, Sandeep & Saha, Nandini & Kumar, Avinash & Bhawar, R.s & Kumar, Vinay & Kumari, Sapana. (2023). Economics and Resource-Use Efficiency Analysis of Oyster Mushroom Production in the Bhagalpur District of Bihar, India. Vol 10, 3817-3825.

[3]Jammu & Kashmir Entrepreneurship Development Institute (JKEDI) – Mushroom Cultivation Guide:

https://www.jkedi.org/EResources/mashroomcultivation.pdf

[4]Primary (Directorate of Agriculture and mushroom growers)

[5]https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE97-ENV-E-000259/project-demonstrating-the-total-use-of-rice-husk-as-an-agricultural-by-product-for-its-industrial-use-in-the-automotive-and-packaging-sector

European Life commission database **Economic, Social, and Environmental Viability of the LIFE97 Rice Husk Project.**

ENVIRO

WELCOME


Enviro*

PRESENTATION

ENVIRO

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*who is concerned with the maintenance of ecological balance and the conservation of the environment.//Collins dictionary//

PROBLEM STATEMENT

01

Due to the large-scale burning and improper disposal of wheat and rice straw, agricultural waste contributes significantly to environmental pollution and resource inefficiency. Farmers in rice- and wheat-producing regions face challenges in managing this biomass, leading to economic losses and environmental hazards. As a result, there is a missed opportunity to repurpose this waste into valuable food resources, contributing to both food insecurity and unsustainable agricultural practices.

02

Problem 2

03

Problem 3

PROBLEM STATEMENT

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02

Due to the widespread use of plastic packaging and the lack of sustainable alternatives, environmental pollution and waste management issues continue to rise. Businesses and consumers in the packaging industry struggle to find eco-friendly solutions that are both cost-effective and food-safe.

As a result, plastic waste accumulates, contributing to long-term environmental damage and health risks, while agricultural byproducts remain underutilized.

03

Problem 3

PROBLEM STATEMENT

01

Due to the large-scale burning and improper disposal of wheat and rice straw, agricultural waste contributes significantly to environmental pollution and resource inefficiency. Farmers in rice- and wheat-producing regions face challenges in managing this biomass, leading to economic losses and environmental hazards. As a result, there is a missed opportunity to repurpose this waste into valuable food resources, contributing to both food insecurity and unsustainable agricultural practices.

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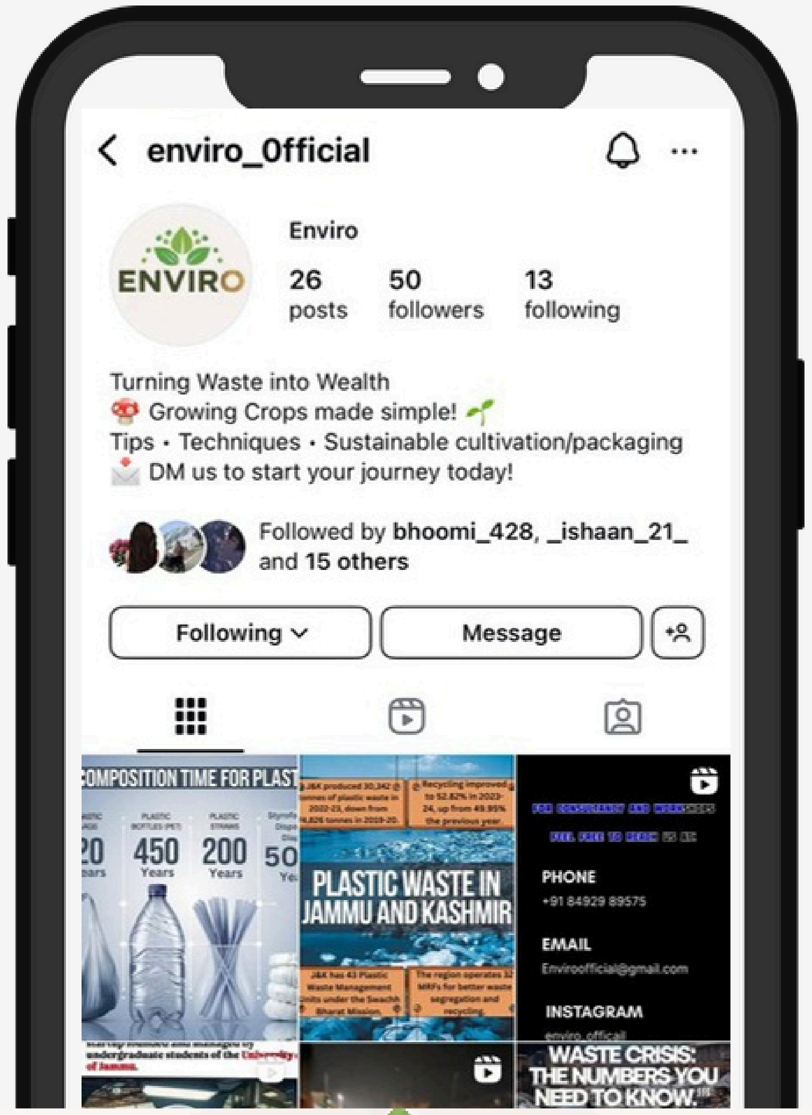
As a result, plastic waste accumulates, contributing to long-term environmental damage and health risks, while agricultural byproducts remain underutilized.

03

Due to the slow natural decomposition of biodegradable waste, organic disposables, including agricultural byproduct-based materials, take extended periods to break down. Waste management systems and sustainability efforts face challenges in efficiently processing such waste within optimal timeframes.

As a result, delays in biodegradation hinder the effectiveness of composting solutions, contributing to waste buildup and limiting the environmental benefits of sustainable packaging and disposables.



ENVIRO

01

Solution 1

Growing mushroom on paddy/wheat straw

02

Solution 2

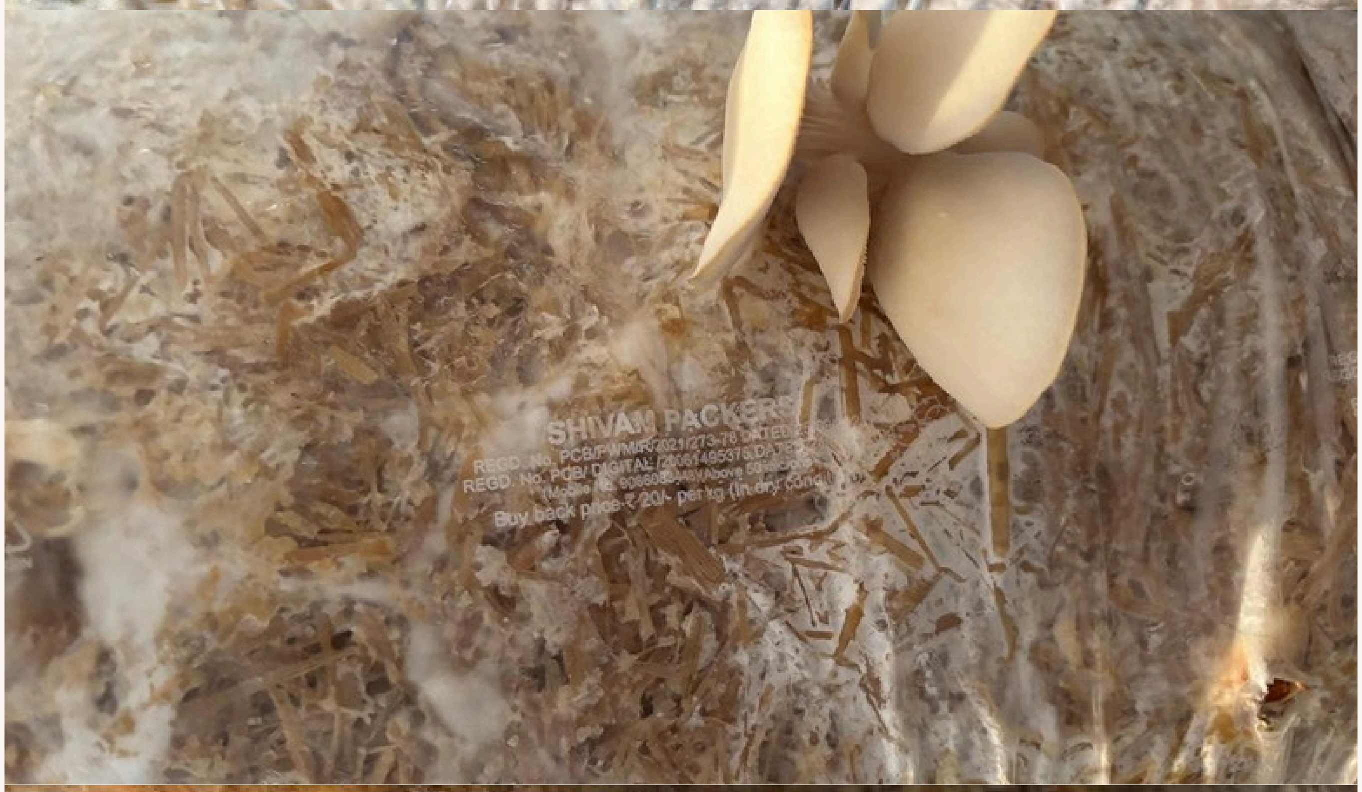
Rice husk packaging

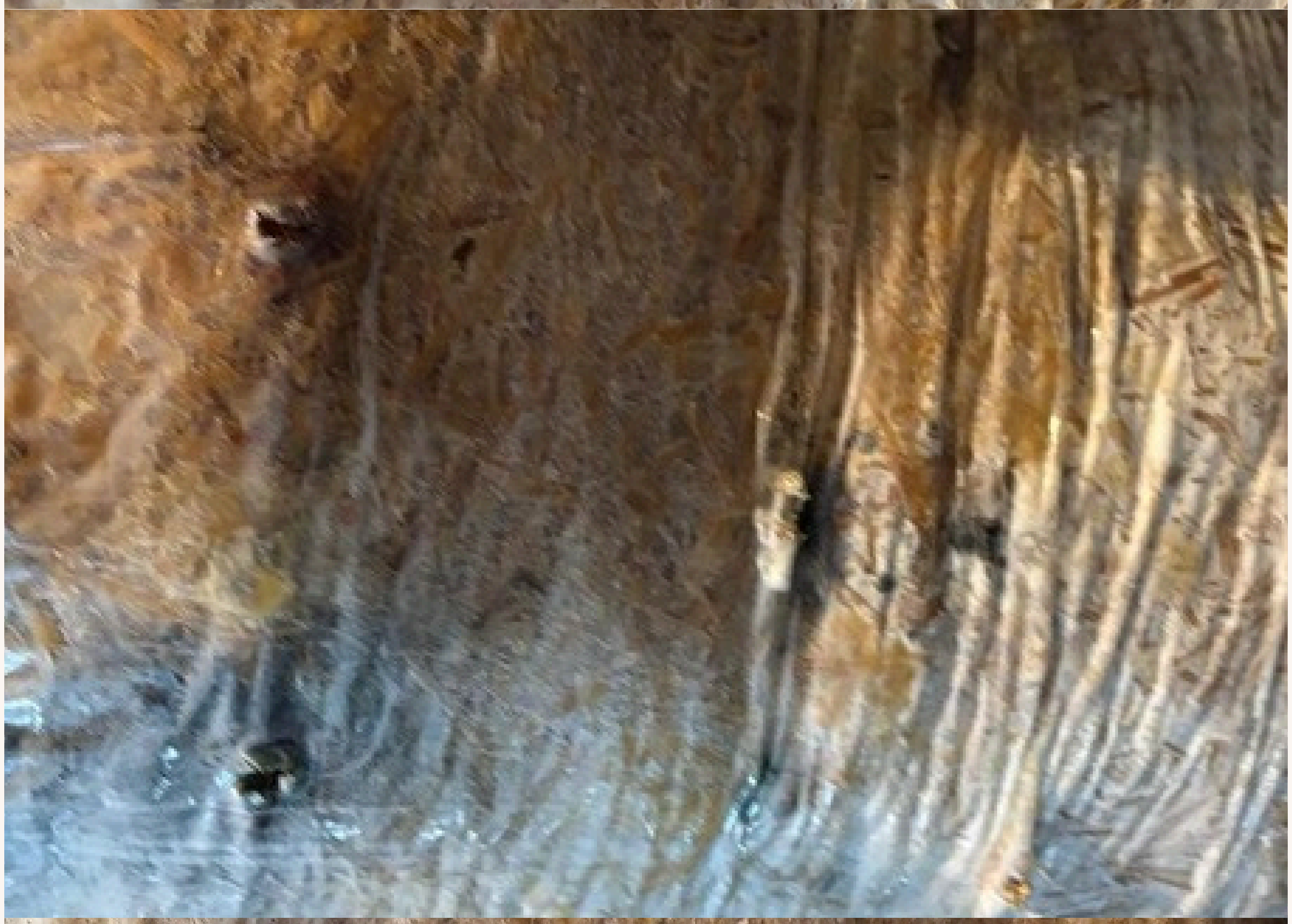
03

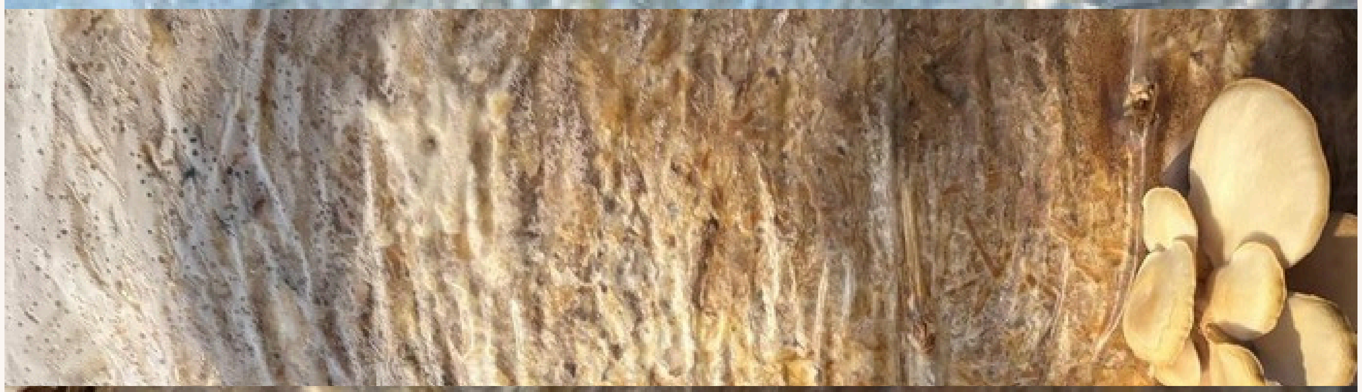
Solution 3

Compost pit dustbin


Harvest Mushrooms
Monitor Growth
Spawning Process
Prepare Growing Area
Disinfection
Chop Straw
Clean & Sort
Collect Straw


SHIVAM PACKERS





Key Features

Feature 1

- Comes with a ready-to-grow substrate already inoculated with mushroom spawn.
- Eliminates the need for sterilization or preparation.

Feature 2

Can be grown indoors.

Feature 3

Eco-Friendly & Sustainable

- Uses organic materials and can be composted after use.
- Helps recycle agricultural waste into food.

Feature 4

Easy-to-Use Setup

- Typically requires minimal effort: just mist with water and place in a suitable environment.
- Ideal for beginners and home growers.

Target User

Farmers

Encouraging them to turn agricultural waste into profit by growing mushrooms using materials like rice straw and wheat husk.

Women

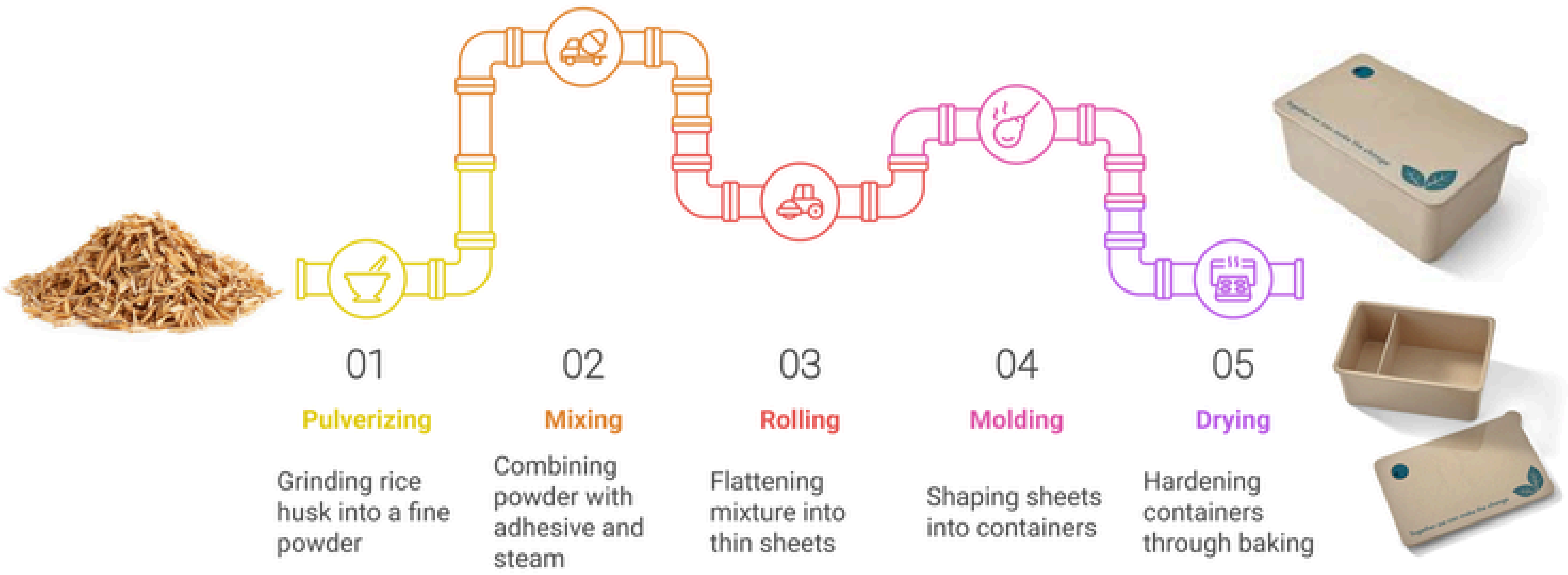
Supporting home-based mushroom businesses with easy-to-use kits for sustainable income.

Urban Growers

Providing eco-friendly, waste-based cultivation kits for growing organic mushrooms at home.

Competitor’s

Our main Competitors and their products.



01
Pulverizing
Grinding rice husk into a fine powder
02
Mixing
Combining powder with adhesive and steam
03
Rolling
Flattening mixture into thin sheets
04
Molding
Shaping sheets into containers
05
Drying
Hardening containers through baking

Key Features

Feature 1

Eco-Friendly & Biodegradable

- Fully biodegradable and decomposes within a few months under composting conditions.

Feature 2

Food-Grade & Non-Toxic

Feature 3

Durable & Lightweight

- Stronger than paper packaging.

Feature 4

Naturally heat-resistant

Target User

Eco-Conscious Businesses

Companies looking for sustainable and biodegradable packaging solutions.

Farmers & Agri-Entrepreneurs

Those interested in repurposing agricultural waste into profitable eco-packaging for their produce.

Travellers

Companies providing disposable yet sustainable alternatives for travelers, reducing environmental impact.

Competitor's

Our main Competitors and their products.

ODM GROUP

Novsus

PROSERVATION


DIRECTORATE OF AGRICULTURE
JPAE
VEGETABLE IMPROVEMENT SCHEME

Future Roadmap

Prototype
Q1 2025

Pilot Implementation
Q2 2025

Scaling
Q3 2025

Diversification
Q4 2025

Thank You

FOR YOUR TIME

ENVIRO

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