



AUTOMATIVE ORGANIC FERTILIZER SPLASHING MACHINE

Mr. R. Mohammed Farooq1. ME.,

Assistant Professor / Mechanical Engineering
P.A. College of Engineering and Technology
Pollachi-642002

D. Sanjeev4

Final Year Mechanical Student
P.A. College of Engineering and Technology
Pollachi-642002

K.S. Harishram2

Final Year Mechanical Student
P.A. College of Engineering and Technology
Pollachi-642002

K. Vignesh Kumar5

Final Year Mechanical Student
P.A. College of Engineering and Technology
Pollachi-642002

B. Prasath Kumar3

Final Year Mechanical Student
P.A. College of Engineering and Technology
Pollachi-642002

Abstract--- An organic fertilizer splashing machine is a piece of agricultural equipment designed to efficiently distribute organic fertilizers, such as compost or liquid organic fertilizers, onto crops or soil. It typically consists of a tank for holding the organic fertilizer, a pump or conveyor system for spraying or spreading the fertilizer, and often includes adjustable nozzles or distribution mechanisms to control the application rate and coverage. This machine can help farmers improve the evenness and effectiveness of fertilizer application, promoting healthy plant growth and soil fertility in an environmentally friendly way. The use of organic fertilizer forms the backbone & basic necessity of a poor farmer. The traditional methods of using chemical fertilizers are not sufficient & satisfactory for increasing productivity of crop and to maintain the fertility of soil. Whereas the chemical fertilizers are more costly in market, so it becomes difficult for poor farmers to purchase it. Organic fertilizer manufacturing machine solves these problems. The raw material is introduced in hopper and further it is mixed with the help of stirrer. This mixture is then passed to another large sized agitation vessel where it is kept for decomposition for about 24 hours. When this mixture is completely decomposed further through filtration fertilizer is separated. In this way, this machine prepares fertilizer within 24 hours

1. INTRODUCTION

Agriculture is the lifeblood of the national economy, and fertilizers are the basis of agricultural production. As an

important agricultural input, fertilizers rank first in the world in terms of production and use in China and play an important and irreplaceable role in safeguarding national food security and in improving agricultural productivity. The quality of the fertilizer directly affects agricultural production. Improving the quality of the fertilizer can increase crop yield and promote the sustainable development of agricultural production. The quality of the fertilizer is not only related to the internal nutrients of fertilizers but also to the appearance of fertilizers, which affects the mechanical fertilizer application effect. It typically consists of a tank for holding the liquid fertilizer, a pumping system to transport the fertilizer to a distribution mechanism (such as sprayers or nozzles), and often a tractor or other vehicle to move the machine across the field. This equipment helps farmers apply organic fertilizers efficiently, promoting healthy crop growth while minimizing waste and environmental impact.

2. LITERATURE REVIEW

Chaudhari et. al (2017) studied the sugarcane plantation in India and need of an alternative to the traditional as well as tractor operated fertilizer spreading machine. In India near about 70% people of our country are farmers. Due to these reasons the author developed the machine which has minimal capital cost compared to traditional fertilizing equipment. ^[1]

Laghari et. al. (2015) focuses on beneficial uses of fertilizer in agriculture. Soil contains various micro and macro elements which are essential for plant growth and yield. It is necessary to save important nutrient elements like nitrogen, phosphorus and

potassium by application of chemical fertilizers. For certain situations broadcast applications can be an inefficient method of application because there is much greater soil to fertilizer contact in more fixation or tie-up of nutrient.^[2]

Narode R. R et al. (2015) have generated a method to spread the fertilizer uniformly over a fallow land by dropping the fertilizer over the impeller disc. The system consists of a three wheels, two at the front and one at the back. These two wheels at the front are used to impel the fertilizer. The two hoppers are used to store the fertilizer; these hoppers are placed at some height from the wheel axle so that the fertilizer falls on to the impeller. The hopper is provided with flow control mechanism. In fertilization, the flow maintenance is necessary. Generally, every crop should get sufficient amount of fertilizer. This condition is satisfied by Spring Mechanism.^[3]

Kweon & (2014) Grift have proposed a method which employs control of the drop location of fertilizer particles on a spinner disc to optimize the spread pattern uniformity. The system contained an optical sensor as a feedback mechanism, which measured discharge velocity and location, as well as particle diameters to predict a spread pattern of a single disc.^[4]

NitishDas et al. (2014) have done a review of different fertilizer and pesticide spreaders. Author has sought attention towards growing population in India which is projected to be 1.6 billion in next few years. He also emphasizes that 73% of population is in Agricultural sector and out of that 65% farmers are small land and marginal farmers. In this he has discussed various types of spreaders and pesticides like Backpack sprayer, Lite-Trac, Motorcycle Driven Multi-Purpose Farming Device, Aerial Sprayer and their advantages & disadvantages.^[5]

3. LIST OF COMPONENTS USED

S.no	Name of the Component	Range
1	Screw Conveyor	8 inches
2	Bearing	24 mm
3	Sheet metal	Aluminium
4	Motor	0.25hp
5	Belt	V belt
6	Frame	Mild steel
7	Wheel	plastic

4. DESIGN



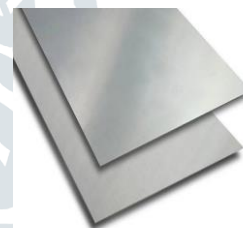
4.1 BEARING



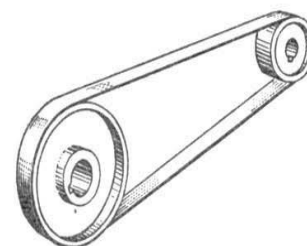
4.2 SCREW CONVEYOR



4.3 SHEET METAL



4.4 BELT



4.5 MOTOR**5. WORKING PRINCIPLE**

An organic fertilizer splashing machine is a piece of equipment used in agriculture to distribute organic fertilizers onto crops or soil. It typically consists of a tank for holding the fertilizer, a pump or mechanism for spraying it, and a set of nozzles or outlets for even distribution. These machines help farmers efficiently apply organic fertilizers to enhance soil fertility and crop growth. By adding manure to crops it adds nitrogen, potassium, phosphorus, sulfur, magnesium and calcium. While also increasing soil stability by increasing organic material, increasing water infiltration, it can add bacteria diversity and over time reduce the impacts of soil erosion. However, there is organic manure and non-organic manure. In order for manure to be considered organic it must come from organic livestock or certified organic growers. If organic manure is not available, they are permitted to use non-organic manure as long as the animals have room to roam, are not kept in the dark, and growers abstain from using genetically modified feeds.

APPLICATION

Agricultural science that deals with the cultivation of gardens, including planting vegetable plants, fruit, flowers, and shrubs and ornamental trees. Fertilization is one of the important things to increase production, even until now regarded as a dominant factor in agricultural production.

ADVANTAGES

1. Increase agricultural income
2. Organic fertilizer machine is conducive to the healthy life of human beings.
3. It is conducive to the export of agricultural products to earn foreign exchange.

6. CONCLUSION

A fertilizer splashing machine is a valuable agricultural tool that helps distribute fertilizers efficiently and evenly across fields. It can significantly improve crop yields and reduce the labor required for manual fertilization. However, the effectiveness of such a machine depends on factors like

proper calibration, maintenance, and choosing the right type of fertilizer for specific crops and soil conditions. Overall, investing in a well-designed and well-maintained fertilizer splashing machine can be a wise decision for modern farming practices.

7. REFERENCES

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