AGRICULTURE WATER SPRAYER SEEDER AND WEEDER

HARSHPALSINH DABHI[1], MAAZ KHALAK[2], RAJPALSINH ZALA[3,] Sanket Gandhi[4]

[1,2,3] *STUDENT, MECHANICAL ENGINEERING, SAMARTH COLLAGE OF ENG. AND TECH., INDIA*

[4]*Ass.Prof. MECHANICAL ENGINEERING, SAMARTH COLLAGE OF ENG. AND TECH., INDIA*

ABSTRACT

The spraying is traditionally done by labour carrying backpack type sprayer which requires more human effort. The weeding is the generally done with the help of Bulls becomes for small land farmers. Similarly the seed sowing application is also done with the help of bulls, which in the present age is time consuming and laborious. So to overcome these above problems a machine is developed which will be beneficial to the farmer for the spraying and weeding operation along with the seed sowing application. A multifunction device will come in handy that can be put to use in different stages of farming as per requirement.

Keyword : - *WATER SPRAYER , SEED SOWER, WEEDER, and AGRICULTURE MULTIPURPOSE MACHINE*

1. INTRODUCTION

Insects are largely responsible for the crop destruction. Insecticides or pesticides, a man made or natural preparation are used to kill insects or otherwise control their reproduction. These herbicides, pesticides, and fertilizers are applied to agricultural crops with the help of a special device known as a "Sprayer,"

A sprayer is a device used to spray a liquid. In agriculture, a sprayer is a piece of equipment that spray nozzles to apply herbicides, pesticides, and fertilizers to agricultural crops. Sprayers range in size from man-portable units (typically backpacks with spray guns) to self-propelled units similar to tractors, with boom mounts of 60–151 feet in length.

Agricultural implement and machinery program of the government has been one of selective mechanization with a view to optimize the use of human, animal and other sources of power. In order to meet the requirements, steps were taken to increase availability of implements, irrigation pumps, tractors, power tillers, combine harvesters and other power operated machines and also to increase the production and availability of improved animal drawn implements. Special emphasis was laid on the later as more than 70% of the farmers fall in small and, marginal category.

A research program usually concentrates on the development of equipment suitable to a given farming conditions. The objective is to improve upon the performance of indigenous implements or develop a new implement that can either enhance labor productivity or appropriately mechanize the operation where a labor or power shortage hinders completing the task in time.

Types –

- Backpack/knapsack
- Foot
- Garden
- Hand compression
- Power
- Stirrup

Need for Project : The figure below shows the conventional hand sprayer

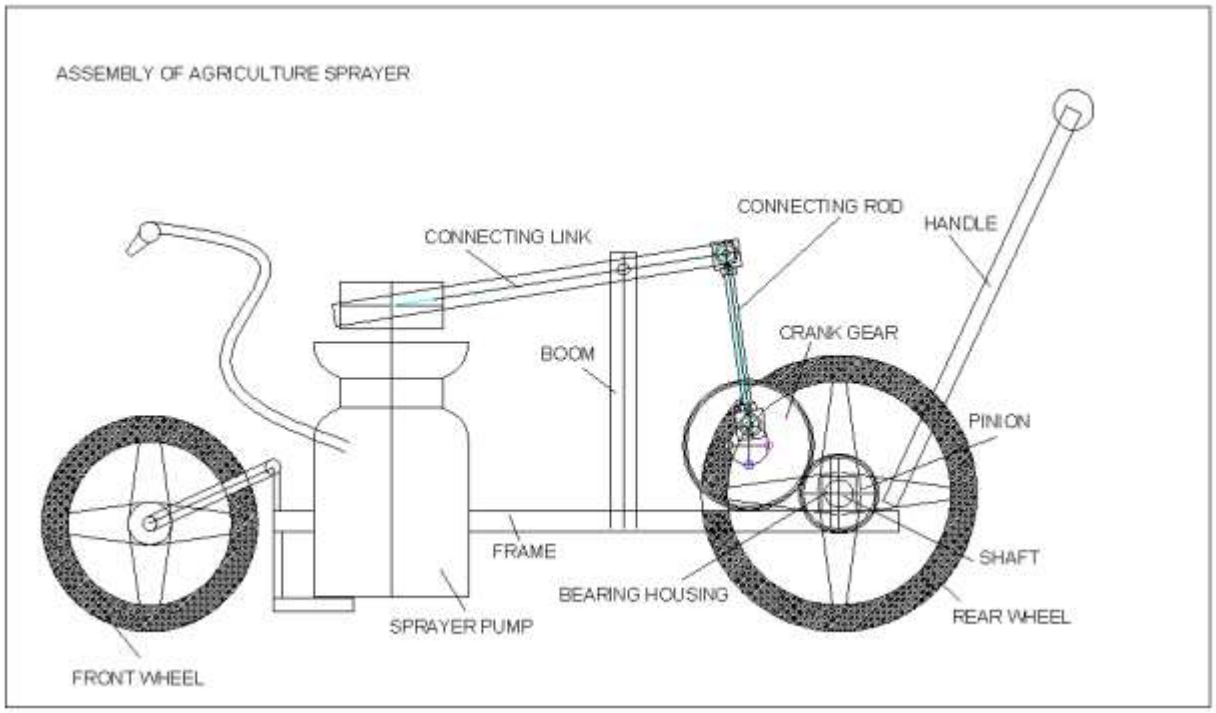
This type of sprayers has the following features:

a)Very popular amongst the pest control operators.

b)Tanks fabricated from cold rolled brass alloy steels, welded joints tested for 150 pounds pressure.

c)Brass forged fittings , built in air pump d)Adjustable shoulder straps.

1.1 assembly of agriculture sprayer



2. working

When the handle is pushed the sprayers vehicle moves forward rotating the wheels , hence the spur pinion makes the crank gear to rotate. The Crank gear acts like the crank which in turn drives the connecting rod and makes the connecting link to oscillate about the boom hinge. The connecting link is engaged to the piston of the sprayer pump which moves. forward and backward to give pump action and increase pressure inside the pump which is further used to spray the pesticide when the valve is opened on the sprayer pipe.

2.1 ADDITIONAL FEATURES

- **Weeder arrangement**

- **Seed sowing arrangement**

  1. Hopper : Hopper holds the seeds to be sown The hopper is sheet metal component made in trapezoidal shape., it drops the seeds into the distributor mechanism, ie in between two blades of the turbine.

  2. Turbine or distributor : This mechanism decides the number of seeds to be dropped per turn such that the gap between toe blades is to accommodate only given quantity of seeds. The turbine is rotated with such speed that the gear train will adjust the distance between to droppings. No of blades of turbine will decide the quantity of seeds dropped per turn.

  3. Seed sower drive mechanism : The seed sower drive mechanism comprises of a DC motor 30 rpm, with a gear train in between the motor pinion and the turbine. So also hw gear train drives the earth covering mechanism.

  4. Earth covering mechanism: This comprise of the slider crank mechanism with the gear train gear acting as a crank, the earth covering plank as an piston. Thus the mechanism moves to an fro to cover the seeds after each dropping.

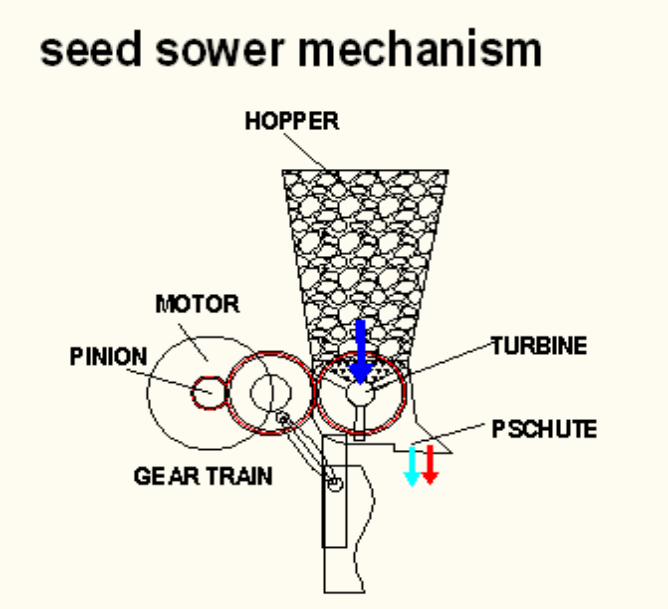


Figure 2. Seed Sower Mechanism

3 ADVANTAGES

- Human effort in pumping is saved.
- Less tiresome as compared to the conventional sprayer as the tank is carried on vehicle.
- Increases the capacity of spraying.
- Two pumping outputs per rotation of crank, so tank charging is faster.
- Cost effective as compared to automatic sprayers.
- It is multipurpose machine.
- Easy to operate and user friendly.
- Very less pollution on other models.
- It is portable
- Unit cost is very cheap one.
- Maintenances cost is low.
- Easy to assemble.

3.1application-

1. **Farms**
2. **Garden**
3. **Home garden**
4. **flortifarm**

4. CONCLUSIONS

The concept of group project was included in our engineering syllabus with the view to inculcate within us the application ability of the theoretical concept of design and production engineering to practical problems. So also to help us to learn to work more as a team rather than an individual. In completing our project titled **"AGRICULTURE SEED SOWER, WEEDER & WATER SPRAYER REPORT"** as per our time estimate gives us immense pleasure and a feeling of achievement. During the course of project we encountered numerous problems which we overcame with the able guidance of our project guide. This project report presents a brief mention of our efforts. Project work has given us good exposure to the practical field which in the future is definitely going to help us.

5. REFERENCES

[1].http://www.ijaerd.com/papers/finished_papers/AGRICULTURAL%20SPRAYER%20VEHICLE%20WITH%20ROUTER%20WEEDER%20AND%20SEED%20SOWER-19592.pdf

[2]. D.V.Sabarinanda, V.Siddhartha, B. Sushil Krishnana, T.Mohanraj , "Design and Fabrication of Automated Hacksaw Machine", International Journal of Innovative Research in Science, Engineering and Technology, ISSN (Online): 2319-8753, volume 3, April 2014.

[3]. O.Cakir, A. Yardimen, T. Ozben, "Selection of cutting fluids in machining processes", Journal of Achievements in Materials and Manufacturing Engineering, volume 25, Issue 2, December 2007.

[4]. Prof. Nitinchandra R. Patel, Mohammad A. Vasanwala, Balkrushna B. Jani, Ravi Thakkar, Miteshkumar D. Rathwa, "Material selection and testing of hacksaw blade based on mechanical properties", International Journal of Innovative Research in Science, Engineering and Technology, ISSN: 2319-8753, volume 2, Issue 6, June 2013.