



IGSSS'
VERMICOMPOST
INITIATIVES
ACROSS INDIA
AN IMPACT STUDY

Study by Iram Fatima



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Foreword

The story of IGSSS's involvement with vermicomposting is a testament to an undertaking towards sustainable development of communities. For over two decades now, the organisation has been at the forefront of the vermicomposting movement, not merely as an ecological initiative but to empower women, enhance financial independence, and champion equity.

Vermicomposting has tremendous potential to transform organic waste into nutrient-rich compost and has risen to prominence in the intervention states under the steadfast and consistent guidance of the team on the ground. Beyond the superficial benefits, we have recognised the profound impact vermicomposting can have on our environment, including the preservation of soil health, the reduction of chemical fertilisers, the capability of carbon sequestration, and the efficient utilisation of residual cow dung. By engaging women in this endeavour, IGSSS was able to provide a source of income, promote financial independence, and a path towards equitable societal roles.

A Kashmir specific study on vermicomposting was undertaken by my colleague, Iram Fatima in April 2023 to assess the impact of vermicomposting being done by the rural women supported by IGSSS through various projects. The study brought to the fore

positive impacts of vermicomposting and validated our thought process to have such interventions. The findings of the study encouraged our Executive Director, Mr John Peter Nelson to have a similar study across IGSSS' intervention areas in the country. Under his astute guidance, Iram Fatima conducted this study in July 2023. The completion of this study has been made possible through the consistent efforts of IGSSS team members across India.

The results from the vermicomposting study are very encouraging and inspiring. As a document, it validates the potential of vermicomposting and provides the empirical evidence required to promote its adoption in broader terms. The multifaceted benefits of vermicomposting, from economic empowerment to ecological sustainability, have been successfully tracked.

Let us acknowledge the contributions of each member of the IGSSS family, whose dedication has shaped this endeavour into a force for positive change and hope this study helps in spreading vermicompost intervention widely and encourages communities to indulge.

Yasir Qureshi
Senior Manager

Introduction

Vermicomposting has gained attention for its sustainable approach, being crucial in promoting resilient agriculture and maintaining a balanced ecosystem. By breaking down organic waste into nutrient-dense compost, vermicomposting enhances soil fertility, improves water retention, and encourages healthy plant growth, ultimately reducing the need for chemical fertilizers. Under Jharkhand's Sustainable Food Security initiative, IGSSS introduced its vermicomposting programme in 2004. Over the years, this programme has grown from strength to strength and has expanded to all intervention geographies of IGSSS.

A study was conducted in sixteen districts of Assam, Chhattisgarh, J&K, Madhya Pradesh, Maharashtra, Odisha, Uttar Pradesh, and Jharkhand to assess the impact of vermicomposting initiatives supported by IGSSS over the years. The study's primary goals encompassed evaluating economic benefits, analysing social implications, assessing environmental effects, and examining potential health outcomes. 1416 persons who are engaged in vermicomposting participated in this study and provided valuable data and insights. By comprehensively validating the impacts of vermicomposting initiatives, this study may hold significance for various stakeholders to arrive at informed decision-making, refinement programmes, and formulation of scaling up strategies.

Methodology

This study employed a methodical approach to develop and execute the data collection process for achieving research objectives. The methodology included distinct stages:

1. Preparation of Test Questionnaire.
2. Iterative Testing.
3. Questionnaire Finalization.
4. Member Orientation.
5. Data Collection using Digital Tools.
6. Data Compilation.
7. Data Analysis.

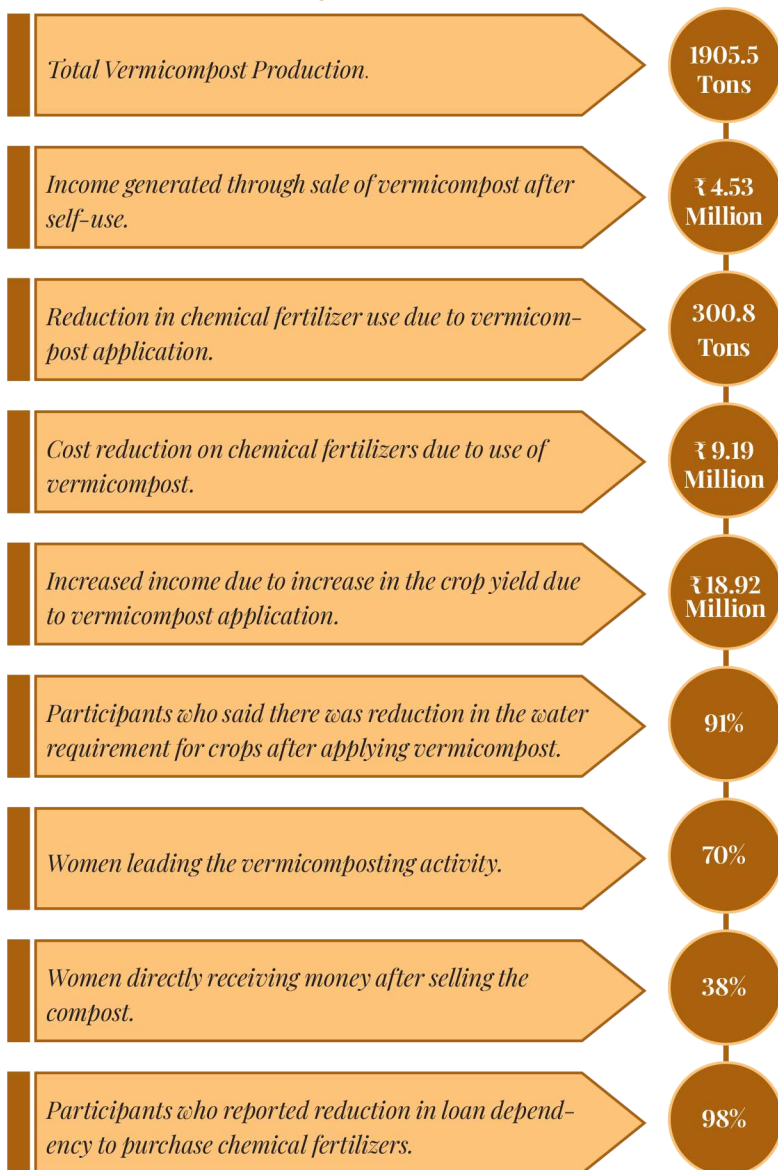
A conversion factor was established, indicating that 1 ton of vermicompost can sequester approximately 0.24 tons of carbon dioxide¹. To quantify the potential carbon emissions prevented, the carbon content of 1 kg of non-recycled organic waste was determined, revealing that it could potentially yield up to 700 grams of carbon dioxide².

¹ Dr Popiha Bordoloi. *Agricultural waste recycling for environmental sustainability: Way to mitigate climate change by carbon sequestration*. *The Pharma Journal*. 2022; 11(10): 1945-1948.

² Find out how your carbon footprint is generated. <https://www.bbva.es/>

Highlights

Achievements in the year 2022-23



Annual Average Values per Family

| | |
|--|------------------|
| Vermicompost production | 1346 Kgs |
| Vermicompost for self-use | 1098 Kgs |
| Vermicompost sold | 247 Kgs |
| Revenue generated by selling vermicompost | Rs 3202 |
| Chemical fertilizers used prior to vermicompost application | 405 Kgs |
| Cost to the family on chemical fertilizers before vermicompost | Rs 11,754 |
| Chemical fertilizers used in 2022-23 | 192 Kgs |
| Cost to the family in 2022-23 on chemical fertilizers | Rs 5262 |
| Additional increase in income due to yield increase | Rs 13,363 |

Major Findings

A. Sustainable Impacts

The organization's vermicompost interventions have brought about remarkable sustainable impacts, successfully reduced carbon emissions and advanced environmentally friendly agricultural practices. Through collaboration with respondents, we prevented the emission of 457.32 tons of carbon dioxide into the atmosphere. Additionally,



a significant decline in chemical fertilizer consumption was achieved, with respondents collectively cutting usage by 300,890 kilograms - a shift from 573,350 to 272,460 kilograms. This shift preserves soil well-being and fertility and lessens potential environmental and health hazards associated with excessive chemical fertilizer usage.

The sustainable impact of vermicomposting was evident in

responses from 1374 participants. A substantial 97% reported a remarkable reduction in plant diseases previously associated with cow dung and chemical fertilizers usage, highlighting the vermicomposting's effectiveness in enhancing plant health and countering negative environmental and agricultural consequences tied to traditional methods. Adopting vermicomposting also altered water usage patterns, as 91% (1285 respondents) confirmed decreased soil water needs with 1177 participants noted a 25% water reduction, while 104 reported 50% decrease. Impressively, three respondents achieved a remarkable 75% reduction.

These outcomes present immediate advantages and extend their influence on broader, long-term benefits. The practice of vermicomposting emerges as a powerful tool that contributes to mitigating pressing environmental challenges. At the forefront of the benefits lie the resource-efficient aspects of vermicomposting. Using vermicompost aligns with sustainable agriculture practices, decreasing reliance on non-renewable resources and diminishing the potential negative impacts on soil health and water system. Furthermore, adopting vermicomposting promotes an ecologically conscious approach that prioritizes the creation of resilient and healthier ecosystems.

In a larger context, these sustainable practices promote a commitment to enhance a legacy for present and future generations. The benefits of vermicomposting align with intergenerational equity, where the actions taken today consider the needs and well-being of those who will inherit the planet.

B. Social Impacts

Vermicomposting makes a real difference in communities, sparking impressive social changes. The most noticeable effect is in waste reduction. By diverting organic waste towards vermicomposting, communities have reduced landfill dumping by 94%, worth

31,75,878.33 kgs less. This has led to cleaner surroundings and a shared determination for an improved quality of life, further strengthening the community's bonds and promoting cooperation.

Another remarkable impact is the empowerment of women. The survey findings highlight that 70% (985) of those surveyed have seen women taking the lead in vermicomposting initiatives.



This shift challenges traditional gender roles, allowing women to assume leadership positions and gain financial independence. However, when it comes to financial independence, there is room for growth. Only 38% (378) of the women-led efforts have translated into income from vermicompost sales, indicating the need for further support to turn participation into sustainable income streams.

One more positive shift is the reduced dependency on loans. Almost all respondents, a significant 98% (1,384), revealed that vermicomposting had lessened their reliance on loans for chemical fertilizers. This not only encourages sustainable agricultural practices but also eases financial burdens on households. Interestingly, this decline in loan dependency has a spin-off effect on self-confidence. All 1,384 respondents expressed a boost in self-confidence and self-esteem. This newfound autonomy em-

powers communities to make choices firmly believing in their capabilities. When we take all these impacts together, they culminate in improved living conditions. An overwhelming 99.7% (1412) of respondents noted that their living conditions have improved due to increased income and cost savings from vermicomposting. These comprehensive changes highlight the potent influence of vermicomposting initiatives.

In closing, the effects of vermicomposting stretch beyond mere waste reduction. They encompass a more empowered gender dynamic, financial self-sufficiency, decreased reliance on loans, heightened self-confidence, and better living conditions. These outcomes highlight sustainable waste management's vital role in nurturing environmental protection, driving positive social change, and advancing community development.

C. Economic Impacts

The study's results indicate significant economic benefits from adopting vermicomposting practices by the 1416 respondents. These financial gains manifest across various domains, encompassing reduced expenditures on chemical fertilizers, enhanced income from vermicompost sales, and improved crop yields that yield additional earnings. These respondents' cumulative annual supplementary income due to vermicomposting is Rs 3,26,49,847 rupees, for each respondent family it comes to 23,762 rupees.

1. **Reduced Chemical Fertilizer Usage and Costs:** Prior to adopting vermicomposting, respondents collectively spent Rs 1,66,45,062/- on 5,73,350 kgs of chemical fertilizers annually. Post-adoption, chemical fertilizer consumption reduced by 52.47% to 2,72,460 kgs, with costs amounting to Rs 74,52,196/-. This transition translated into substantial savings of 3,00,890 kgs and Rs 91,92,866/-, marking a significant financial relief for farmers.

2. **Income Generation from Vermicompost Sales:** During 2022-2023, the respondents collectively produced 19,05,527 kgs of vermicompost, with 3,50,366 kgs sold for Rs 45,34,498/-. This additional income enhances respondents' financial stability, enhancing their overall economic prospects.
3. **Enhanced Crop Yields and Added Income:** 98% of respondents reported increased crop yields following vermicompost utilization. Among the 1387 respondents experiencing elevated yields, an additional Rs 1,89,22,483/- in income was generated during 2022-2023, directly attributed to increased productivity.

D. Health Impacts

A significant shift towards improved upper respiratory tract health has been observed among individuals who have transitioned from using chemical fertilizers to adopting vermicomposting practices. Of the 1416 respondents, 1358 (96%) reported experiencing upper respiratory tract symptoms, such as itchy eyes and related discomfort, while using chemical fertilizers. However, on switching to vermicomposting, 1358 participants (100%) reported a noteworthy reduction in these respiratory symptoms.

This considerable improvement indicates the positive impact that vermicomposting can have on individuals' well-being. The transition from chemical fertilizers to vermicomposting offers a feasible solution for preventing and minimizing upper respiratory tract symptoms that often get triggered by chemical fertilizer exposure. This shift highlights the potential of vermicomposting in enhancing soil fertility and waste reduction and creating a healthier environment for individuals engaging in agricultural or gardening activities.

Way Forward

Having witnessed the numerous benefits that vermicomposting interventions have brought to our intervention sites, it is evident that this sustainable approach is essential for addressing environmental and agricultural challenges. The success stories we have encountered emphasize the need for further replicating such interventions across all our target areas. By promoting vermicomposting on a larger scale, we can unlock many advantages and contribute to a more sustainable and resilient future. Moving forward, IGSSS's vermicompost programme can take strategic steps to enhance its impact and sustainability:

1. **Capacity Building Workshops:** Conduct regular workshops for farmers, especially women, to impart knowledge about vermicomposting techniques, organic farming, and sustainable agricultural practices. This not only enhances productivity but also empowers farmers to make informed decisions. To further integrate women empowerment, the capacity building of women on leadership and management skills is crucial.
2. **Technology Adoption:** Explore modern technologies for efficient vermicompost production. Introducing mechanized processes could increase output while minimizing labour efforts, making it an attractive venture for large-scale production.

3. **Partnerships and Collaborations:** Increase partnerships with agricultural research institutions and universities to enhance research and development of vermicomposting techniques. Collaborating with local NGOs and self-help groups can widen the programme's reach and impact.
4. **Large-Scale Business Model Development:** To upscale the programme into a viable business model and establish regional collection centres for organic waste. Develop a well-structured supply chain to ensure consistent access to raw materials for vermicomposting. Explore opportunities for branding and packaging the vermicompost for commercial sale.
5. **Market Diversification:** Besides agricultural use, explore potential markets in the horticulture, landscaping, and urban gardening sectors. Position the vermicompost as a premium organic fertilizer, emphasizing its environmental benefits.
6. **Scaling Up Geographically:** Based on the success in different regions, consider expanding the programme to more communities, adapting the approach to suit local contexts while maintaining the core objectives.