

DESIGN FABRICATION OF MULTI PROCESS SEQUENTIAL SEED SOWING MACHINE

Arunkumar R¹ | Gokulraja P² | Iyyappan B³

¹(Mechanical Engineering, Student, Christ The King Engineering College, arunkumar.r15216@gmail.com)

²(Mechanical Engineering, Student, Christ The King Engineering College, gokulraja2@gmail.com)

³(Mechanical Engineering, Student, Christ The King Engineering College, Iyyappan1358@gmail.com)

Abstract—Developed agriculture needs to find new ways to improve efficiency. One approach is to utilize available information technologies in the form of more intelligent machines to reduce and target energy inputs in more effective ways than in the past. Precision Farming has shown benefits of this approach but we can now move towards a new generation of equipment. The advent of autonomous system architectures gives us the opportunity to develop a complete new range of agricultural equipment based on small smart machines that can do the right thing, in the right place, at the right time in the right way. So that here we fabricated the “multi process sequential seed sowing machine”.

Keywords— Tool, Farm, Plough, Seed sowing, Watering, Pesticide spraying

1. INTRODUCTION

India is agricultural country so, India's economy is mainly depends upon agriculture and agriculture based product. India's 50 - 60% population depends over agriculture and agriculture based industries. More than 65% farmers of India still using traditional agricultural tools. These tools are not that much efficient and well designed. They increases cost of the productivity of farm and farmer. India has been knows as agricultural country. Agriculture in India had developed in a remote antiquity, and down to the eighteen century India ranked among the few developed countries in globe. . We have already known that farmers of India are still using traditional tools such as Plough, watering, pesticide sprayer, Seed Sowing tools. The farmers who are having land of 1 to 2 acres cannot afford a cost for individual operations. By the use of tractors attachments and they are facing many problems while using traditional tools including more man power requirement, problems due to faulty design, less utility .etc. Farmers which are using traditional tool system have to use different tools for different operations which are available individually. It is so time consuming and they have to pay more cost for individual tools

2. DESCRIPTION OF EQUIPMENTS

2.1 IC Engine

The internal combustion engine is an engine in which the combustion of a fuel (normally a fossil fuel) occurs with an oxidizer (usually air) in a combustion chamber. In an internal combustion engine the expansion of the high-temperature and -pressure gases produced by combustion applies direct force to some component of the engine, such as pistons, turbine blades, or a nozzle. This force moves the component over a distance, generating useful mechanical energy.

The term internal combustion engine usually refers to an engine in which combustion is intermittent, such as the more familiar four-stroke and two-stroke piston engines, along with variants, such as the Winkle rotary engine. A second class of internal combustion engines use continuous combustion: gas turbines, jet engines and most rocket engines, each of which are internal combustion engines on the same principle as previously described.

2.2 Battery:

In our project we are using secondary type battery. It is rechargeable type. A battery is one or more electrochemical cells, which store chemical energy and make it available as electric current. There are two types of batteries, primary (disposable) and secondary (rechargeable), both of which convert chemical energy to electrical energy. Primary batteries can only be used once because they use up their chemicals in an irreversible reaction. Secondary batteries can be recharged because the chemical reactions they use are reversible; they are recharged by running a charging current through the battery, but in the opposite direction of the discharge current.

2.3. Ploughing tool



Fig 1 ploughing tool

The plough is a farm tool or implement used in farming for initial cultivation of soil in preparation for sowing seed or planting. It consists of a heavy blade at the end of a beam, usually hitched to a draft team or motor vehicle and used for breaking up soil and cutting furrows in preparation for sowing. For centuries, this basic instrument has been widely used for farming and soil preparation. It presents one of the major advances in agriculture

The primary purpose of ploughing is to turn over the upper layer of the soil, bringing fresh nutrients to the surface, while burying weeds and the remains of previous crops, allowing them to break down. It also aerates the soil, and allows it to hold moisture better. Now a days a ploughed field is typically left to dry out, and is then harrowed before planting.

Initially ploughs were pulled by oxen and horses. Today ploughing is done by means tractors. Ploughs are even used under the sea, for the laying of cables, as well as preparing the earth for side-scan sonar in a process used in oil exploration.

2.4. Seed sprayer

The basic operating concept of broadcast spreads is simple. A large material hopper is positioned over a horizontal spinning disk, the disk has a series of 3 or 4 fins attached to it which throw the dropped materials from the hopper out and away from the seeder/spreader. Alternately a pendulum spreading mechanism may be employed, this method is more common in mid-sized commercial spreaders for improved consistency in spreading. Hoppers are commonly made of plastic, painted steel, or stainless steel. Stainless steel is usually used in large commercial units for strength and because granular fertilizer is often quite corrosive. Some seeders/spreaders have directional fins to control the direction of the material that is thrown from the spreader. All broadcast spreaders require some form of power to spin the disk.

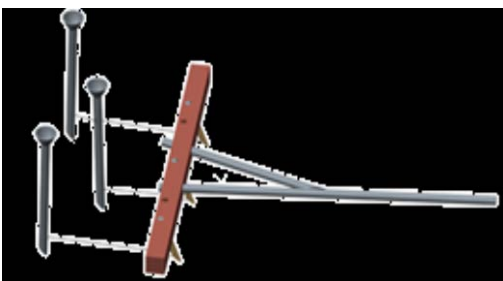


Fig 2 Seed sprayer

2.5. Pesticide sprayer

In agriculture, a sprayer is a piece of equipment that is used to apply herbicides, pesticides, and fertilizers on agricultural crops. Sprayers range in size from man portable units to trailed sprayers that are connected to a tractor, with boom mounts. One of the most common forms of pesticides applications especially in conventional agriculture is the use of mechanical sprayers. Hydraulic sprayers consists of a tank, a pump, single nozzles.

Sprayers convert a pesticide formulation, often containing a mixture of water and chemicals into droplets.



Fig 4 Pesticide sprayer

2.6. Water spraying

Water sprinklers are sprinklers providing to vegetation, or for recreation, as a cooling system, or for the control of airborne dust. The sprinkler system irrigates the field. Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Water is distributed through a system of pipes usually by pumping. It is then sprayed into the air through sprinklers so that it breaks up into small water drops which fall to the ground. The pump supply system, sprinklers and operating conditions must be designed to enable a uniform application of water.



Fig 3 Irrigation System

3. Model drawing for multi process seed sowing machine

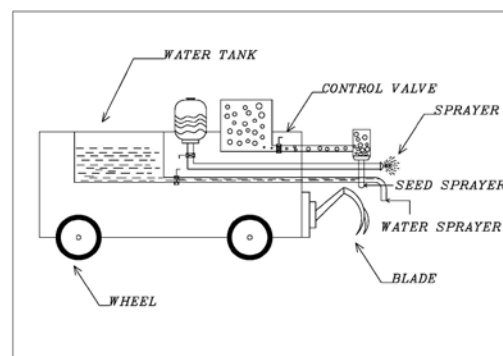


Fig 4 Overall diagrams

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3. WORKING PRINCIPLE

Here we fabricated the MULTI PROCESS SEED SOWING machine. A ploughing tool and broadcast seed sprayer is fixed in front of the vehicle. And water tank is fixed before this arrangement. When the vehicle moves forward, ploughing operation is carried out after sowing the seeds over the ploughing area then the water is sprinkle over the area. An internal combustion engine is used to run the vehicle. Seed sprayer and water sprinkler gets drive from the engine.

4. CONCLUSION

The designed assembly helpful for those people who are still using traditional tools. The assembly providing the arrangements for all four operations such as ploughing, water spraying, seed sowing and pesticide spraying. It reduces the stress acting on human body parts as per anthropometric and strength data of Indian agriculture workers survey. The application of this machine is very high when compared to the cost of the machine. By using more such techniques, cutting costs, employing indigenous technologies, these devices can bring a revolution in the modernization of Indian farming.

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6. EXPERIMENTAL SETUP



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