# AUTOMATIC SEED SOWING MACHINE

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***Abstract*-"Energy - demand" is one the major need for our country. Finding solutions, to meet the "Energy - demand" is the great challenge for Social Scientist, Engineers, Entrepreneurs and Industrialist of our Country. Applications of Non-conventional energy are the only alternate solution for conventional energy demand. Like other development activities, agriculture sector is one of the major areas, which finds number applications of making it work using non-conventional sources. Solar energy plays an important role in agriculture products and for irrigation purpose for pumping the well water in remote villages without electricity. Mechanization involves the use of a hybrid device between the power source and the work. The paper deals with multi-purpose agriculture machine for seed feeding, spraying pesticides, fungicides, and fertilizers and cutting. Thus paving way for a more economical and multi-usable equipment for farmer which is also easy to clean and maintain, easy to handle and do not require fuel, hence cost gets reduced and helping farmers to a great extent in their fields.**

***Keywords*: Variable length sprayer, Twin end blower, High torque DC cutter, Control box.**

## INTRODUCTION

Abstract: Agriculture is the backbone of India. Paddy and Wheat is one of the new targets in agriculture where still, not many researchers and manufacturers participate. This field faces some problems such as how to maximize the profit, how to increase productivity and how to reduce the cost. In India, two types of agricultural equipment are used, manual method (conventional method) and mechanized type. Mechanization involves the use of a hybrid device between the power source and the work. This hybrid device usually transfers motion, such as rotary to linear, or provides ample of mechanical advantages such as increase or decrease or leverage of velocity. Agricultural machinery is machinery used in farming or other agriculture.

Mechanized agriculture is a process of using agricultural machinery to mechanize the work of agriculture, greatly increasing farm worker productivity. In modern times, powered machinery has replaced many farm jobs formerly carried out by manual labour or by working animals such as oxen, horses, and mules. The entire history of agriculture contains many examples of the use of tools, such as the hoe and the plough. But the ongoing integration of machines since the Industrial Revolution has allowed farming to become much less labour- intensive. The biggest profit of automation is that it saves the labour. However, it also saves energy and materials and to improve the quality, accuracy, and precision.

The seed feeding, pesticides sprinkling and crop cutting are the important stages in the agriculture field.The design of multipurpose agro equipment machine will help Indian farmers in rural side and small farm. It will reduce the cost of seed feeding, pesticides sprinkling and crop cutting the field and will help to increase economic standard of an Indian farmer.

## I. CURRENT RESEARCH

The economic contribution of agriculture in India's GDP is continuously decreasing with the country's broad-based economic growth. Still, agricultural research and development (R&D) in India has made impressive contribution in the past. But the system is under significant stress today due to lack of clarity on focus and inefficient use of financial resources. Links among sister institutions have weakened and accountability has declined over time.

Ramesh D; This research paper present "Agriculture Seed Sowing Equipment: A Review". The present review provides brief information about the various types of innovations in seed sowing equipment. The basic objective of sowing operation is to put the seed and the fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. Kannan A: This research paper presents design modification in multipurpose sowing machine which describes the sowing purpose and the import of the machinery, which are bulk in size having more cost. To prevent this they design multipurpose sowing machine which consists of hopper, seed metering mechanism, ground wheel, power transmission system, seed distributor, and tiller. It is designed on PRO-E software.

Backpack sprayer which can be carried on the operator back, having tank capacity as large as 20 liters. A hand lever is continuously operated to maintain the pressure which makes the backpack sprayers output more uniform than that of a handheld sprayers. Basic low cost backpack sprayer will generate only low pressure and lack feature such as high-pressure pumps, pressure adjustment control (regulator) and pressure gauge found on commercial grade units. The engine operated sprayers typically produce more consistent sprayer's outputs, covers the sprays swath more uniformly, operate at constant speed and results in much more uniform coverage than the hand spraying. Motorized sprayers are also capable of higher pressure spray useful to provide a better coverage. There are many other types of hand operated sprayer that are not widely used throughout the agriculture. Some may be used wide extensively for the productions of specific commodities.

Jeremy, in 2005 designed and fabricated solar charged cutter machine. The machine was dependent on weather since the battery

would be charged using solar panel. The common drawback was that the engine runs slowly and the production cost was high for an average individual to purchase. Victor and Vern's, (2003) designed and developed a power operated rotary weedier for wet land paddy. The complex nature of the machine makes its maintenance and operation difficult for the peasant farmers.
In India, the conventional methods for agriculture are generally involved which are more complicated and time and labour intensive. The usage of agriculture equipment in the world is increasing. In the usage of agriculture tools, India contributes only 16% according to the survey conducted in the year 2011. Seed feeder (high speed twin end blower)
The aim of seed feeder is to reduce seed plantation time and increase the productivity. More time is required for the plantation on fields as seed feeding is a skilled job. The necessity for even distribution of seeds in the farm also exits. So this project helps to minimize the human efforts involved in plantation and saves time. This will give perfect plantation with less effort; a twin end blower is installed for this job, which consist of two different ends and two different seed chambers, so that two different seeds can be feed at the same time.

Pest Management (3 Axis spraying mechanism) "Pest" is defined as any species, strain, or biotype of plant, animal, or pathogenic agent injurious to plants or plant products. In a simple way, the pest includes insects, pathogens, and weeds. There is growing concern over the effective use of pesticide and other pest control techniques for higher farm production. The inclusion of sprayer in multipurpose agro machine using spraying pipe and fluid tank which is also easy to handle. The spray pipe can move in all the three axis i.e. X, Y, &Z also the pump solar powered Making the spraying pollution free and effective.

**Crop Cutter**
Harvesting crop includes removing crop by hand by small farmers. The agro equipment includes the crop cutter which focuses on easy of cutting operation for cutting variety of crops in less time and at low cost by considering different factors as power requirement the cost of equipment , ease of operation in the field
. The operating, adjusting and maintaining principle are made simple for easy and properly handling by unskilled operators.

CONSTRUCTION DETAILS & SPECIFICATIONS

Components of multipurpose agro equipment
- Spraying fluid tank
- Spraying pipe
- Solar panel
- Batteries
- Pump
- Motor
- Switch & Toggle
- Frame
- Ground wheel
- Cutter
- 3 axis attachments
- Front and Bottom LED
- Twin end blower
- Conical plastic flask
- Charging circuit
- Blower and seed frame chamber

A frame is made up of carbon steel which gives the desired strength and lightness, it includes all the three equipment together i.e. Seed feeder, pesticide sprayer, and crop cutter. In this frame, a retractable link is fixed to the top end of which a solar photovoltaic panel is fixed that converts solar power into electricity. This electricity is then provided to the battery via a charging circuit and is used for charging the battery. Electric power from this battery is given to an electric motor via control switches, by controlling which entire device can be operated. The pump is connected spray pipe.

**Figure1.1: The side-view of multi- purpose agro equipment**

**Figure 1.2: The front view of multi-purpose agro equipme**

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Figure1.3: The top view of multi- purpose agro equipment

Liquid insecticide is sprayed on the crops using Spray pipe, which receives liquid from a reservoir with the help of a pump. This pump is driven by another DC motor that receives power from the same battery. Thus insecticide in liquid form is sprayed.
A separate chamber for seeds has been made, which is used for feeding the seeds to the farm field. The multipurpose agro machine equips a crop cutter for cutting out the crops. The handle casing on it makes it more comfortable. It consists of a cycle wheel in the front. The equipment thus serves as a friendly tool for the farmer and also making it economical.

## II. ADVANTAGES

The developed system used for spraying the fertilizer, pesticides, fungicides and insecticides.

- Easy in construction
- More economical
- Easy to clean and maintain
- It is a renewable energy powered
- It does not create air pollutant & noise
- Easy to handle
- Do not require fuel hence cost reduce & Light in weight

## III. LIMITATIONS

- The panels are weather dependent. Thus the power will have to be generated by any others means.
- There is a requirement to fill the sprinkler tank again with the pesticide after the quantity inside it gets over.

## IV. FUTURE SCOPE

- There could be continuous supply of liquid pesticide/ fertilizer generated for sprinkler.
- The Solar panel unit could be enhanced in order to generate more prolonged electric supply. Moreover, The top concentration of our design is the cost and operational ease in case of small farm units. This multipurpose ago equipment is thus designed to reduce the cost of harvesting, spraying and seed feeding. In the development of multipurpose ago equipment we utilize the past data and techniques. In this way the design of multipurpose agro equipment is safe. Such human powered machine systems will help to a great extent in improving the production per acre and increase profitability of small and middle class farmers. A new type of multipurpose mechanism is fabricated which is different from other machines and will work on non-conventional energy source which is purely human operated. Such systems are of much importance in Asian countries, as almost all Asian countries are facing electricity and power scarcity which results in twelve to fourteen hours load shedding in rural areas especially in India. Therefore, there is the need to develop a locally, fabricated multiple multipurpose agro equipments.

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