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[Francis* *et al.*, 6(4): April, 2017]
IC™ Value: 3.00

ISSN: 2277-9655
Impact Factor: 4.116
CODEN: IJESS7

IJESRT

INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

AGRICULTURE FERTILIZER DISTRIBUTER

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DOI: 10.5281/zenodo.556722

ABSTRACT

The art of growing plants for food is agriculture. Nutrients available in the soil determines the efficiency of growth of plants. These nutrients can be artificially increased by he usage of fertilizers. A machine that helps to feed plants with fertilizers will be a great source to increase the rate of agriculture. Our machine is designed to meet these needs. Solid and powder fertilizers can be fed to plants by our machine. Fertilizers of different sizes can be served with this single machine. The main advantage of this machine is that dimensions of the machine can be adjustable according to the requirement.

KEYWORDS: solid fertilizer, powder fertilizer discharge, plant growth, agriculture.

INTRODUCTION

Agriculture is a technique of growing plants, in order to increase the efficiency of agriculture fertilizers are used. Plants need several types of nutrients to thrive. Almost all the nutrients are present in soil, but due to cyclic agricultural process on the same land nutrients are depleted in that place. Therefore when further cultivation is done on the same land, plants can't produce its foliage. Fertilizers replenishes the nutrients present in the soil. So proper selection and usage of fertilizers will increase the efficiency of the agriculture. Fertilizers have the advantage of predictability and reliability.

LITERATURE REVIEW

Now-a-days agriculture is being reduced, due to hard work required to grow plants. Therefore farmers must be provided with machines that reduces their physical power required to row plants. Fertilizers are used to stimulate the growth of plants. Fertilizers used are of two types one is liquid type and another is solid type.Fertilizers are designed with accuracy and reliability to provide necessary nutrients for plants. A number of spraying of machines are available for broadcasting liquid type fertilizers, but there is no machine for distributing a solid and powder type fertilizer. Our machine will be a great invention to broadcast solid as well as powder type fertilizer.

Fig 2.1 (liquid) sprayer

Fig 2.2 (liquid) sprayer

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OBJECTIVE

The main objective of our machine is to reduce the man power required to broadcast fertilizers over a field It also aims at reducing the time consumption required for broadcasting the fertilizers. It aims to use the same machine for various types of plants. The distance between the plants may vary according to their planting type. Our machine can be used to provide fertilizers for plants irrespective of the distance distance between them. This can be achieved by adjusting the central distance between the wheels. Each plant is served with a separate discharging unit and it can be adjustable according to the requirement.

Not only reducing man power it also aims at proper discharging of fertilizer to the plants. The wastage of fertilizers such as scattering,been taken by wind can be reduced by the usage of our machine . It consists of several adjustable parts such as height and horizontal distances between the discharging units to complete the broadcasting of fertilizers. The physical contact between the human body and the fertilizers can be avoided by the usage of this machine.

DESIGN

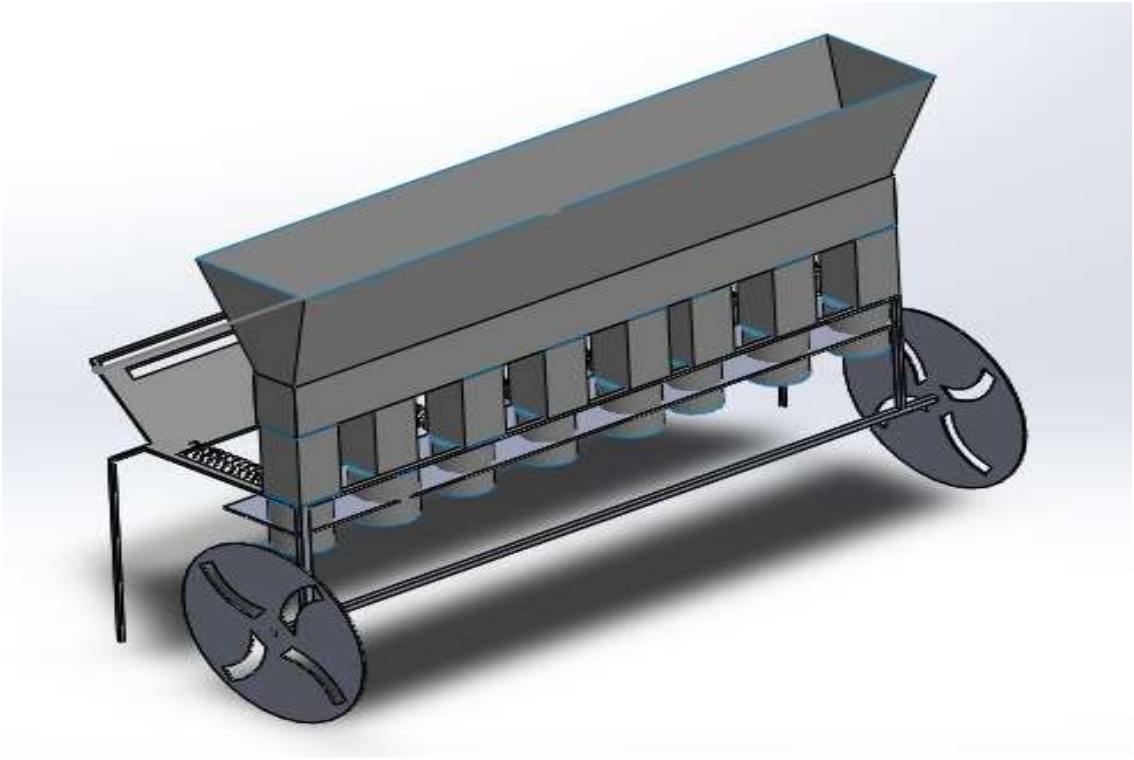

Fig 4.1 3D model

Features

Our machine has many additional features such as adjusting the vertical height between the tip of the discharging unit and the plants, horizontal distances between the discharging units. The need of these adjustable pars are as follows.

Vertical height adjustments

Plants are continuously varying in their heights. If the distance between the discharging unit and the plant is high, the amount of fertilizer that is placed of directly on the plant is reduced and also the scattering of fertilizers takes place. To overcome these problems the distance between the tip of the discharge unit and the plant must must be reduced. This can be done by the reducing the vertical distance of the discharging unit.

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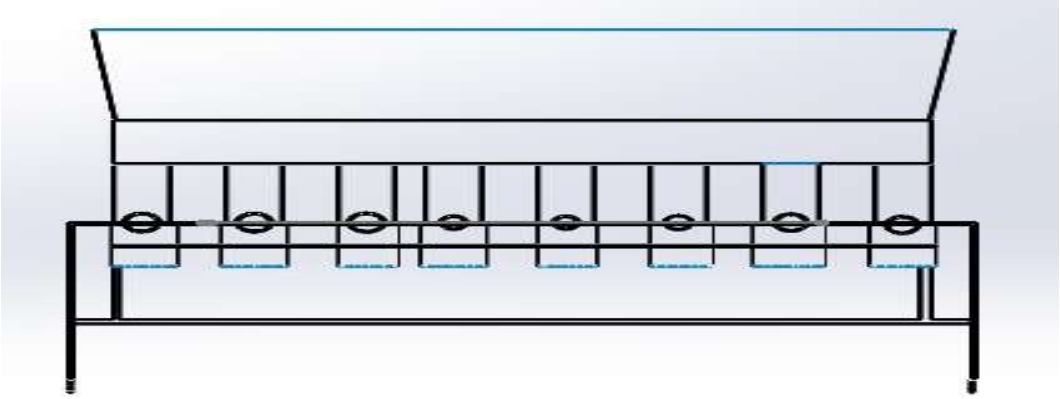

Fig 5.1.1 front view

Horizontal distance adjustments

According to the distance between the plants, the distance between the discharging units must be adjusted to provide proper broadcasting. This horizontal distance can be adjusted in our machine.

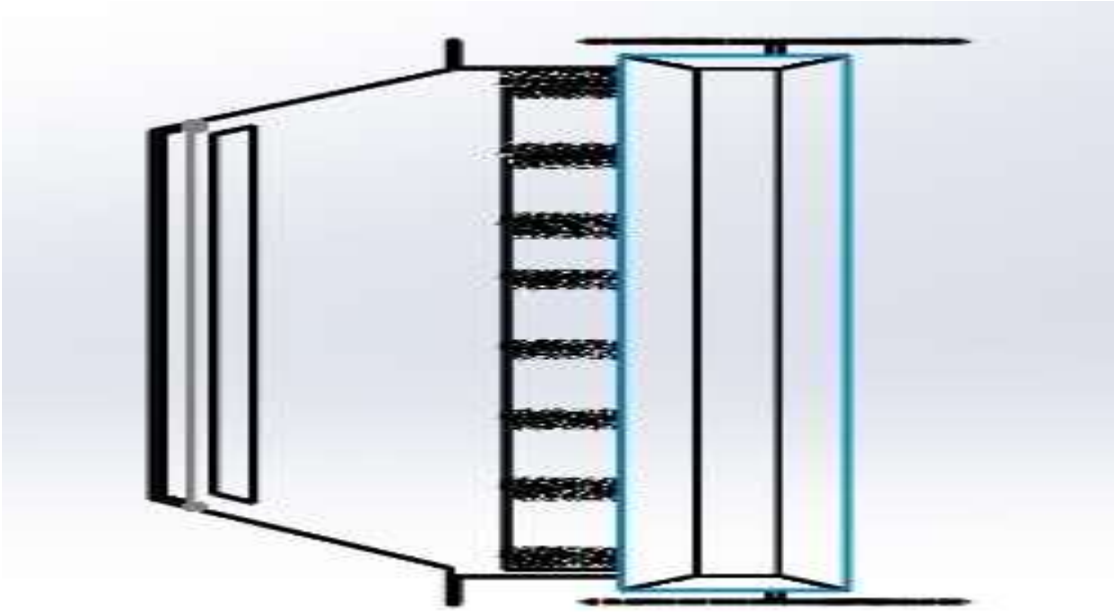

Fig 5.2.1 top view

Adjustments in number of discharging unit

If the number of discharging units is less than the number of plants present between the wheels of the machine the efficiency of broadcasting is affected. To increase this efficiency, both the number of plants and the number discharging units must be same. So the number of discharging units must be varied according to the requirement. This adjustment can be done in our machine.

Stand

A stand is provided to support the vehicle when it is in rest.The alignment of the stand lies in a straight line with the wheel. The stand is present at the handle and it can be adjusted according to the requirement. The position of the stand is straightly backwards from the wheel, the reason of such position is to prevent plants from being adhering to the wheels.

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Spring

Springs are used to operate the discharge units. When the control valve is operated the springs gets stretched and it releases the or makes the discharge unit to be opened. The need of spring is to perform the closing action in the discharge unit when the control valve is released.

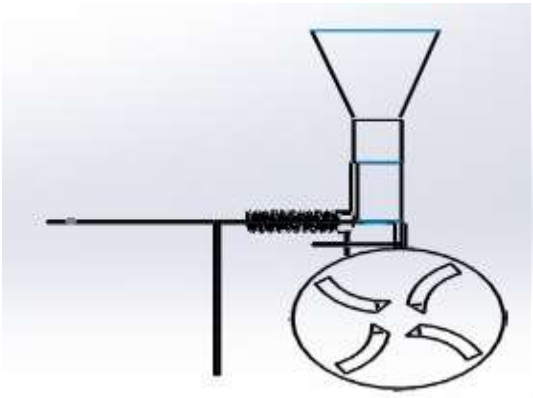

Fig 5.5.1 side view

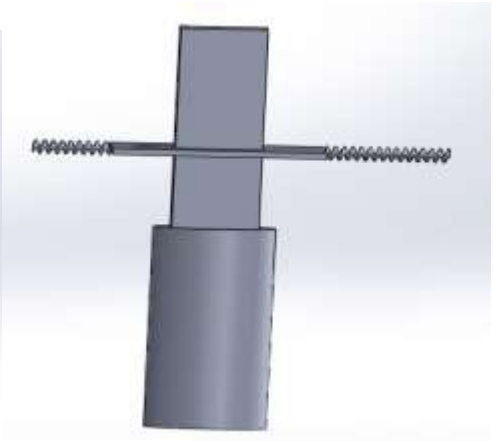

Fig 5.5.2 discharge control spring

WORKING

Our machine consists of two wheels, a stand is provided to support the machine when it is in rest. Solid fertilizer is placed in a tank which is in the shape of a tunnel. This machine can be easy moved due its light weight. A handle is provided to move the machine, a control lever is connected to the handle to operate the discharging unit.A tension spring is used to connect the control lever and the sieves present in the end of the tunnel. The position of the stand is straightly backwards from the wheel, the reason for such arrangement is prevent the adhering and sticking of plants with the stand. The machine is adjustable in many aspects such as horizontal length and vertical height. The sieves present at the tip of the discharge unit determines the size of the solid fertilizer that is discharged from the machine. The size of the sieves can be varied by replacing the active sieves by a sieve with required dimensions. Initially the machine is moved by pulling through hands, there is no ejection of harmful gases from this machine, thus it is totally environment friendly. The machine can be used to feed fertilizers for various sized plants, this is achieved by adjusting the height and length of the machine. Control lever is directly connected to the sieves with tension springs, as the lever is operated the spring gets stretched and it pulls a lid to open the sieves When the lever is released the lid is automatically closed due to the compression of the spring. The fertilizer is moved to the tip of the discharging unit by gravitational force, there is no need of any external forces to drive the fertilizer. As the height and length of the discharging unit can be varied the wastage of fertilizer while broadcasting is significantly reduced.The central distance between the wheels can be adjusted for easy motion of the machine between the plants. The stand used to support the machine when it is in rest can be folded and attached to the body of machine for our convenience.

CONDITION

Fig 7.1

Fig 7.2

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CONCLUSION

There exits a large variety of machines to broadcast liquid type fertilizer over a field, but there is no machine to broadcast solid type fertilizers, our machine will be very helpful to replace that situation. Our machine reduces the frequent between the human body and the fertilizer while broadcasting it. This machine aims at reducing the human work and the time required to feed fertilizers to the plants.

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