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Three-In-One Agricultural Vehicle System

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***Abstract*— The paper deals with utilization of solar energy and it is converted into the chemical energy, which is used to drive the different units of the system. In this paper we had tried to explain how the different agriculture equipments are combined and work together efficiently with reducing the manufacturing cost which will be in affordable beget.**

***Keywords*— Agricultural vehicle, Spraying machine, Dusting machine, Cutting machine.**

I. INTRODUCTION

For the proper growth of plants like tomato, cotton, graphs etc. there is need of keeping away this plants from different disease and also the unwanted grass should be removed from the farm field after the specific interval of time. For this lot of effort are require and also the different agriculture equipments which needed lot of money. The agriculture equipment like spraying machine, dusting machine, cutting machine are used to spray the pesticides solid liquid or mist and the cutting machine is used to harvest or used as a grass cutter in the farm field. Also the pesticides are spreads for improving the quality of the crop therefore the pesticides should be sprayed uniformly all over the plant. For spraying the pesticides uniformly the spraying machine and dusting machine is required.

II. LITERATURE SURVEY

B.Venu:a solar grass cutting is machin that uses sliding blade to cut lawn at an even length .even more sophisticated device are there in every field. Power consumption becomes essential for further[1].

V.Vasu, R. Joshua: Energy demand is the measure thread for our country. Finding solution to meet the energy demand is great challenge to the scientist engineers, interpreneurs & industrialist of our country[2].

III. METHODS

3.1 Convectional method: In the conventional method the equipment use for agriculture purpose was a separate unit like spraying machine dusting machine, cutting machine as shown in below figure.

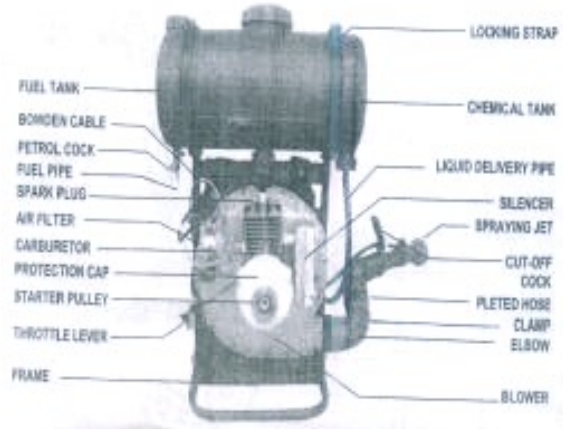

Fig.1 Spraying Machine

Fig.2 Cutting Machine

3.2 Developed Method: Below Figure Shows Three Mechanism installed on the single foundation which is different from the conventional method in which all the three equipment's where working as single unit.

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Fig.Three in one machine

IV. Problems In Agricultural Fields Equipments

The main problem we observed was that the cost of equipments likes spraying machine, dusting machine and cutting machine. Also the availability of such machine in the single unit . Also the convectional equipments used, required the fuel for their working this increase the maintenance of the equipment. Also the problem like pollution is caused by the convectional equipments. If the equipments are working on the electricity then the work is stopped during the time when the electricity is not present this cause delay in the working, which can increase the disease in the plant if electricity is not present for the several days. Also the cutting the grass in the farm field requires number of labors which is quite difficult now a day, also the charges to be pay are increasing day by day which cannot be affordable for the poor farmer. And also the work is not done in time. Also the convectional dusting machine is very costly and it works on the tractor machine. The cost of tractor machine in very high . This tractor machine and dusting machine is out of beget of poor farmer.the cutting machine price is also very high and cutting of grass in the farm field has to be done continuously this requires lot of labors means more increase in the cost while doing the farming. The spraying machine is the most important now days due to which the price is increasing, also it is operated with the help of electricity of diesel machine means it will not be able to operate without the electricity or the diesel machine. The diesel machine will cause pollution. The drenching is also the main function to be performed in case of tomato farm field in the Rainey season. The maintenance equipment is very costly of all this instruments. The breakdown of a single part will cost too much to the farmer.

4.1 Need:

The main aim behind this is to construct the equipment which are essential for the farm field with the suitable cost which will be affordable for the poor farmer and also the efficiency of the equipment should be high, so that all farmer can prefer it first rather going to the convectional equipments. The other need is the labor availability, now a day the labor is not being easily available. Also if they are available the working cost of them is very high and the efficiency of the labor is very low. This can cause the working time to be increase. Therefore the work will not be completed in the given time. When we use the convectional machine like the diesel machine the main problem caused by this machine is the pollution. The pollution is the main problem now a day. Because of the pollution the human life is getting disturbed and also the temperature of the environment is increasing this disturbed the human comfort. Also there are very much nonconventional energy source available in our surrounding which can be used rather than the convectional source of energy. We are using the solar energy as the main source for completing the different operation. If we don't use the solar energy it will be wasted. Also it has no harmful effect like polluting the surrounding environment. And also the solar energy is freely avable, we has to not pay for it. The trapping of solar energy is very easy and also conversion of it into the electricity is very easy. The equipments required for the conversion of solar energy is easily available in the market with the suitable low cost.

V. Construction & Working

5.1 Construction of spraying machine:

It consist of solar plate, battery, on off switch, centrifugal pump fluid caring pipe or tube, nozzle, fluid containing tank, one 12 volt dc motor, power transmitting wire.

5.2 Working of spraying machine:

The solar energy is trapped with the help of solar plate this energy is stored in the battery. When the on off switch is on at that time the power is given to the centrifugal pump the pump get operated it pumps the fluid from the fluid tank this fluid is passed through the tube towards the nozzle where the nozzle will spray the fluid uniformly over the plant. We can use this machine as a drenching machine by removing the nozzle, as per requirement in the farm field. The 12 volt dc motor is used to adjust the angle of spraying machine as per operation to be performed.

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5.3 Construction of dusting machine:

It consist of rotary fan, gearing arrangement ,dusting pipe, solar plate, battery, motor, powder containing container, switch, adjusting rod.

5.4 Working of dusting machine:

The solar plate trappers, traps the solar energy and the power is stored in the battery. This power is used to drive the system. The switch is on and the power is given to drive system which operates the rotary fan. The powder to be spray falls down in front of the rotary fan by mean of air pressure the powder is forced out of the pipe. The adjusting rod is used to adjust the powder falling from the powder container according to requirement.

5.5 Construction of cutting machine:

It consists of motor, cutting blades, switch, solar plate, battery, adjusting stand.

5.6 Working of cutting machine:

The solar energy trapped in the solar plate is stored in the battery. This energy is given to the motor due this the motor start running. The cutting machine is attached to the motor, when the supply is given to motor, motor start running due to which the cutting machine starts. The grass is trapped in the cutting blades because of this the grass is being cut.

Advantages:

- Pollution free.
- Cost effective.
- Easy in operation.
- Multiple operations can be performed at a time.
- Portable.
- Less maintenance cost.
- High efficiency.
- Construction is easy.
- No need of skilled operator.
- Smooth working.
- Controlling of operation easy.

VI. CONCLUSION

In this way we conclude that, the different operation can be performed at a time without polluting the environment and by using the non convectional power source with high efficiency.

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