



THE WASTED OPPORTUNITY: HOW WE CAN USE ORGANIC WASTE TO CREATE A MORE SUSTAINABLE FUTURE



**I'M SO GOOD AT WASTE MANAGEMENT, I CAN
TURN GARBAGE INTO GOLD. I'M LIKE A MODERN-
DAY ALCHEMIST, EXCEPT INSTEAD OF TURNING
LEAD INTO GOLD, I'M TURNING TRASH INTO
SOMETHING THAT'S ACTUALLY USEFUL.**



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Horriying amount of waste



India generates 1.45 lakh metric tonnes of solid waste per day, of which 35% is dry waste and 65% is wet waste. This means that India produces 51,250 metric tonnes of dry waste and 93,750 metric tonnes of wet waste per day. To put this into perspective, the weight of the Statue of Unity is about 67,000 metric tonnes. So, India produces enough dry waste every day to build 0.8 Statues of Unity. And the weight of the dome of the Taj Mahal in Agra is about 12,000 tonnes. So, India produces enough wet waste every day to build 2.6 Taj Mahal domes.

Only some amount of India's municipal solid waste is recycled. The rest of the waste is either dumped in landfills or burned in open fires. Landfills and open fires are major sources of air pollution, water pollution, and greenhouse gases. Waste management is a major challenge for India, and it is only going to get worse as the country's population grows. This is a staggering amount of waste, and it is a major environmental problem. If India does not find ways to reduce, reuse, and recycle its waste, it will have a devastating impact on the country's environment and people.

Physocological pollution



In India, the Ganga River is considered sacred and purifying, even though it is polluted with sewage and other waste. This belief is based on the Hindu concept of two types of waste: physical- external and ritual- religious. The belief that the Ganga is sacred and purifying leads some people to bathe in the river, even though it is polluted. They may be aware of the physical pollution, but they believe that it does not compromise the river's sacred and purifying properties. This belief can hinder efforts to clean up the Ganga, as it can lead people to believe that the river will cleanse them of any impurities they may have.

The caste system also plays a role in India's waste problem. Dalits, the lowest caste in the Hindu hierarchy, are often tasked with cleaning up waste, because they are considered to be polluted and untouchable. This leads to discrimination, as well as to health problems from exposure to waste. The story of Mallu, a young man who was given a name associated with waste (Mal in Hindi means "feces" or "excrement."), is a reminder of the challenges faced by Dalits in India. The belief that they are impure and worthless can have a profound impact on their lives. By giving a name associated with waste, she believed that doing so would ward off the gods and keep him alive since he is worthless and would never amount anything.

Why are we generating so much waste?

India produces a staggering 93,750 metric tonnes of wet garbage every day. Much of this waste ends up in landfills or is burned, which pollutes our air and water, contributes to climate change, and creates health hazards.

One of the main reasons for India's wet garbage problem is our culture of excess. We buy goods and supplies in amounts that are often not even needed. This is especially true for weddings and other large functions, where it is not uncommon to see mountains of food go to waste. According to a study, India wastes about 40% of the food it buys. This is a huge amount of waste, and it is having a significant impact on our environment. Another major problem with garbage in India is that we do not segregate our waste. This means that all of our dry and wet garbage is mixed together, making it difficult to recycle or compost garbage. As a result, much of our wet garbage ends up in landfills, where it can release methane, a potent greenhouse gas, and leachate that pollutes the soil and groundwater. The problem of wet garbage in India is a complex one, but it is one that we can solve.



The Silent Killer

The silent killer refers to the less obvious and often overlooked forms of environmental contamination that have detrimental effects on ecosystems and human health. One significant example of unseen pollution is the loss of vital nutrients, such as potassium, from dumpyards. When organic waste is discarded in landfills, it undergoes decomposition, releasing harmful gases like methane and carbon dioxide. These gases contribute to climate change and air pollution. Moreover, the nutrients present in the waste, which could otherwise be used as organic fertilizers, are wasted and do not return to the farming system. The consequences of this unseen pollution extend beyond the immediate environmental impact. Farmers suffer as they are compelled to rely on synthetic fertilizers to compensate for the lost nutrients. This reliance perpetuates a cycle of energy consumption, from the production and transportation of chemical fertilizers to their application on fields. Additionally, the economic burden falls on farmers, who face increased costs and decreased profit margins. The unseen pollution from dumpyards not only harms the environment but also disrupts agricultural sustainability and adversely affects the livelihoods of those in the farming industry.

To address this issue, innovative waste management practices, such as composting and recycling, should be implemented to divert organic waste from landfills. These approaches can help restore nutrients to the soil, reduce greenhouse gas emissions, and promote a more sustainable and resilient agricultural system.



What is happening to the waste?

India is a land of contrasts, and its waste management system is no exception. On the one hand, the irony of India's waste management situation is that it is a country with a rich history of sustainable living. For centuries, Indian communities have practiced waste segregation and composting, and they have used waste to create fuel and fertilizer. However, this traditional knowledge has been lost in recent decades, as India has become more industrialized and urbanized. On the other hand, it is also a country where millions of tonnes of waste are dumped in landfills each year, polluting the environment and posing a health hazard to millions of people.

Waste segregation at source is not being done, and non-recyclable waste with a calorific value of 1500 Kcal/kg or more is being dumped in landfills. This is because there is a lack of awareness about the importance of waste segregation and recycling, and the waste management system in India is not adequately equipped to handle the amount of waste that is being generated. As a result, millions of tonnes of waste are being dumped in landfills each year. And wet garbage releases methane, a potent greenhouse gas, and leachate that pollutes the soil and groundwater. Due to methane the temperature rises and it also ignites fire on the landfills. It is responsible for more than 25% of the global warming we are experiencing today. Due to its structure, methane traps more heat in the atmosphere per molecule than carbon dioxide (CO₂), making it 80 times more harmful than CO₂ for 20 years after it is released.

What are the opportunities of this waste in helping the environment?

India's waste problem is a mountain of opportunity. It is a mountain of plastic that can be recycled into new products, a mountain of food waste that can be composted to create fertilizer, and a mountain of biomass that can be used to generate energy. If India can harness the potential of its waste, it can help to reduce pollution, create jobs, and improve the lives of its citizens. But this will require a concerted effort from all stakeholders, including the government, businesses, and individuals.

The government can create policies that incentivize waste segregation and recycling, businesses can invest in waste-to-energy technologies, and individuals can make changes to their lifestyles to reduce their waste output.



The 17 Sustainable Development Goals

The Sustainable Development Goals (SDGs), also known as Global Goals, are a set of 17 integrated and interrelated goals to end poverty, protect the planet and ensure that humanity enjoys peace and prosperity by 2030.



THE GLOBAL GOALS



The Composting Phoenix: Rising from the Ashes of Waste

Traditional composting methods are those that have been used for centuries to turn organic materials into compost. These methods typically involve creating a pile of organic materials, such as food scraps, yard waste, and manure, and allowing it to decompose over time. Traditional composting methods can be effective, but they can also be time-consuming and labour-intensive. One of the main limitations of traditional composting methods is that they can take a long time to produce compost. The decomposition process can take anywhere from several days to a year, depending on the materials being composted and the conditions of the pile. This can be a problem for people who want to use compost quickly. Another limitation of traditional composting methods is that they can be messy and smelly. The decomposition process can produce foul odors, and the pile of organic materials can attract pests. This can be a problem for people who live in urban areas.

Despite these limitations, traditional composting methods can be a good option for people who want to compost at home. They are relatively easy to set up and maintain, and they do not require any special equipment. But traditional composting methods, like the phoenix, can rise from their limitations to become a valuable tool for reducing waste and improving soil health.



BSFL Composting: A Dam Against the Waste Tide

Waste is a river that we must learn to control. Just as we build dams and levees to control the flow of water, we can use BSFL composting to control the flow of waste. BSFL, or black soldier fly larvae, are a type of insect that can quickly and efficiently decompose organic waste. They can be used to turn food scraps, yard waste, and other organic materials into nutrient-rich compost in as little as 48 hours, compared to more than 30 days for traditional composting. BSFL composting is a sustainable and environmentally friendly way to manage waste. It reduces the amount of waste that goes to landfills and incinerators, and it produces compost that can be used to improve soil health, feed poultry, provide proteins for humans, and even be used to produce biodiesel. BSFL composting is also a relatively simple and affordable process that can be used in a variety of settings.

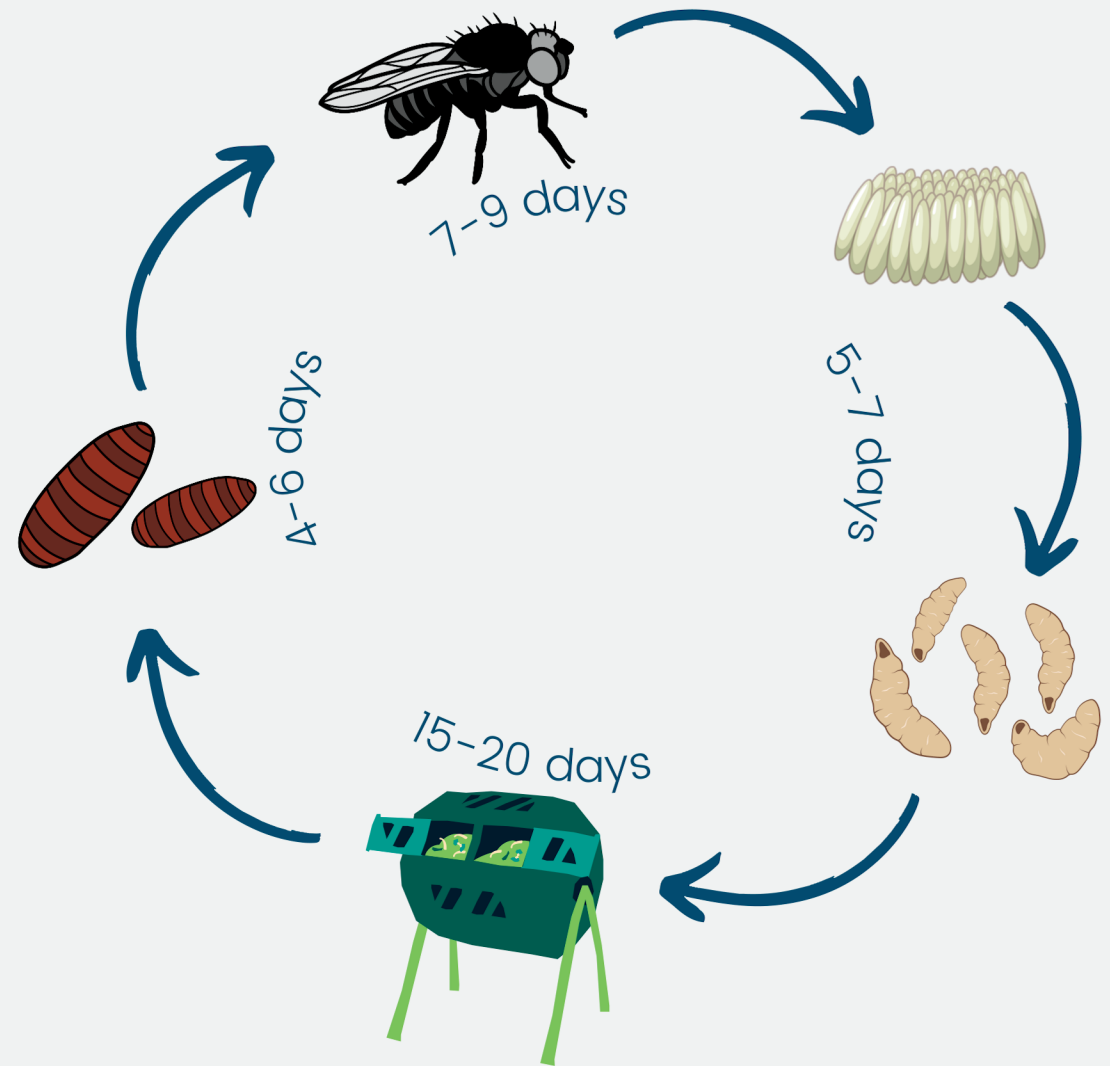
Innovative approaches to waste management, such as BSFL composting, are like dams and levees for the waste river. They help us to control the flow of waste and prevent it from reaching landfills and incinerators. These approaches are essential to creating a more sustainable future.



The Circle of Life of BSFL

Black soldier flies live fast and die young, like fireflies that flash briefly before fading into the night. Flies have a lifespan of just 7-9 days, during which time they do not eat anything. Instead, they focus on laying eggs, ensuring the continuation of their species. After laying their eggs, they die, but their legacy lives on in the form of their offspring.

The eggs hatch after 5-7 days, and the larvae that emerge are voracious eaters. They feast on waste materials, such as food scraps, manure, and even sewage, converting it into nutrient-rich compost. After 15-20 days, the larvae enter the pupal stage, during which they undergo a transformation into adult flies. The pupae are black, after 4-6 days, the adult flies emerge, ready to start the cycle all over again. These insects are able to thrive in even the most challenging conditions, and they play an important role in the ecosystem by breaking down waste and recycling nutrients.



Benefits of BSFL

Nutrient rich compost

BSF manure: A nutrient-rich soil amendment that's half the price, and it's good for the environment too!

BSF manure is a nutrient-rich compost that is high in nitrogen, phosphorus, and potassium. It can be used to improve soil structure and water retention, just like vermicompost. But unlike vermicompost, BSF manure is much more affordable. Vermicompost costs around Rs. 25/kg, while BSF manure costs only Rs. 10/kg. That's a 50% savings! But don't let the price fool you. BSF manure is just as good as vermicompost, if not better. It is packed with nutrients that will help your plants grow strong and healthy. BSF manure is also a great way to reduce food waste and improve the environment. When you treat your kitchen garbage with BSFL, the larvae break it down into nutrient-rich compost that can be used to fertilize plants.

Vigyan Ashram's pilot project at Darpan Society in Rajgurunagar, Maharashtra, has shown that BSF composting bins can be a success with the support of residents. The bins were placed in the parking area, and residents were encouraged to throw their kitchen garbage in them. The larvae quickly broke down the garbage to compost. BSF composting bins are a win-win for residents and the environment by building sustainable cities and communities. They help to reduce food waste, affordable nutrient rich manure and reduce greenhouse gas emissions.



Benefits of BSFL

Protein source

Black Soldier Fly Larvae: The Future of Protein

Black soldier fly larvae (BSF) are tiny creatures that could be the next big thing in protein. They are packed with nutrients and can be raised on scraps, making them a sustainable and eco-friendly alternative to traditional sources of protein.

For poultry, BSF larvae offer a number of benefits. They have a high protein content that supports growth and development. They improve feed conversion rates and reduce costs for chicken. In addition, BSF larvae can be fed on food scraps, which reduces the amount of waste that goes to landfills. This is a major advantage over soy, which takes a lot of water to grow.

For humans, BSF larvae are also a sustainable, affordable, and eco-friendly alternative to traditional sources of protein. They are rich in essential amino acids, which are necessary for muscle and tissue repair. 1 KG of waste can be converted into 3 Rs. worth of protein-rich (BSF) larvae. In addition, BSF larvae mature in 45 days, compared to 2 months for poultry birds. This means that the protein cycle can be continuous, which is essential in a world where the demand for protein is growing and help in achieving zero hunger. BSF larvae are a game-changer in the protein space. They are a sustainable, nutritious, and affordable source of protein that can help to feed the world in a more environmentally friendly way.



Benefits of BSFL

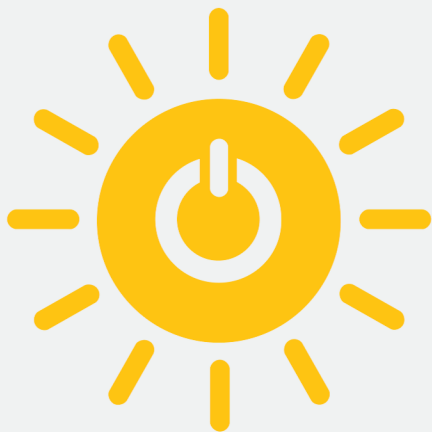
Biodiesel

Black Soldier Fly Biodiesel: The New Black Gold

Biodiesel is a clean-burning, renewable fuel that can be made from a variety of sources, including vegetable oil, yellow grease, cooking oil, and animal fat. The process of making biodiesel is called transesterification, which converts fats and oils into biodiesel and glycerin.

BSF larvae are grown on organic waste, such as food scraps and manure. This means that they do not compete with food crops for land or water, and they actually help to reduce food waste. BSF larvae also have a high feed conversion rate, meaning that they produce more biodiesel per unit of food waste than other sources. BSF biodiesel has a number of benefits over traditional petroleum diesel. It is cleaner burning, so it produces fewer emissions that contribute to air pollution. It is also renewable, so it does not contribute to the depletion of fossil fuels. Additionally, BSF biodiesel is biodegradable, so it does not pollute the environment when it is disposed of.

BSF biodiesel is a sustainable fuel that has the potential to change the world by proving affordable and clean energy.



Benefits of BSFL

Health & Environment

The BSF system is a powerful tool that can help us to reduce waste, improve health, and boost agricultural productivity. These tiny flies are voracious eaters that can consume a wide variety of organic waste. Their frass is a nutrient-rich fertilizer that can enrich the soil and boost crop yields. Their larvae are a sustainable source of protein for livestock and humans, and their bio diesel can help to mitigate climate change. In addition to its waste-reduction benefits, the BSF system can also help to improve public health by reducing the risk of foodborne illness. Because they can be produced on a small scale with minimal resources, BSF larvae are an ideal choice for communities.

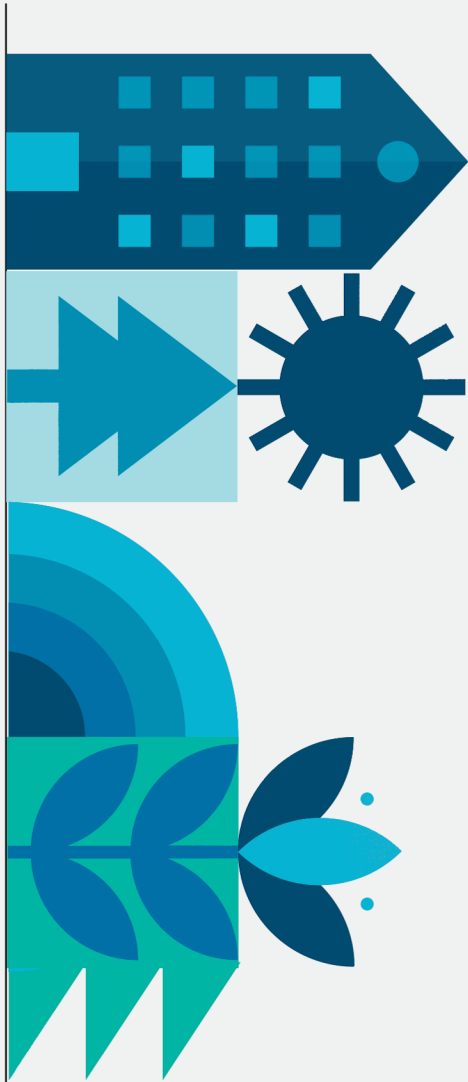
In a world facing a growing waste crisis and climate change, the BSF system is a promising solution. It is a sustainable, efficient, and effective way to manage organic waste, improve public health, and boost agricultural productivity. The system can help to mitigate greenhouse gas emissions and protect our planet for future generations.

Imagine a world where our landfills are empty, our waterways are clean, and our food is nutritious and safe to eat. A world where we are no longer dependent on fossil fuels. A world where we are living in harmony with nature. This is the world that the BSF system can help us to create.

Let's join together and make the BSF system a reality. Together, we can build a better future for ourselves and for our planet.



Vigyan Ashram: a recycling wand that gives new life to old waste.



For over 15 years, Vigyan Ashram has been working tirelessly to develop a composting technique that is both economically and environmentally viable. We have finally arrived at a solution that we are confident can make a real difference.

BSFL system is a sustainable and effective way to manage organic waste. It is:
Economical: The system is a cost-effective way to reduce waste disposal costs,
Environmentally friendly: The system helps to protect the environment by reducing the amount of waste that ends up in landfills,
Scalable: The system can be scaled to meet the needs of any community and
Multi-product: The system produces three valuable byproducts: nutrient-rich compost, high-protein feed, and oil.

We believe that BSFL system is the key to a more sustainable future. And it's like a symphony of insects that work together to create something beautiful. It can help to reduce waste disposal costs, protect the environment, and improve the quality of life for everyone.

We are eager to collaborate with more communities to help them manage their organic waste. Together, we can build a better world. Contact us to learn more about how BSFL system can help you manage your organic waste and be the part of a sustainable future.

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