

Solar Operated Paddy Harvester

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INTRODUCTION

Solar energy is a renewable energy from the sun, which is available abundantly and freely every day. With fossil fuels disappearing rapidly and likely to be exhausted sooner or later, making use of solar energy is now more important than ever. Agricultural industry is surpassing greater heights. With the inventions of new machinery and new ways of getting better yield has exposed the concerned industry to the fire of competition. Today the farmers have become aware of the modern technologies that can fetch them better yields and also help them manage it with multiple machineries. But the mechanization of farming is not possible in India because here the farmers have very small piece of farm which is to be maintained for farming and investment on the machineries are not possible by small farmers. We have to devise the small machines or equipment's which farmer can afford. We are well aware that during harvesting, cutting the crops by hand is by far one of the most laborious and difficult operations of the farmer's profession, and need labours for doing the same and now a days we find shortage in labour. However surpassing technologies have ensured that crop cutting will no longer be a sturdy task but various machines suitably designed for this purpose will perform the this action smoothly and in time. Besides saving time and labour, these machines are designed to make agriculture a sophisticated profession. All these machines use diesel as fuel and we have to come with an alternate since fossil fuels are getting depleted and also it is costing us the nation exchequer heavily. The present crop cutting is done by manual process and in mechanized process, heavy machineries are used which are costly and a common farmer cannot afford for such machines. So we are designing a machine where small farmers can afford it.

Review Stage

The Central government increased the price of petrol, diesel day by day. So the middle class people and low class people are affected. The rent for harvester is also high. They want many number of labour want to cut the paddy and the labour charge is also high.

Final Stage

The purpose of the project is to fabricate a machine to carry out the operation like Harvesting which should be helpful for the farmers having Less & Marginal Land. By the observations of the results and discussion, variation between manual methods, Machine method and proposed machine method, are described below:

The labours required for the proposed machine method is less than the manual method and equal to machine method. Further, the machine method cannot be

Suitable for small scale farmers as it is economically not feasible. The time duration required for the proposed machine method is less than the manual method and more than machine method. Further, the machine method cannot be suitable for small scale farmers as it is economically not feasible. The cost required for harvesting the one acre land is also less by using proposed Machine method.

2. Machine harvesting method

In this method, harvesting is done with the help of machine. It is fully automated it requires very less time for cutting paddy around large area. The machine harvesting is having high initial cost, high operating cost, applicable for only large scale farmers, skilled labour required to operate the machine and area require for operation is also more and then it will be transmitted by an RF Transmitter module.

3. ADVANTAGES

1. Use of renewable energy for the crop cutting action.
2. Not using any fossil fuels which are depleting now and becoming costlier.
3. Low investment.
4. Cutting blade is very fast since cutting works at high speed.
5. A Single person can do the crop cutting faster than manual process which is tedious and hazardous also.
6. Easy to use.
7. Light weight makes it easier for any aged people and also for women.

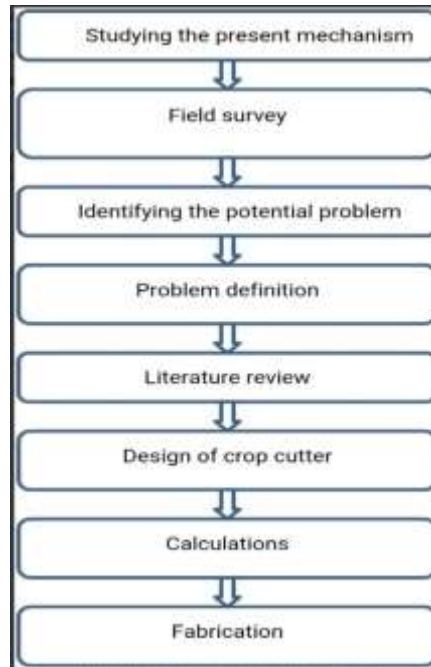
Working Principle

The paddy cutting machine is provided with a motor drive. The wheel is having free motor drive and the circular cutter shaft. The speed ratio of the circular speeds 3500rpm. The fixed blades is fitted in the frame of the body and the moving blade is rotated when it is in moving condition.

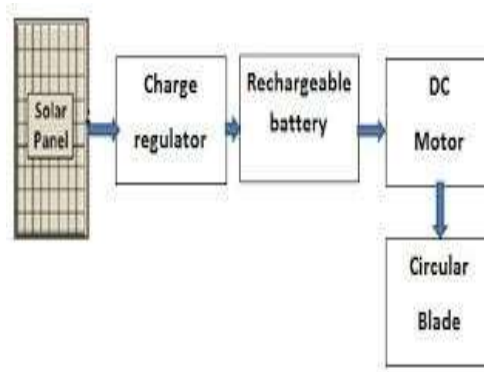
The cutting length of the paddy is adjusted with the help of fixed blade adjustment. The screw is used to adjust the fixed blade sharpness. The speed is also reduced in the ratio of 1:4. When the main shaft rotates 4 times the wheel shaft will rotate only once. The handle is used to move the solar paddy cutter from one place to another place.

Methodology

The following are the steps involved in the working methodology:



BLOCKDIAGRAM



Results and discussion

General

In this chapter, results and discussion of the present project work will be discussed. Section 8.2 highlights the number of labours required, time required and cost for manual method. Further, for machine method and proposed model will be discussed in section 8.3 and section 8.4, respectively. Finally the comparison of all method will be discussed in 8.5.

Results of Manual Method

required and number of labours required for the harvesting of paddy crop is tabulated in Table 8.2. Further, the cost required is also given in Table 8.2.

SL.No	Crop Name	Labours/ Acre	Time Required	Cost /Acre
1	Paddy	5-6	12 hrs	2400

Results of Machine Method

The time required and number of labours required for the harvesting of different crop is tabulated in Table 8.3. Further, the cost required is also given in Table 8.3.

Sl.No	Crop Name	Labours / Acre	Time Required	Cost / Acre
1	Paddy	01	2hrs	1400(Excluding Initial Cost)

CONCLUSION

The purpose of the project is to fabricate a machine to carry out the operation like Harvesting which should be helpful for the farmers having Less & Marginal Land. By the observations of the results and discussion, variation between manual method, machine method and proposed machine method, are described below: The labours required for the proposed machine method is less than the manual method and equal to machine method. Further, the machine method cannot be suitable for small scale farmers as it is economically not feasible. The time duration required for the proposed machine method is less than the manual method and more than machine method. Further, the machine method Cannot be suitable for small scale farmers as it is economically not feasible. The cost required for harvesting the one acre land is also less by using proposed Machine method.

.Scope for Future Work

Though the machine has some innovative concepts, there is still a lot if scope for development like:

The machine has to be provided with gear box.

- The machine can be made lighter by doing detailed analysis of design & removing excess material wherever it is not necessary.
- With minimal modification this machine can be used for different crops.

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