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Multipurpose Agriculture Equipment for Seeding, Spraying and Mulching

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ABSTRAT
Farming is the backbone of Indian economy. In this agriculture sector, there is a lot of fieldwork, such as ploughing, reaping, sowing etc. these operations previously were done by traditional equipment's. This field faces some problems such as how to minimize the losses, how to increase productivity and how to minimize cost. In India, two types of agricultural methods are used, manual method (conventional method) and mechanize type method. In Manual method they are working with those equipment's was tedious and laborious.Also traditional ways are time consuming. Mechanization involves the use of a hybrid device between the power source and the work.

Keywords: *seeding, mulching, fertilizer spreading, multipurpose*

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I. INTRODUCTION

Agriculture being one of the major occupations in India, it is very essential to discover and implement new idea in this field, though lot of work has been done in this area. Talking about past in 1951, there were just 8635 tractors being used and every one of them were imported. Creation of tractors initiated during 1961-62, turning out 880 of them. This figure has crested to more than 262,000 out of 1999-2000. The offer of tractors in 2003-2004 was 172,000. Now, India is the biggest maker of tractors on the planet. Farmers nowadays pay plenty of cash on machines that facilitate them to decrease labor work and increase yield of crops. Due to the fact that agriculture plays an important role in the development of the economy of our country, some problem are still associated with the production of agriculture. The attitude of the farmer towards production of crops, little did they know about new technology of modern farming. It is essential to increase the productivity of agriculture and farming processes to improve yields and cost effectiveness with this technology, so we are introducing this multipurpose agriculture machine. Generally, cultivation of any crop involves various steps like ploughing, harvesting, sowing, and irrigation. Farmer has to use various agricultural equipment's and labors for caring out these steps, our purpose is to combine all the individual tools to provide farmers with multipurpose equipment which implements all the scientific farming techniques and specifications, suitable for all type of seed to seed cultivation with minimum cost as possible. All this can be done in this same machine.

II. OBJECTIVE

The design of multipurpose agro equipment machine will help Indian farmers in rural side and small farm. It will reduce the cost of seed feeding, pesticides sprinkling and crop cutting the field and will help to increase economic standard of an Indian farmer.

1. The main objective of this project is to design and fabricate multipurpose agriculture machine.
2. To minimize the cost so that it should be affordable for everyone.
3. To reduce Human efforts, all operations can be performed by single person, thus it will reduce the labor cost.
4. To reduce amount of time for operation

III. PROBLEM STATEMENT

In India, Agriculture with its allied sectors, is the largest source of livelihoods. 70 percent of its rural households still depend primarily on agriculture for their livelihood, with 82 percent of farmers being small and marginal. These farmers can't afford costly equipment's and machines. And they have to put more human and animal effort.

1. Lack of mechanization in farming.
2. Required excess efforts for different process.
3. Required more man power.
4.Excess time consumption for performing individual process. These are the main points to work on, our project will work on and to minimize these problems .

IV. LITERATURE REVIEW

1.M.V. Achutha, Sharath Chandra.N, Nataraj.G.K, [2016], In this research paper author has mentioned the four plans for Design and development. Basic concept is from bicycle on bicycle they have doing operation. And their expected cost is nearby about 24,000/-Rs. Also, they have done the analysis on Ansys software to check on load condition to avoid the failure problem while fabrication of the project. They are doing one or two operation on each plan. Here more manpower is required as they are not using the engine.
The Conclusion from the paper is to decrease the cost. From this paper we are looking how they are doing the operation to minimise the cost and the analysis are done.

2. **D.A. Mada, Mahai**, [2013], In this research paper author has mentioned the magnitude of automation in agricultural field by giving some instance. The conclusion from the paper was need of multifunctional vehicle for pre and post harvesting. We have taken this as base of our research and take further changes in production of our multipurpose agricultural vehicle.

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

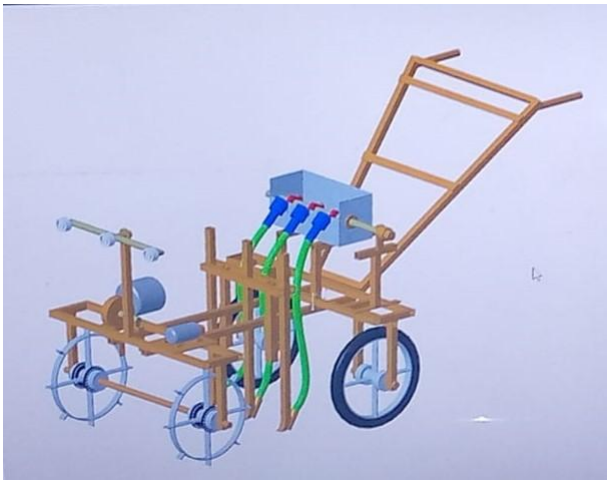
4**. F.A. Adamu, B. G. Jahun and B. Babangida** [2014] In this paper authors draws our attention towards the performance factor of a power tiller.Among those demand for light weight power tiller was sought out most Fuel efficiency and field capacity such parameters are also discussed. We taken those points in consideration while designing a sustainable multifunctional agricultural vehicle.

5. **Pratikkumar V. Patel, Mukesh**Ahuja,"RESEARCH AND DESIGN OF MULTIPURPOSE AGRICULTURE EQUIPMENT",International Research Journal of Modernization in Engineering Technology and Science,(2020). Research was done to prove that tractor with comparatively low power can be more economical and efficient. Also equipment or machine is designed based on various types of activities related to various types of crops. Design of equipment also considered information gained from previous studies as well. From above study it can be concluded that conventional system with heavy tractor is less efficient and more time consuming than conservative system with low or medium power tractor. Also, the equipment or machine that is designed can be used for plough, seeding, fertilizing etc. It will be moreeconomical and efficient than heavy machines for small to medium scale farmers

V. PART

i. MS metal body frame.
ii. Seed holder and sowing mechanism.
iii. Fertilizer container with pump.
iv. Nozzle for fertilizer.
v. Rollers.
vi. Wheels.

VI. EQUIPMENT DESIGN



EXPECTED OUTCOMES

i. Multipurpose operation can be performed on a single machine.
ii. Machine should be easy to operate.
iii. Cost of the equipment should be as low as possible. (That can be affordable to every farmer)
iv. Multiple operations to be done on this machine so as to reduce time and efforts.
v. This machine has one-time investment.
vi. This Machine should have less maintenance cost .
vii. This machine should be use in intercrops.

VII. CONCLUSION

After the designing and analysis of the "Multipurpose Agricultural Machine" conclusion which we made are as follows: Based on the overall performance of themachine 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 solve the labour problem that is the need of today's farming in India. Unique machine designed to carry out the task of spraying the fertilizers and sowing of seeds is developed.The complete calculations alongwith the software model are presented in this paper. It overcomes the problem associatedwith conventionalspray such as back pain due to weight carried on back.

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