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Nectar Water - A Bio-Pesticide

Jayesh Kurme*[1], Suraj Hande[2], Prathamesh Govardhane[3], Dr. Ravi Tapre[4]
*[1-4]Chemical Engineering Department, Datta Meghe College of Engineering, Navi Mumbai, Maharashtra, India
[4]Mentor, Chemical Engineering Department, Datta Meghe College of Engineering, Navi Mumbai, Maharashtra, India
Corresponding Author : - jayeshkurme55@gmail.com

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ABSTRACT

Crop protection has depended significantly on synthetic chemical pesticides for the last 60 years. Inadequate use of broad-spectrum chemical pesticides to improve agricultural productivity has resulted in a number of negative consequences, including the development of resistance in target pests, the killing of beneficial organisms, the presence of harmful residues in food, feed, and fodder, and a hazardous impact on human health. The growing public awareness about the possible negative effects of synthetic agrochemicals encourages a quest for technology and products that are less harmful to the environment. As a result, different eco-friendly pest management strategies are required. Pest management agents based on live microorganisms or natural items are known as bio-pesticides. They have demonstrated pest management capability and are utilised all around the world. Bio-pesticides are formulations derived from naturally occurring compounds that control pests through non-toxic and environmentally acceptable techniques. The use of bio-pesticides has the potential to significantly assist agricultural and public health initiatives.

Keywords : Nectar Water, Bio-Pesticide, Organic Fertilizers, Cow Dung

I. INTRODUCTION

Agriculture is harmed by the destructive actions of several pests such as bacteria, fungus, weeds, and insects, resulting in lower yields. Since the 1960s, the most frequent form of pest management has relied heavily on the application of synthetic organic pesticides. Crop output grew as a result of the effective adoption of green revolution technologies, which included the use of synthetic chemical pesticides in pest control programmes. However, over-reliance on chemical pesticides and their indiscriminate usage have a number of negative environmental consequences. Recognizing the negative impacts of chemical pesticides such as pesticide resistance, pest revival, secondary pest outbreaks, pesticide residues in produce, soil, air, and water resulting in human health dangers and ecological imbalances, alternative approaches must be developed. As a result, the necessity of the day is to maximise output from diminishing natural resource availability while minimising environmental impact.

As a result, alternative, ecologically friendly pest management strategies are required. As a result, bio-pesticides containing eco-friendly, plant or microbial derived components that have broad insecticidal effects while causing minimum environmental damage have been progressively produced. Bio-pesticides are less harmful than chemical pesticides in general, are typically target specific, and do less harm to birds, insects, and mammals. Furthermore, even when employed in an open field, they degrade fast, lowering the danger of environmental contamination or lingering toxicity.[1]

Microbial pesticides, plant pesticides (botanical pesticides), and biochemical pesticides are the three primary types of biopesticides. Surprisingly, almost 90% of microbial pesticides are based on a single entomopathogenic endospore generating bacteria. Given the tremendous microbial richness, there are several chances for discovering and altering possible biopesticides to protect the environment from the fatal effects of agrochemicals on nontarget creatures, including humans.[2]

Bio-pesticides may be broadly categorized into three major groups:

1) Microbial Pesticides:

Microbial bio-pesticides are formulations that include pathogenic microorganisms (Bacteria, Fungi, Viruses, or Protozoans) for the pest of interest. Bio-fungicides (Trichoderma), bio-herbicides (Phytopthora), and bio-insecticides are examples of microbial pesticides that may manage a wide range of pests (Bacillus thuringiensisandBaculovirus). The most well-known microbial pesticides are strains of the bacterium Bacillus thuringiensis, also known as Bt, which may control certain insects in cabbage, potatoes, and other crops. Bt releases a protein that is toxic to some insect pests. Other microbial insecticides work by displacing pest organisms. Bacillus thuringenesis, Bacillus sphaericus, Psudomonas fluorescence (Bacteria), Trichoderma viride, Beauveriabassiana (Fungi), and Baculo virus are the most often employed microbial insecticides.[3]

2) Biochemical pesticides

Biochemical pesticides are naturally occurring compounds derived from bacteria, plants, and animals that use non-toxic ways to control pests. Conventional pesticides, on the other hand, are synthetic substances that typically kill or inactivate the bug.

Plant growth regulators, for example, are biochemical insecticides that interfere with growth or mating, whereas pheromones repel or attract pests. Historically, several plant species have been studied for their insecticidal and repellant qualities for human benefit. In general, many plants contain a diverse range of secondary metabolites such as phenols, flavonoids, tannins, alkaloids, and sterols, the efficacy of which varies depending on the pest species. Botanicals refer to plant biochemicals as a group.[4]

3) Plant Incorporated Protectants

Plant-incorporated protectants are created by inserting a gene that provides resistance to a specific pest into a crop plant. The gene for Bt pesticidal protein, for example, was inserted into the genetic DNA of the cotton plant. This transgenic plant generates biodegradable protein that has no negative impact on animals or humans, reducing the need for dangerous pesticides [1].

II. REVIEW OF LITERATURE

According to the Deshpande technique, the planter must include at least 15 kg of dirt from the root of a banyan tree into each acre of farmland he desires to cultivate. Because the amount is so small, I call it Angara, which is the name of the sacred ash from our temples. The use of Angara causes a progressive rise in the number of soil-dwelling organisms. My goal, on the other hand, was to see a quick growth in their numbers. I was certain that our forefathers had

devised a method to do this. So I returned to the Vedic classics. I was not disappointed, since Arya Chanakya delivered a really perfect shloka to conclude the quest. Coat the seed with honey and ghee (clarified butter) if it is in stick form; if it is in bulb form or has a hard cover, coat it in wet cow dung. If you are a farmer, you will understand how tough and hard the technique outlined in this shloka looks to be! It's no surprise that generations of farmers ignored the motto. I, on the other hand, spent months attempting to decipher the mantra's wisdom. This was followed by field trials that required unrelenting efforts, achievements, and failures. My perseverance eventually paid off. I was successful in putting the mantra into action, and so the word Amrutpani was formed.[5]

Prof Sripad A. Dabholkar introduced Amrut Jal as part of what is known as NatuEco Farming Technique. However, most gardeners I speak with are blissfully oblivious of this magical potion. I hope that this message reaches as many Organic Terrace Gardeners and farmers as possible, so that everyone may benefit from nature's simple yet powerful gift. I first learned about Amrut Jal via the Urban Leaves blog and decided to give it a shot in our yard. We first tested it on a dried-up flower plant that had ceased blossoming. What do you think? With around fifteen days, the plant began to grow blooms, and by a month, it was completely covered in them. Amrut Jal has been a fixture in our garden since then.

Just as we require food to replenish our bodies' nutritional levels, organic soil requires something to maintain their nutrient levels. Amrit-Jal is a liquid organic fertiliser that improves the nutritional content of organic farming soil. This page covers everything about Amrit-Jal, from its ingredients to its production process. Prepare Amrit-Jal and add it to the soil that has been prepared for organic farming every fifteen days. You may further improve the results by adding a handful of wood ash to the soil every three months[6].

N Selvaraj, B Anita, B Anusha, and M Guru Saraswathi contributed. In a slightly different method, TNAU Agritech Portal Organic Farming discussed the preparation and use of this Nectar water in the study Organic Horticulture Creating a more Sustainable Farming. In addition to all of the items used here, butter has been included as a component.[7]

III. INGREDIENTS FOR NECTAR WATER

1) Cow dung

Cow dung contains billions of microorganisms per gramme. When fermented for three days, they proliferate and hasten disintegration. The microbial activity is at its peak on the fourth day, following which it begins to decline. Fresh cow dung provides not just plant nutrients, but also millions of soil-friendly microorganisms. They reproduce when they are adequately nourished. And when you feed these bacteria to the soil, it springs to life[8]. They not only enhance soil structure, but they also begin to break down available nutrients into a form that plants may easily absorb. Making Amrut Jal is essentially a procedure of enhancing the amount of previously present microbial life in fresh cow excrement from Indian breed cows.. Dried cow dung (Gobar) is widely utilised as a fuel for fires and a source of energy in rural India. Environmentally friendly Gobar Gas Plants would help conserve the ozone layer and avoid global warming in rural India.[9], [10]

2) Cow urine

Cow urine includes a total of 24 nutrients. Cow urine, like salt, adds flavour to compost and makes it appealing to bacteria. It's unfathomable that cow urine has such restorative properties[11].

Cow urine advantages demonstrate its numerous applications.

Cow Urine Composition: 95 percent water: Urea (2.5%) : Minerals, Hormones, Salts, and Enzymes (2.5%)

USAGES: It is utilised in a variety of ways, including:

1. Cow urine as an antimicrobial agent
2. Cow urine's effect on leukemia
3. Antimicrobial activity of cow urine
4. Cow urine's effect on wounds
5. Cow urine's anti-cancer properties
6. Immune modulation
7. The effect of cow urine fertilizer on pasture quality
8. Development of a disinfectant based on cow urine[12], [13]

There will be no need for chemical fertiliser if cow urine is applied on the field continuously for three years.

3) Sugarcane syrup

Sugarcane syrup can be replaced with 6 overripe bananas, 50 grammes of plain black jaggery, or 6 pieces of overripe jackfruit or other ripe sweet fruits. Sugarcane syrup includes sucrose, which is a kind of sugar that contains carbs. The primary goal of sugarcane syrup is to provide nourishment for bacteria found in fresh cow manure. As a result, it serves as food for microorganisms found in cow manure. The addition of sugarcane syrup or black jaggery provides energy to the microorganisms, causing them to grow and hence be useful[14].

1. The addition of sugarcane syrup accelerates fermentation.
2. It serves as a food source for millions of germs found in fresh cow dung.
3. It aids in the provision of energy to microorganisms.

4) Water

Water is the primary component of this bio-pesticide. The term "Nectar Water" implies that the major component of this solution is water. Water serves as a solvent in this case, allowing all of the elements to be blended together. This solution is left to cure for 2-3 days. Furthermore, water is the only source of nutrients required for bacteria. This nectar water is prepared, diluted with water, and then used as a foliar spray[15]. Chemical farming requires 80-90 times more water than farming that uses even less than typical organic farming. Water will be the most pressing issue in the planet's future, which we are only now realising.It is predicted that the next world war would be fought for water rather than politics or oil. Serves as a solvent. Minerals required for growth are provided. This is a dilution agent. Water is used to drench nectar water in soil, and nectar water is utilised for foliar spray[16].

IV. MANUFACTURE PROCESS OF NECTAR WATER OF A BIO-PESTICIDE

Here is step by step recipe for creating nectar water:-

1. Take 2500 ml litres of water.
2. Add one 250 ml of cow urine and add it to water.
3. Mix 250 gram of fresh cow dung and fifty ml of sugarcane syrup together.
4. Add above prepared mixture to cow-urine and water.
5. Stir this solution thrice in a day.
6. Stir it clock-wise for twelve times.
7. Now, stir it anti-clockwise for twelve times.
8. A concentrated solution will be ready by fourth day.
9. Add one part of concentrated solution with ten parts of water.
10. Nectar water is ready.

V. APPLICATIONS

Applications:

1. Nectar water is best used on the fourth day for watering the plants. However we also use it on 3rd and 5th days. We use it in almost all gardening activities.[17]

2. Watering the plants using nectar water on a weekly basis keeps the soil alive and rich in nutrients. [17]
3. Spraying filtered Nectar water once a week or once a fortnight helps in lowering the chance of pest infestation. It is also an excellent foliar spray.
4. Seed treatment using Nectar water by soaking for 24 hours before sowing them helps in better germination rate and stronger plant.
5. Root treatment of saplings for 30 minutes before planting them helps develop a stronger and more disease resistant plant.
6. Dried leaves or dried sugarcane bagasse is soaked in Amrut Jal and then used as mulch for plants.[18]
7. We all know that Nectar water is the heavenly drink which refreshes the gods and has the power to resurrect the dead. In the same manner Nectar Water invigorates the living soil and converts a dead soil into a living one.
8. Sugarcane, turmeric, ginger etc. should be planted after dipping into Nectar water.
9. When the soil is damp it should be drenched with Nectar Water.
10. While planting seedlings of crops such as chilli, tobacco or fruit trees, the small amount of water which is needed to wet the area around the plants, Nectar water is used.

VI. CONCLUSION

It is a total and complete organic farming with assured yields. Healthy soils, healthy plant life and healthy yields. Improves the condition of humus-helpful to soil bacteria and other helping soil insects and pathogen.
Restores natural taste, colour and flavour of the yields.
The cooking quality of rice and other cereals improves very much.
Reduces incidence of pests and diseases. Reduces the need of pest control measures. Poison-free pest control methods.
Poison-free fodder, produces and food.
Removes environmental pollution and ecological disturbance.
The plants are not subjected to shocks due to chemical fertilizers and chemical pesticides.
Leads to sustainable Agriculture

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