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TITLE: THREE IN ONE AGRICULTURE MACHINE

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Abstract

The paper proposed with multi-purpose agriculture machine tool for spraying pesticides, sowing seed and cultivation. Thus paying 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

Index Terms: Pesticide1, Sowing2, Cultivation3, .

1. INTRODUCTION

Agriculture is the backbone of India. The history of Agriculture in India dates back to Indus Valley Civilization Era and even before that in some parts of Southern India. Today, India ranks second worldwide in farm output. The special vehicles plays a major role in various fields such as industrial, medical, military applications etc., The special vehicle field are gradually increasing its productivity in agriculture field. Some of the major problems in the Indian agricultural are rising of input costs, availability of skilled labors, lack of water resources and crop monitoring. To overcome these problems, the automation technologies were used in agriculture. The automation in the agriculture could help farmers to reduce their efforts. The machine are being developed for the processes for ploughing, seed sowing, leveling, water spraying. All of these functions have not yet performed using a single machine. In this the robots are developed to concentrate in an efficient manner and also it is expected to perform the operations autonomously. The proposed idea implements the machine to perform the functions such as ploughing, seed sowing, pesticide spraying. These functions can be integrated into a single machine and then performed.

[1] Reason for selecting the problem

- Lack of mechanization in farming
- Required excess efforts for different process.
- Required more man power.
- Excess time consumption for performing individual process

1.1 Scope of the Project

- The seed sowing mechanism is modified into simple mechanism
- The multipurpose agriculture vehicle is designed for small farmers in future
- The project will become an example for future works

1.2 Objective of the Project

- The primary objective is to develop a harvester which is simple and cost effective
- The reduction of cost of the Ploughing tool
- The life of the Ploughing tool is increase

2 LITERATURE REVIEW

D.A. Mada, Sunday Mahai, [2013], In this research paper author has mentioned importance of mechanization in agricultural by giving examples. The conclusion from the paper was need of multifunctional single axel vehicle for pre and post harvesting. We have taken this as base for our research and further production of our multifunctional agricultural vehicle.

V.K. Tewari, A. Ashok Kumar, Satya Prakash Kumar, Brajesh Nare[2012] In this research papers author have done case study on farm mechanization in west Bengal as being part of India it give clear status about availability and progress in India. This ensured us to take right steps compared to current steps.

F.A. Adamu, B. G. Jahun and B. Babangida [2014] In this paper authors draws our attention towards the performance

factor of a power tiller. Among those demand for light weight power tiller was sought out most. Fuel efficiency and field capacity such parameters are also discussed. We taken those points in consideration while designing a sustainable multifunctional agricultural vehicle.

P. Šařec, O. Šařec [2015] The lowest values of soil penetration resistance below the cultivated profile were determined with the cultivators equipped with chisel shaped shares i.e. in the case of Farnet and Köckerling. Cultivators Väderstad TopDown 400 and Farnet Turbulent 450 showed good capacity in embedding plant residues. This results have taken for our research basis.

Achuta et al, [2016] This MAE is a project which is use for various purpose such as sowing fertilizer, pesticides sprayer, transportation vehicle. This project can be worked without any external source like (electrical, solar energy).

Nitin Kumar Mishra et al, [2017] This machine included solar panel, battery and motor. This project is multipurpose agro equipment as it includes all the three equipment together i.e. seed feeder, pesticides sprayer and crop cutter. A solar photovoltaic panel is fixed that converts solar energy into electrical energy further this electrical energy is used to run motor which further runs the pump which is used to spray pesticides.

Dipampatel et al, [2016] this minimizes the situation of carrying the pesticides tank on back of operator which is a conventional method. This sprayer is mechanically operated as when operator pushes the cart, rotational motion of tires to convert into reciprocating motion that further used by pump

Shree Harsha B T et al, [2017] This project is mainly small version of agriculture vehicle such tractor harvester etc. This is easy to run. This vehicle work on solar power which charges the battery with help of solar photovoltaic cell present on solar panel. This vehicle uses instrument such as motor, solar panel, batteries which are expensive.

Dhatchanamoorthy et al, [2018] This is a vehicle used for multiple purpose of agricultural field such as ploughing, seed Sowing, levelling operation, water spraying operation, pesticide spraying operation, harvester. This vehicle run on petrol as a fuel, engine type is 4 stoke single cylinder. It's a vehicle in which operator (farmer) can easily sit in it and operate it as a automobile. This is an automobile which is mounted with agricultural equipment.

Laukik P. Raut et al, (2013) This project is a mechanically operated sprayer and weeder the rotary motion of pinion is converted into into reciprocating motion of pump which further pumps the pesticide through sprayer. The crank mechanism is used in this project

VishakhaBodke et al, (2017) This machine is used to spray pesticide. This vehicle uses single slider crank mechanism. When the vehicle is pushed forward by using handle, front wheel rotates and the gear mounted at the axel of wheel is start to rotates and its rotation is then transferred to the pinion through the chain drive. The rotary motion of pinion is converted into reciprocating motion of pump which further pesticide is pushed to sprayer pipes and sprayed through nozzle.

Karan Thakkar et al, [2017] This project work with help of reciprocating pump, nozzle, storage tank, control vavle, wheel etc. the mechanism is same as other mechanically operated

agricultural vehicle the rotary motion of wheel is covered into reciprocating motion.

Patil Nikhil V et al, [2018] This vehicle's main objective is drilling, levelling, fertilizer spraying, seed sowing and ploughing. This vehicle runs on a 100-cc engine. When engine is started the bit drill tool will activated to drill hole for seed sowing after that operator press level for drop a seed from hopper then the digging and sowing operation will be completed. Ploughing is done manually.

Thange R.B et al, [2016] In this equipment, engine is used which is connected to the front wheel by using chain drive. Rotary motion of wheel is connected to sprayer pump. So, at running position sprayer will automatically work. Now for sowing operation automatic seed feeder mechanism start their function by rotation of wheel. As wheel, rotates seed feed mechanism allows seed to come down in proportion with speed of equipment. For cutting operation power is supplied to cut

2. CONCLUSION

The top concentration of our design is the cost and operational ease in case of small farm units. This multipurpose agro equipment is thus designed to reduce the cost of harvesting, spraying and seed feeding. In the development of multipurpose agro 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 proposed which is different from other machines and will work on non-conventional energy source which is purely human operated

3. FUTURE SCOPE

We can interface sensors to this Machine so that it can monitor some parameters. We can add Wireless Technology to Control Machine. We Can add More Drill for different crops. We can add water tank + fertilizer tank in Machine to reduce more efforts. There are to be proper provisions are needed to couple the machine with the tractor. We can add solar panel for spraying system

ADVANTAGE

- [1] This machine cost is less as compare to other machine.
- [2] Reduce man power work.
- [3] No fuel is required for working of machine.
- [4] Only one person is required for operated the machine

- [1] It give more time for complete operation
- [2] This machine not work in muddy area.
- [3] This machine not work in stone surface area.

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