A REVIEW PAPER ON MULTIPURPOSE AGRICULTURE VEHICLE

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ABSTRACT

By and by, little land holding ranchers use work bulls generally for land planning. Their use can be expanded and made more conservative by utilizing them for other ranch tasks like furrowing, nerve racking, compost application, planting and weeding. Improved hand instruments will likewise work with ranch work. Bulls can be utilized to pull a truck during the time which keeps them in preparing. The expense cost of imported grower has gone past the buying force of the vast majority of our ranchers. Ranchers can do a lot to expand crop creation particularly grains if drudgery can be diminished or completely eliminated from their planting activities. We have taken this undertaking to make it more versatile, more savvy, robotized and increment the efficiency of a farmland, as we probably are aware in the current time of globalization it has become a need to utilize the accessible assets to their best ideal force this equivalent goes for the agribusiness as well. Along these lines, to carry out this thought we are going with a multipurpose horticulture vehicle which will expand the profitability of the farmland by utilizing different machines on a solitary machine which will steadily diminish the expense of homestead to the limited scale ranchers and furthermore it will assist with decreasing the quantity of labour force in that farmland and by and large by this efficiency will increments.

Keyword : - *Sowing, Spraying, Ploughing, and Multipurpose.*

1. Introduction

Agribusiness has been the foundation of the Indian economy and it will keep on excess in this way, for quite a while. ―A man without nourishment for three days will squabble, for seven days will battle furthermore, for a month or so will pass on. Horticulture is a part of applied science. Farming is the science and specialty of cultivating including developing the dirt, delivering yields and raising animals. It is the main undertaking on the planet. Throughout the long term, agrarian rehearses have been completed by little holders developing between 2 to 3 hectares, utilizing human work and conventional instruments like wooden furrow, burden, leveler, harrow, hammer, spade, large sickle and so on These apparatuses are utilized in land readiness, for planting of seeds, weeding furthermore, gathering.

Present day agrarian methods and gear are not utilized by little land holders on the grounds that these gears are excessively costly and hard to get. By receiving logical cultivating techniques, we can get most extreme yield and great quality harvests which can save a rancher from failing yet dominant part of ranchers actually utilizes crude technique for cultivating procedures because of absence of information or absence of venture for using present day hardware. Rancher needs to utilize different agrarian gear's and works for minding out horticulture action. Our motivation is to consolidate every one of the individual devices to give limited scope ranchers with multipurpose hardware which executes every one of the logical cultivating

procedures and particulars, reasonable for all kind of seed-to-seed development with least expense as could really be expected

2. Literature review

1. Naveen G(2019), The main aim of this research paper is to focus on design, development and fabrication of multipurpose agricultural vehicle. Our vehicle is going to perform follow task like digging soil, sowing seeds, levelling soil and then spraying water on seeds.

2. Rakeshkumar H. R(2018), A multipurpose sowing machine is designed for small farmers to improve their productivity. The machine required less man power and less time compared to traditional methods, so if we manufacture it on a large scale its cost get reduce and we hope this will satisfy the Indian farmer needs.

3. Rohan Patel(2019), The main aim of this research paper is to focus on design and fabrication of vehicle which is completely solar based. It will automatically sow seeds and will move as controlling will be done from keyboard given to farmer. It is solar based and therefore no need of charging and hence Economical**.**

4. Deepali Sanap(2019), Multipurpose equipment is designed and fabricated with low-cost, easy to use and effective equipment for agriculture.

5. Chetan Patil(2018), Based on the overall performance of the machine we can definitely say that the project will satisfy the need of small-scale farmer, because they are not able to purchase costly agricultural equipment. The machine required less man power and less time compared to traditional methods, so if we manufacture it on a large scale its cost gets significantly reduce and we hope this will satisfy the partial thrust of Indian agriculture.

3. Concept design

As we've referred to the research papers, we came to know the research gap, that is, absent of spraying, sowing and ploughing in single machine. So, our team members came across an idea in which ploughing, spraying, sensing and sowing could be performed in on go moreover if we want to just plough it then we can add grill like structure in front end that would make ploughing easy. Also, we have done automation by which farmers have greater control on the multipurpose machine.

4. Components:

The machine consists of number of components like wheels, rotor, driving mechanism, lever, 12V Battery, Accelerator, cultivating tool, Hub wheel, Shank, Handle and the main components are discussed below;

• FRAME:
The chassis is considered to be one of the significant structures of a mechanical model. It is the frame which holds both the body of machine and the power train. Various mechanical parts like the engine and the drive train, the axle assemblies including the wheels, the suspension parts, the brakes, the steering components, etc., are bolted onto the chassis. A consists of an internal framework that supports a man-made object in its construction and use.

• ENGINE:
Engine is mounted on front of the chassis; it is used for digging operation. The speed of engine can be increased or decreased by the accelerator which is given near to the handle.

• SPRAYING TANK:
It is mounted on the back of the chassis between the battery and motor. For spraying operation pipe connected to motor from the tank.

• SUBMERSIBLE PUMP:

A submersible pump, also called an electric submersible pump, is a pump that can be fully submerged in water. The motor is hermetically sealed and close-coupled to the body of the pump. A submersible pump pushes water to the surface by converting rotary energy into kinetic energy into pressure energy.

• NOZZLE SPRAY:

A spray nozzle is a precision device that facilitates dispersion of liquid into a spray. Nozzles are used for three purposes: to distribute a liquid over an area, to increase liquid surface area, and create impact force on a solid surface.

5. Working

In country like India majority of farmers are marginal farmers, which are not able to invest capital on high end equipment's like tractors, pumps etc. Which eventually increases the cost of overall crop production and becomes burden on farmers. Our team has tried to make multipurpose agricultural equipment which can perform various operations simultaneously and effectively. This equipment can perform operation like seed injecting, seed storing, water or pesticide spraying. Also, it can be controlled wirelessly through our mobile phones. In many traditional equipment operations like ploughing, seed sowing etc are performed once at a time, due to which time and cost increases.

So, our equipment eliminates this problem and gives us a solution to increases the productivity. Instead of performing two of the main operations like ploughing and seed sowing separately we have tried to combine both them in a single operation termed as seed injecting operation. With the help of this operation, we can directly inject the seed at particular depth under the ground, by using low power and high efficiency.

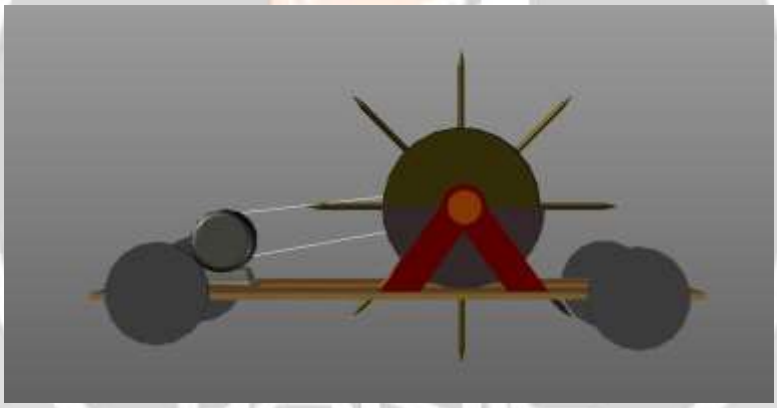

Fig-1.: Cad Design Side view

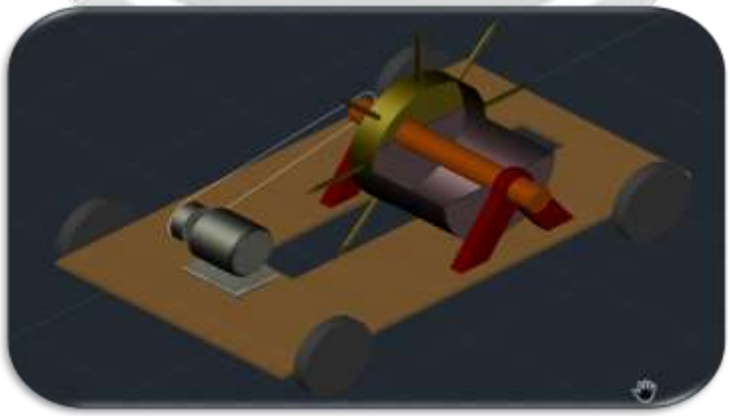

Fig-2.: Cad design

•As we have shown in our CAD design, there is a drum made steel having hollow spokes on its outer periphery.
•Each of the spoke is joint normally to the outer periphery of drum, and the drum is mounted on a shaft which is rotated by the means of electric motor connected by the means of rope or belt drive.
•The drum is hollow from inside and attached with a storage tank, the tank has a hole which when aligns with the hole of spokes then and only then the seed will fall.
•This mechanism allows us to control the number of seeds to inject, it helps to reduce the wastage to resources.
•This mechanism is fixed on chassis type structure with the help of v shaped stands this structure forms the base of our equipment, it is having wheels on every side.
•We can vary number of spokes and length of spokes depending upon the requirement of spacing of rows and columns between two crops.
•Also, we are providing the spraying mechanism which can spray water, pesticide, herbicide etc from a particular height.
•Also, we are making this equipment wireless so that one can control it from mobile.

Fig.3: Actual model

6.Material Used

• Chassis – MS – 2 x 2 inch
• Wheels – MS centre plate – rubber grip tire
• Pesticide tank – PVC sheet – 1 litre
• Engine – 24 cc petrol engine – 6000 rpm, 1 litre petrol tank
• Submersible Pump – 80 W – 200 psi – 700 gm
• Nozzle – brass – 8 x 5 x 1 cubic cm
• Drum – MS sheet SS400 – 20-inch diameter – 5-inch width
• Spokes – MS sheet SS400 – 2-inch diameter – 8-inch length

7. CONCLUSION

The multipurpose equipment will help small scale farmer to perform various task in one go. It could perform ploughing, seeding and spraying at once. Due to which the fluctuation of production could be reduce. Also due to its less cost, small scale farmers could able to buy it and increases their farm production. It will also save the cost of

labors required for performing various agriculture task. It will be controlled by phone/any Bluetooth device. This gives farmers greater access to control the machine.

8. Future scope

1. One could put solar panel for spraying system and for power.
2. One could make More Drill for different types crops.
3. One could use IOT for watching water level.
4. And then link to machine so that machine automatically spray when water is required.

9. REFERENCES

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