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A Review on Multipurpose Agriculture Machine

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ABSTRACT

This Research paper is based on the various study conducted on use of Agriculture Machines in fields and how it can be modernized or optimized further for small to medium scale farmers and also to design multipurpose agriculture equipment. Various activities are conducted by various machines in agriculture field. Also study shows that small or medium powered machines with optimum load are more economical and efficient than heavy machines. In this research paper we have also designed multipurpose equipment based on the requirements and initial concepts, which can be more economical and efficient for small to medium scale farmers.

Keywords: Multipurpose Machine, Agriculture etc

1 INTRODUCTION

Agriculture is the main part of any countries economy. It provides job to many people. Many industries are dependent on agriculture. Especially in India about 42 – 43% employment comes from agriculture requires many activities to be done by heavy machineries which are costly and yet to be accessible for small scale farmers.

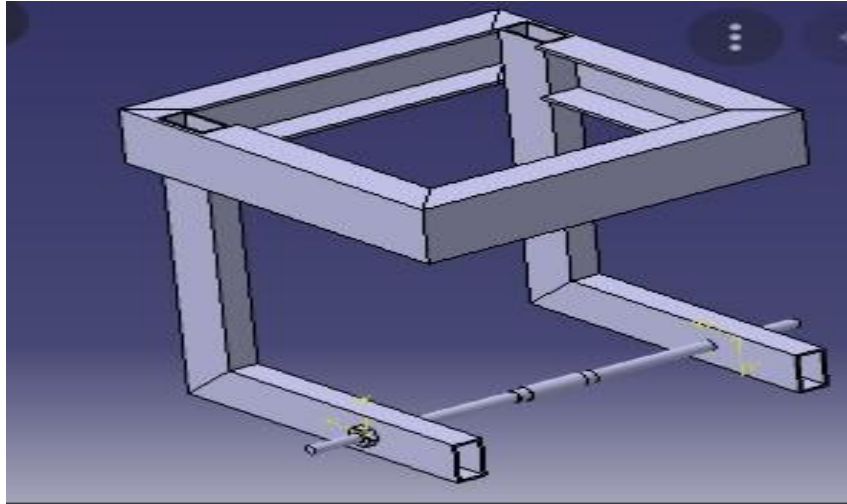
We have to make efforts in the direction to use scientific methods and available technologies to make multipurpose agriculture machine that can be used for small and medium scale farming for different types of crops. Seed sowing machine is devise which help in the sowing of seeds in the desired position hence assisting the farmers in saving time and money.

There is a greater need for multiple cropping in the farms and this, in turn, requires efficient and time saving machines. The paper discusses different type of seed sowing machine which will be helpful for the agriculture industries to move towards mechanization.

2 COMPONENT

1. Frame :- A frame may be defined as a structure of bar or angle jointed by welding or reverted. These are made up of angle irons or channel section and are called members of the frame or framed structure.

Fig1 :- Frame



1. **Wheel:-** Wheel is a circular component that is intend to rotate on axle bearing. The wheel is one of the key components of wheel and axle which is one of the simplest types of machine. Wheel is to allow heavy object to move easily one place to another. A wheel greatly reduces the friction by facilitating motion by rolling together with the use of axle.



Fig 2- wheel

3. **Hopper :-** A storage container used to dispense granular materials through it as per requirement in sowing operation. It is mounted on frame and linked to seed drill.

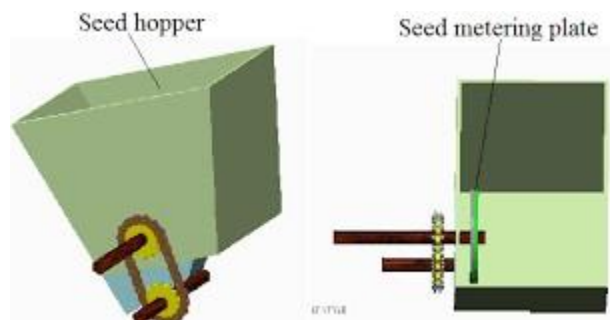


Fig:3 - Hopper

4. Seed plow:- A seed plow is device that sows the seed in metering individual, positioning them in soil in the perfect depth and cover them by soil. theseed drill sows the seeds at equal distances and proper depth, ensuring that the seeds get equal distance coverdwith soil and are saved from being eaten by birds.

Fig 4 :-Seed plow



3. SEED SWOING MACHINE DIGRAM :-



Fig 5:- Seed Swoing Machine

4. WORKING

Generally cultivation of any crop involves various steps like seed selection field preparation, fertilizing, sowing, irrigation, germination, thinning and filling, weed removal, vegetative stage, flowering stage, pesticide spraying, fruit or pod formation stage, harvesting and threshing.

Farmer has to use various agricultural equipment and labors for carrying out those steps, our purpose is to combine all the individual tools to form multipurpose equipment which reduce the overall equipment cost and labor cost and also increases the yield of the crop by implementing scientific farming method.

Initially plough is connected to the beam using fasteners and tilling of the soil is performed, later during sowing seeds drill is attached to the beam along with leveler for leveling of soil for sowing and fertilizing, the seed and fertilizer are stored in the primary seed and fertilizer box.

The seeds and fertilizer are provide to secondary seed box to maintain the level of seeds in the box and disc picks up the seeds from the seed hopper and fertilizer hopper and drop them to the furrow through the seed tube. When the seed is dropped at the specific distance then seed covering device covers soil over the seed and after germination of seed takes place, weeds are also developed in the field.

By replacing the seed drill by wedding tools for the same beam arrangement we can use it for wedding purpose. Wedding blade is attached in inclined position such that it uproots the weeds and simultaneously weedicide is applied on the field by the weedicide container attachment.

5. COMPARISON BETWEEN PRESENT TECHNOLOGIES OF FARMING:-

Table 1: Comparison between present technologies of farming

Steps involved in agriculture and features of the mechanization	Primitive method with manual workers and bullock equipment	Tractor powered modern method equipment	Multipurpose agricultural equipment
1. Crops selection	All types of crops can be cultivated	Only predesigned type of cultivation can be done	Suitable for all types of seed to seed cultivation
2. Field operation	Oxen ploughing 3 times	Tilling using cultivator once and gyrator once and harrow once	Oxen ploughing 3 times
3. Fertilizer application	Single worker and one day is enough	Seeder and fertilizer has to be used	Seed sowing and fertilizer application takes place at a time
4.Sowing	Single worker is enough	One hour for seed sowing in seeder	No need of additional worker
5. Weeding	Extra workers required depends on the area of the land	Weeding cannot be done by using tractor	Weeding is mechanized here and no need of extra workers
6. Initial investment	Very less	High	Very less

6. ADVANTAGES:-

- It saves labor cost
- It is light in weight as compared to present device.
- It reduced the use of man power up to 50%.
- It is cheaper so poorer farmer can also afford this modern devices.
- The plough enters in the soil and automatic dropping of seeds takes place.
- It can be used also for various seed.

7. RESULT AND CONCLUSION:-

Practically our multipurpose agricultural equipment can be used for tilling, fertilization, sowing, leveling and also used for weed removal purposes. All the parts are connected in such a way that in every stage of agriculture the equipment can be rearranged or easily assembled with fasteners to required length and specification of field operation.

Our team has successfully combined many ideas from various fields of mechanical engineering and agricultural knowledge to improve the yield and by reducing the labor effort and expenses. The whole idea of multipurpose equipment is a new concept, patentable and can be successfully implement in real life situations.

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