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Fabrication and Development of Plough and Weeder

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Abstract: ***Currently, little land holding agriculturists use work bulls for the most part for land planning. Their utilization can be expanded and made progressively affordable by utilizing them for other ranch tasks, for example, furrowing, frightening, compost application, sowing and weeding. Enhanced hand apparatuses will likewise encourage cultivate work. Since a huge number of years as of recently the cultivating is reliant on bulls drawn furrow. But, in this system, more labor required, takes more time and its depth of furrowing is not deep. For the most part development of any yield includes different advances like seed choice, field arrangement, preparing, sowing, water system, germination, diminishing and filling, weed expulsion, vegetative stage, blossoming stage, pesticide showering, natural product or case arrangement stage. Our motivation is to consolidate all the individual instruments to furnish agriculturists with multipurpose hardware which executes all the logical cultivating procedures and determinations and reasonable for all kind of seed to seed development with as least expense. This project work is focused on the design and fabrication of multipurpose equipment which is used for land preparation, sowing, fertilizing, leveling and weed removal process. The multi-crop planter has the ability of conveying the seeds exactly with uniform profundity in the wrinkle, and furthermore with uniform dispersing between the seeds.The seed planter consist of the main frame, adjustable handle, seed hopper, seed metering disc, adjustable furrow opener, adjustable furrow closer, drive wheels, seed tube . Seed metering disc was designed to be interchangeable to allow for sowing of the different varieties of seeds. The multipurpose agricultural equipment is very simple to use, the various adjustments are made with ease, and it is maintenance free.***

Keywords: Plough, weeder, sowing, leveler, planter

I. INTRODUCTION

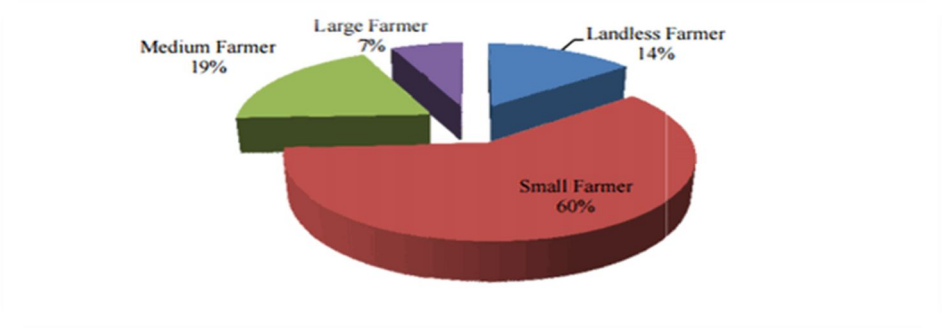
Agriculture has been the foundation of the Indian economy and it will continue to remain so for a long time. “A man without food for three days will quarrel, for a week will fight and for a month or so will die”. Agriculture is a part of applied science. Horticulture is the science and specialty of cultivating including developing the dirt, creating harvests and raising domesticated animals. It is the most imperative endeavor on the planet.

Throughout the years, rural practices have been completed by little holders developing between 2 to 3 hectare, utilizing human work and conventional apparatuses, for example, wooden furrow, burden, leveler, harrow, mallet, spade, enormous sickle and so forth. These apparatuses are utilized in land arrangement, for sowing of seeds, weeding and collecting. Modem horticultural strategies and types of equipment are not utilized by little land holders in light of the fact that these types of equipment are excessively costly and hard to acquire.

By adopting logical cultivating strategies we can get greatest yield and great quality products which can spare an agriculturist from going bankrupt yet greater part of farmers still uses crude strategy for cultivating methods because of absence of information or absence of speculation for using present day hardware.

At the present stage of crop production development there is an acute task of its ensuring with technical and human resources, as their lack increases actual operation periods, leads to technology simplifications and causes significant production losses[3]. Farmers use mainly agrochemicals for plant disease, pest and weed control, and they follow conventional crop protection strategies (utilizing a vast amount of chemicals) despite the negative impacts on the environment and human health[1].Trench-ploughing is defined as the process by which soil is disturbed and displaced during trench formation. This process has been used by mankind for thousand of years for agricultural purposes, but more recently for the creation of trenches to accommodate cables and pipelines on the seabed[4]. Utilization the equipment proposed for sowing seeds in seedbeds decreases the volume of manual force required to do the work, decreases the amount of seed per surface unit, eliminates the execution of works thus reducing costs for obtaining seedlings[5].

II. STATISTICS



III. OBJECTIVES

Fabrication and development of ploughing, weeding and seeding machine for agriculturists so as to build profitability, decrease undesirable work use and time utilization.

There are many tractor powered equipment which are suitable and economical only for more than 5 acres of land. There are many hand pulled equipments which are only suitable for gardening purpose. Our objective of making animal and manually driven equipment is suitable for 1 acre to 3 acres of land it is both economical and modernized with scientific methods. Majority of the Indian formers are the land owners of 1 to 3 acres. Hence it is most suitable for Indian economy and farming techniques.

IV. METHODOLOGY

A. Data Collection Methodology

1) Primary Data Sources

a) Talked with farmers.

b) Meeting to Agricultural Transformation Agency concerned bodies .

c) Field perception of agricultural practices .

B. Secondary Data Sources

1) Structure course readings, reference books, past looks into, and papers.

2) Relevant documents from Agricultural Transformation Agency.

C. Data Analysis Methodology

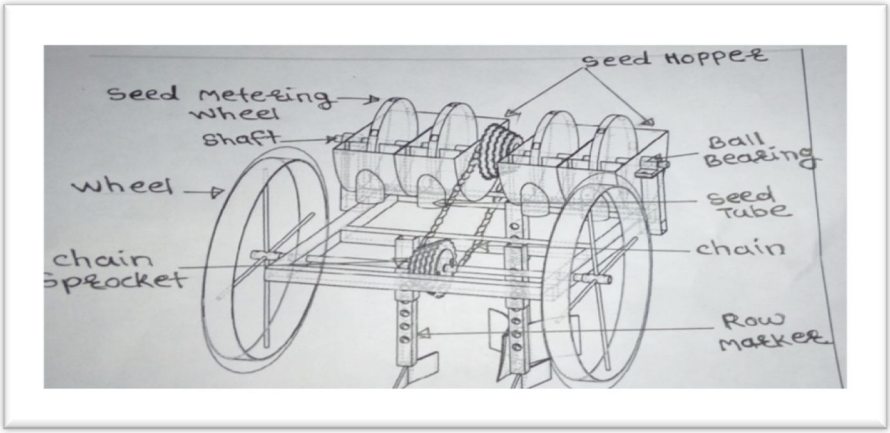
1) Specialized translation of farmers plan needs .

2) Ideas age for structure .

3) Investigating elective plan ideas by assigning weight and choice of one best idea.

4) Detail dimensional plan of chosen idea.

5) 2D and 3D drawings by AutoCAD and CATIA.



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V. COMPONENTS OF EQUIPMENT

A. Frame

The frame is typically made of mellow steel edge segment and pads. It is sufficiently able to withstand a wide range of burdens in working condition. Every other piece of a seed drill are fitted to the frame.

B. Seed Box

It is a container like structure comprised of either gentle steel or excited iron and gave a cover. In certain structures a little instigator is given at the base of the case which disturbs the seeds while the drill in activity and averts obstructing of seeds.

C. Seed Metering Mechanism

The mechanism which picks up seeds from the seed box and delivers them in to the seed tube is called seed metering mechanism. Seed metering mechanism may be of several types: (a) Fluted feed type (b) Internal double run type (c) Cup feed type (d) Cell feed type (e) Brush feed type.

D. Drive Transmission System

The drive transmission instrument comprises of a wheel, sprocket-chain get together and a determined shaft that convey the seed picking plates. At the point when the seed drill moves in the field, the drive wheel turns because of its contact with soil and the sprocket wheel likewise repetitions. The chain interfacing the drive wheel sprocket and driven wheel sprocket pivots the pole conveying the seed metering discs.

E. Furrow Openers

These are the parts which open up furrows in the soil for placing the seeds. Shoe type wrinkle openers guarantee further seed situation in damp zone for sowing under dryland condition. Shoe type wrinkle openers are accommodated simple task. The best possible profundity of seed and manure should be kept up for the correct germination of the seeds. The depth of seed and fertilizer is controlled with the help of a stud on which four numbers of Nuts are given to control the depth

F. Furrow Closer

It is a gadget which shuts the wrinkle with soil after the seed has been dropped in it. Covering the seeds is normally done by chains, bars, packers, rollers or press wheels, planned in different shapes and sizes.

G. Transport Wheel

There are two wheels fitted on a pivot for transporting the drill on streets. Iron wheels are utilized as transport wheels. A few makers utilize pneumatic wheels. One of the vehicle wheels is fitted with a reasonable connection to transmit the movement of the wheel to the seed metering system when the drill is in operation.

H. Plough

Construction is simple, sturdy & durable. It is useful for all soils. Also useful for ridging and clod breaking.

I. Handle

Handle acts as an armrest for farmer and also helps him in guiding in the straight path.

J. Weeder Blade

It removes the weeds by applying force on the plant such that the weeds are removed.

K. Shaft

Shaft is made up of a 120cm long threaded rod of 10mm diameter. It connects the two wheels on either side of the equipment and all the seed metering discs are mounted upon the shaft.

VI. 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 equipments and labors for caring out those steps, our purpose is to combine all the individual tools to form a multipurpose equipment which reduces 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, seeds are stored in the seed box. The seeds provide to the seed box to maintain the level of seeds in the box and the disc picks up the seeds from the seed hopper and drop them to the furrow through the seed tube. When the seed is dropped at a 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 weeding tools for the same beam arrangement we can use it for weeding purposes. Weeding blade is attached in inclined position such that it uproots the weeds.

VII. APPLICATION OF OUR EQUIPMENT

A. Ploughing
B. Clod breaking
C. Leveling
D. Sowing
E. Weeding

VIII. RESULTS AND CONCLUSION

For all intents and purposes our farming hardware can be utilized for working, treating, sowing, leveling and also utilized for weed removal purposes. Every one of the parts are associated so that in each phase of horticulture the hardware can be improved or effortlessly collected with latches to required length and details of field activity.

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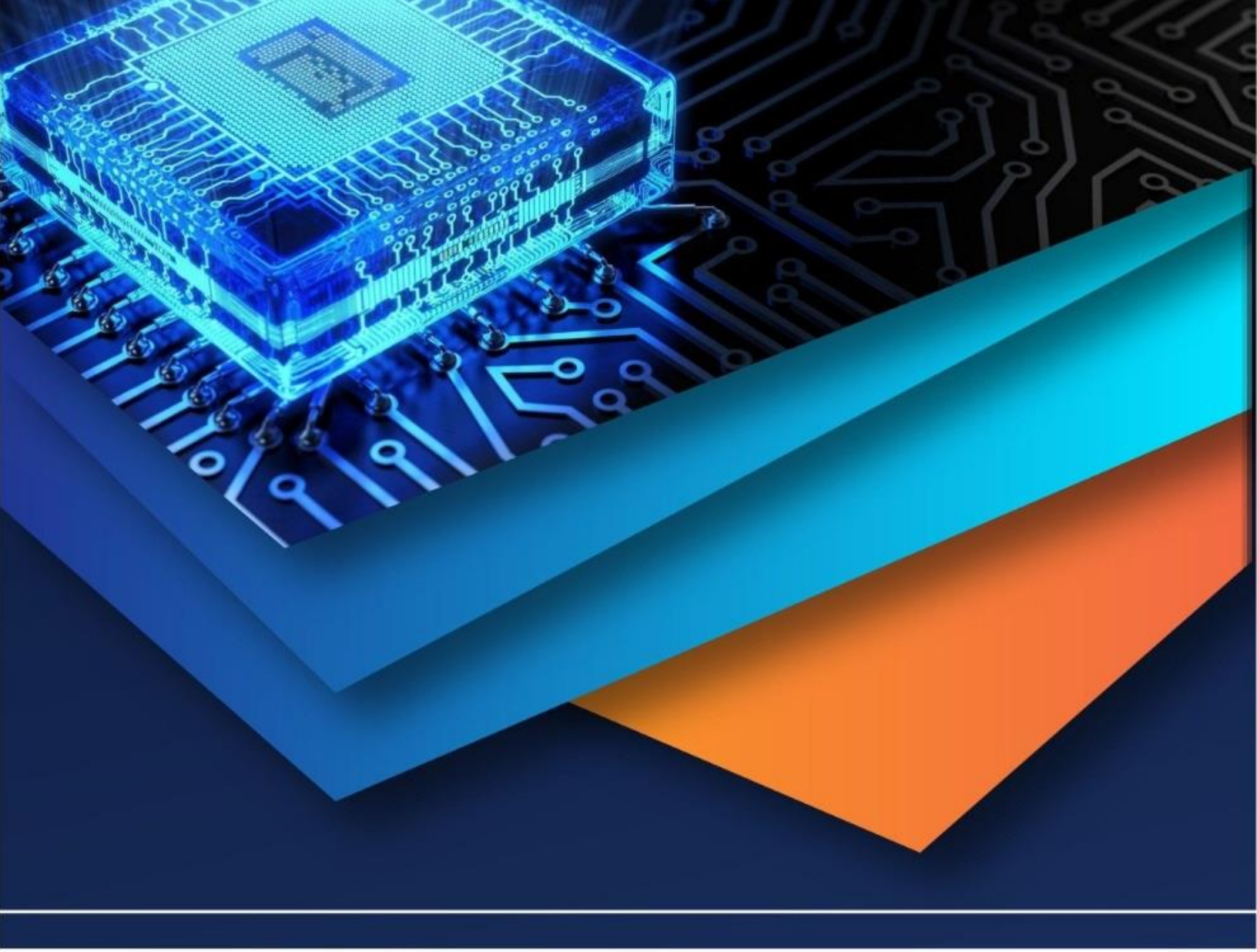

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