Design and fabrication of Agro vechicle for Ploughing

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***Abstract*— The paper aims on the design, development and the fabrication of vehicle which can dig the soil the advantages of this vehicle is low fuel consumption and reduce the cost in the recent years the development of autonomous vehicle in the agriculture has experience increased interested presently, small land holder farmer use work bulls mostly for land preparation. There use can be increased and made more economical by using them for farm operation such as ploughing. Manual method of farming causes back ache to the formers and cost price of imported machine has gone beyond the purchasing power of most of our farmers. This project work is focused on the simple design and multipurpose equipment which implements all farming operations with minimum cost as possible. The multi agro machine able to cut crops, cut grass ploughs the land. Its maintenance cost is low, we can easily operate , simple in construction Multi cutter is a new innovative and effective concept used for agriculture field. it is simple in construction and the working process is very easy and it is mostly used in agriculture for ploughing the fiel..**

Keywords*— *castiron wheels,ploughing ridger , Battery, petrol, shaft, engine

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, we developed our multi agro bike with technologies which were used in agriculture. The agriculture could help farmers to reduce their efforts. The vehicles are being developed for the processes of leveling and the specially designed castiron wheels are used in different operations such as cutting of cotton and in agriculture purpose. All of these functions have not yet performed using a single vehicle. The proposed idea implements the vehicle to perform the functions such as mud leveling, land leveling, and the wheels are designed of cast iron which can run easily in anytype of land. These functions are integrated into a single vehicle and then performed.

2. 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.

3. SCOPE OF PRESENT PAPER

The Present project aims at designing an intelligent vehicle which can be controlled by leveler, The main aim of our project has been to develop a multi operation vechile at the same time. In this machine we used fuel which burns and converts into mechanical energy. This power is then transmitted to the rear wheel through gear drives. In this project an attempt is made to make the mechanical systems share their powers in an efficient way.

4. OBJECTIVES

The objective of this paper is to present the status of the current trends and implementation of Agricultural and leveling systems and outline the potential for future applications. Different

applications of multiagro vehicles in agriculture have been examined and compared with and are proved as efficient and effective.

- To reduce human effort in the agricultural field with the use of small robot.
- To perform all 2 operations at single time, hence increases production and saves time.
- To complete large amount of work in less time.

The basic aim of this project is to develop a multipurpose machine, which is used for leveling the soil and wheels are used for different operations with least changes in accessories with minimum cost. This whole system works with fuel and battery. Leveler is fitted at last of the bike to level the soil. Moreover we will give examples of the economic potential and Focus will be put on potential labor cost savings, farm structure implications and sizes for operation, daily working hours, potential environmental impact, energy costs and safety issues.

5. METHODOLOGY

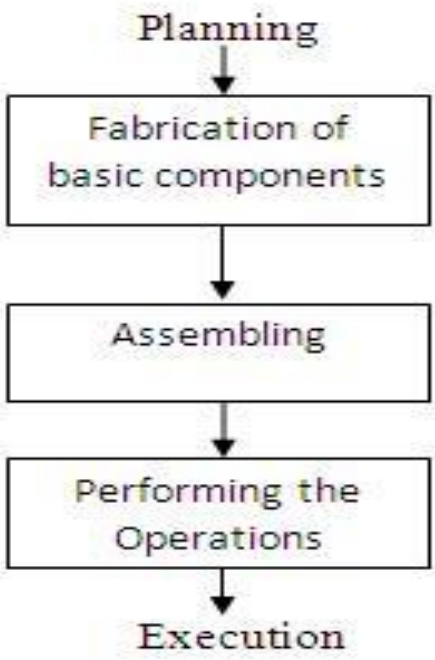

Fig: Flow Chart

6. PLOUGHING

A ridger is used for ploughing , The long bolt and nut is used for leveler up down movement. The ridger is not powered, instead it is fixed to required level initially, The ridger dig the soil in the agriculture field.

Fig: Ploughing

7. WHEEL

A circular object that revolves on an axle and is fixed below a vehicle or other object to enable it to move over the ground.

- Height = 78cm
- Thickness = 4cm
- 8- spooks wheel

8. SHAFT

Shaft is a mechanical component for transmitting torque and rotation, usually used to connect other components of a drive train that cannot be connected directly because of distance or the need to allow for relative movement between them.

Fig: Shaft

- Shaft Diameter : 12cm
- Shaft Length : 77cm
- Cast iron metal

9. ENGINE

Engine is machine with moving parts that converts power into motion. For this experimental work we purchase a old Baja Pulsar.

Fig: Engine

Table: Engine Specifications of the Engine

NAME	SPECIFICATON
Engine	150 cc
Stroke	4
Cooling System	Air Cooled
No. of cylinders	Single Cylinder
Tranmission	5 Speed constant mech
Fuel Used	Petrol
Milage	45 Kmpl

10. CHASSIS

Chassis is the base frame of a bike , carriage, or other wheeled vehicle.

- Chassis type : Double cradle type
- Suspension (Front) : Telescopic floks 135 mm stroke

11. ADVANTAGES

- Easy to Operate
- Low Maintenance Cost
- Farmers could not afford a tractor , can easily afford this agro bike
- Fuel consumption is low
- Simple Design
- Initial cost is low

These are the **Observations** from the project

- High speed =50 to 60kmph without load.
- High speed =40 to 45kmph with load.
- High speed during ploughing =25 to 35kmph.
- ploughing operation mileage 35 to 40.
- Total weight of vehicle = 95km.

12. CONCLUSION

Fig: Overal view of the agro vehicle

After the manufacturing and trail on the **"**MULTI AGRO BIKE**"** conclusion made are as follows:

- 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.

So in this way we can overcome the labour problem that is the need of today's farming in India.

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