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Growth Regulator Feeding Machine

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ABSTRACT: Growth Regulator Feeding Machine combinedly function as digging and Growth regulator/fertilizer feeding. This machine is next version of earth auger machine. Which has some advanced features like Growth Regulator feeding facility. Machine will operate by the single operator. Simultaneously it will dig the ground up to required depth, growth regulator will feed through feeding mechanism. High torque, good powered engine will help to actuate the function. Auger bit will help for digging a hole in soil around mango tree. A special tool called Auger bit will dig the ground will create passage to pour Growth Regulator into it. It will be same like Earth auger machine but having some more feature. In this review we are trying to make this machine into existence.

KEYWORDS: Auger, Growth Regulator Feeding.

I. INTRODUCTION

India ranks first among world's mango producing countries accounting for about 50% of the world's mango production. Mechanized equipment has changed the way mango farming is done. However, lack of availability of labours is a critical issue faced by many farmers and agriculture entrepreneurs across the breadth and width of the country. Western coast of Maharashtra is not an exception for the same. It is world famous for Alphonso Mangoes which are considered as hyper sensitive to atmospheric changes. Growth regulators are important for good production of mangoes. Mango crops are widely cultivated in Konkan region. Mango production requires use of fertilizers and growth regulators. The circumference of trees is usually larger and requires more labour to dig holes and feed the growth regulator for proper manuring. For large trees, significant amount of man hours is required. Scarcity and increasing cost of labours are major issues, even farmer is managed to afford labours but the efforts and time required for manuring process is huge. Traditional method of growth regulator involves digging holes or trench around trees using manual labour. Traditional method requires lot of labour and manual digging tools. This method is time consuming as digging hole or trench around tree using manual tools is very labour extensive job. This ultimately cost farmer time and money. Manually we can manure 3-5 mango trees in an hour per labour. Currently this method is used by farmers to apply growth regulator to mango trees. This method is very inefficient and this can be solved using machine tools and engineering.

II. LITERATURE REVIEW

Amle Kishore E.,Lohote Shiram T., Ghule Vaibhav M.,Bahirat Sagar S. ,Jahind Polytechnic,India, Tractor Operated Auger, IJSRD – In this paper Journal it describes about the design of auger which includes the calculations like power, torque required, determination of shaft diameter based on strength, resistance to twisting method, transmission of torque approach. 6 In this regard, the project's main objective is to meet the needs of small-scale farmers, reduce operating time and manufacturing costs. Soil Digging Machine, IJTRE- this journal describes about the problems faced by the farmers using agriculture tools. IJSRD- 'Design and Fabrication of single axle, self-propelled multi attachment agricultural machine' by mechanical engineering students, Ratnagiri. In these paper they had worked on similar concept like us but that was traditional approach. For history of such kind of machines we have referred this paper too. To know what actually power tillers, mini cultivators does and how they functioned, we have referred some papers, journals, etc. Dr. C.N.SAKHALE, (IRJET 2016), "MULTIPURPOSE FARM MACHINE" in these research paper author has mentioned details about engine specifications, suitable materials used for machine, information about components etc. We have taken engine specifications and material information for our project from this paper.

III. METHODOLOGY

We started with the research to get the information about existing machineries, mini earth augers, power tillers and cultivators etc. which are similar to this machine. Then we started with frame model of conceptual design to get idea about the size of machines. Considering different factors like average height of Indian peoples, soil viscosity, soil density, moisture content we finalised the dimensions of machine. Then we designed the conceptual machine model using Solid works. We are currently designing ager bit for digging purpose and simultaneously working on fabrication.

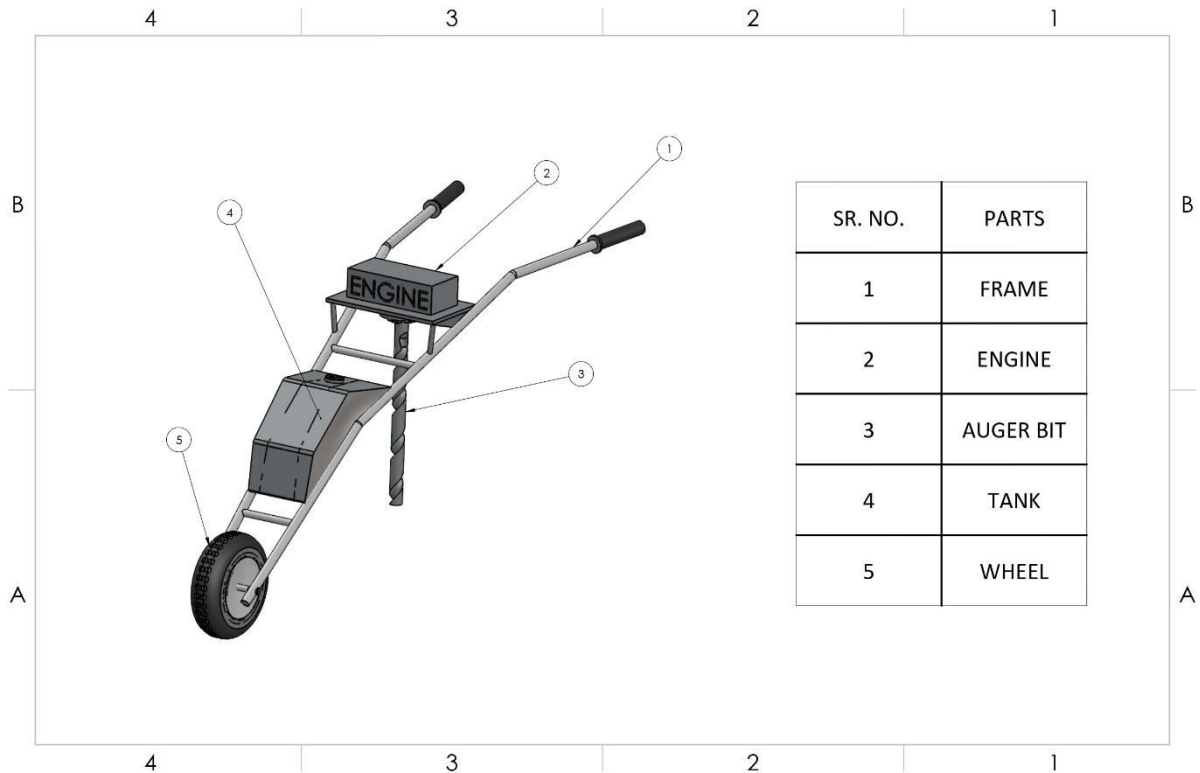


Fig.1 Conceptual Design

IV. EXPERIMENTAL RESULTS



Fig.2 Growth Regulator Feeding Machine

The Growth Regulator Feeding Machine is an innovative technology that can significantly improve the efficiency and productivity of agricultural operations. This machine combines the functions of a hole digger and a growth regulator dispenser into one unit, making it easier for farmers and gardeners to dig holes and apply Growth Regulator at the same time. In our project, we designed and built a prototype of this machine and tested its performance in different soil conditions. The machine was able to dig holes to a consistent depth and dispense Growth Regulator accurately, resulting in improved plant growth and higher crop yields. We also found that the machine was highly efficient, reducing the amount of time and labour required for planting and fertilizing. Additionally, the machine helped reduce the environmental impact of Growth Regulator use by ensuring that it was applied only where it was needed, rather than being over-applied to the entire field.

Overall, the results of our project demonstrate that the Growth Regulator Feeding Machine is a valuable tool for farmers and gardeners. This technology can help improve efficiency, productivity, and sustainability in agricultural operations, leading to better plant growth and higher crop yields.



Fig.3. Dugged hole and Dispensing Mechanism

V. CONCLUSION

In conclusion, the development of a Growth Regulator Feeding Machine has proven to be a significant advancement in agricultural technology. The machine is designed to increase efficiency, consistency, and productivity in planting and fertilization operations. By reducing the need for manual labour and ensuring precise fertilizer application, the machine not only saves time and labour costs but also improves crop yields and reduces the environmental impact of fertilizer use. Field tests have shown that the machine is effective in digging consistent depth and spacing of holes and dispensing the right amount of fertilizer, leading to uniform plant growth and improved crop yields. The machine's scalability also makes it suitable for use in a variety of farming contexts, making it a valuable tool for farmers and gardeners worldwide. Moreover, the machine's automation capabilities and scalability can help address labour shortages and other challenges facing the agriculture industry.

With the machine's ability to perform tasks on a larger scale and with greater precision, farmers and growers can increase productivity and profitability, while also promoting more efficient use of resources.

While the initial investment for the machine may be high, its long-term cost-effectiveness and potential for improving crop yields and environmental sustainability make it a worthwhile investment for larger-scale agricultural operations. Overall, the Growth Regulator Feeding Machine represents a promising technology for enhancing the efficiency and sustainability of agricultural operations, ultimately benefiting farmers, consumers, and the environment.

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