Manually Operated Sprayer for Agriculture Purpose

Sagar[1],Akash[2],Kartik[3],Jagdish[4]

[1] *Studant, Mechanical Engineering, SVIT Nashik, Maharashtra, India*
[2] *Studant, Mechanical Engineering, SVIT Nashik, Maharashtra, India*
[3] *Studant, Mechanical Engineering, SVIT Nashik, Maharashtra, India.*
[4] *Studant, Mechanical Engineering, SVIT Nashik, Maharashtra, India*

ABSTRACT

The new ideas of our project has making multi-purpose agriculture sprayer by man power. In agriculture, sprayer is a piece of equipment those are spray through sprayer is piece of equipment that sprays through nozzles to apply pesticides and fertilizers above agricultural crops. In few years ago, pesticides would be spray above the plants by using blower which runs with help of fuel engine. Range of size of sprayer is based on man-portable units.In our project, we are consider the pressure flow of spraying. Hand pump has used to pressurize the fluid inside reservoir tank.The system allowed more precise rate and droplet area or size control than conventional rate control system.Basically, the traditional uses about spray pressure to control nozzle output is replace bye the duty cycle of a pulation solenoid.

Keywords : - *Sprayer, Pump, Crank mechanism, Sprocket and chain drive.*

1. INTRODUCTION

The objectives of spraying are to be delivered an effectiveness, uniform dose of products to a target area in a safe and timely manner. Any kind of product not deposited the target is called "wastage".In wastage included with drift (vapour and droplet), run-off and any off-target deposition. In high volume air blast applications studies show that 78% product could be lost to be drift and ground deposition. Wastage costs time but may reduce the effectiveness of the application.Ability to change droplet size with pressure adjustments on the go without changing travel speed.

1.1 SCOPE

The regulations in this type of Order limiting the pollution of soil, groundwater and surface water with plant protection.The quality and precision of the operations were equally significant realizing higher yields,harvesting and threshing need of high degree of precision to increase the efficiency of an inputs to reduce the losses.

1.2 USERS OF AGRICULTURE SPRAYERS

In these process the term “users” refers the people who already use an agriculture sprayers or who can benefit from using a agriculture sprayer because their ability to spraying is limited. The agriculture sprayer has useful in given below areas.Users include;

1. Home and garden.

2. Used for small home gardens or roadside plants.

3. Most were Adjustade from stream to mist.

1.3 NEED FOR AGRICULTURE SPRAYER

1. Increased the cultivates

2. To reduced the manual work.

3. Reduce the time consumption

2. CHALLENGES FOR USERS

Users face the many kind of challenges, which must be considered when developing approaches of agriculture sprayer provision. The challengers have been using this agriculture sprayer to spraying pesticides above the land by easily.

3. FINANCIAL BARRIERS

Many of the people in the world live in low income countries. The many of them are poor as well as they do not have access to basic service facilities. The government funding to the provision of agriculture components such as sprayers and another components and then the government could be give the agriculture loan for developing the farm of the farmers.

4. METHODOLOGY

In India farming is done by traditional way that there are large development of industrial sector as well as service sector as compared to that of agriculture. The spraying has traditionally done by a labor carrying backpack type sprayer where it requires more human effort. There was generally done with the help of our project which may becomes costly for farmers having very less farming land.

5. OBJECTIVE

Reduce operational cost by using new mechanism. Reduce the cost of machine. Reducing labour cost by advancing of the spraying method. Machine could be operate in less farming lands(5 acre).

6. MAJOR WORKING MECHANISM

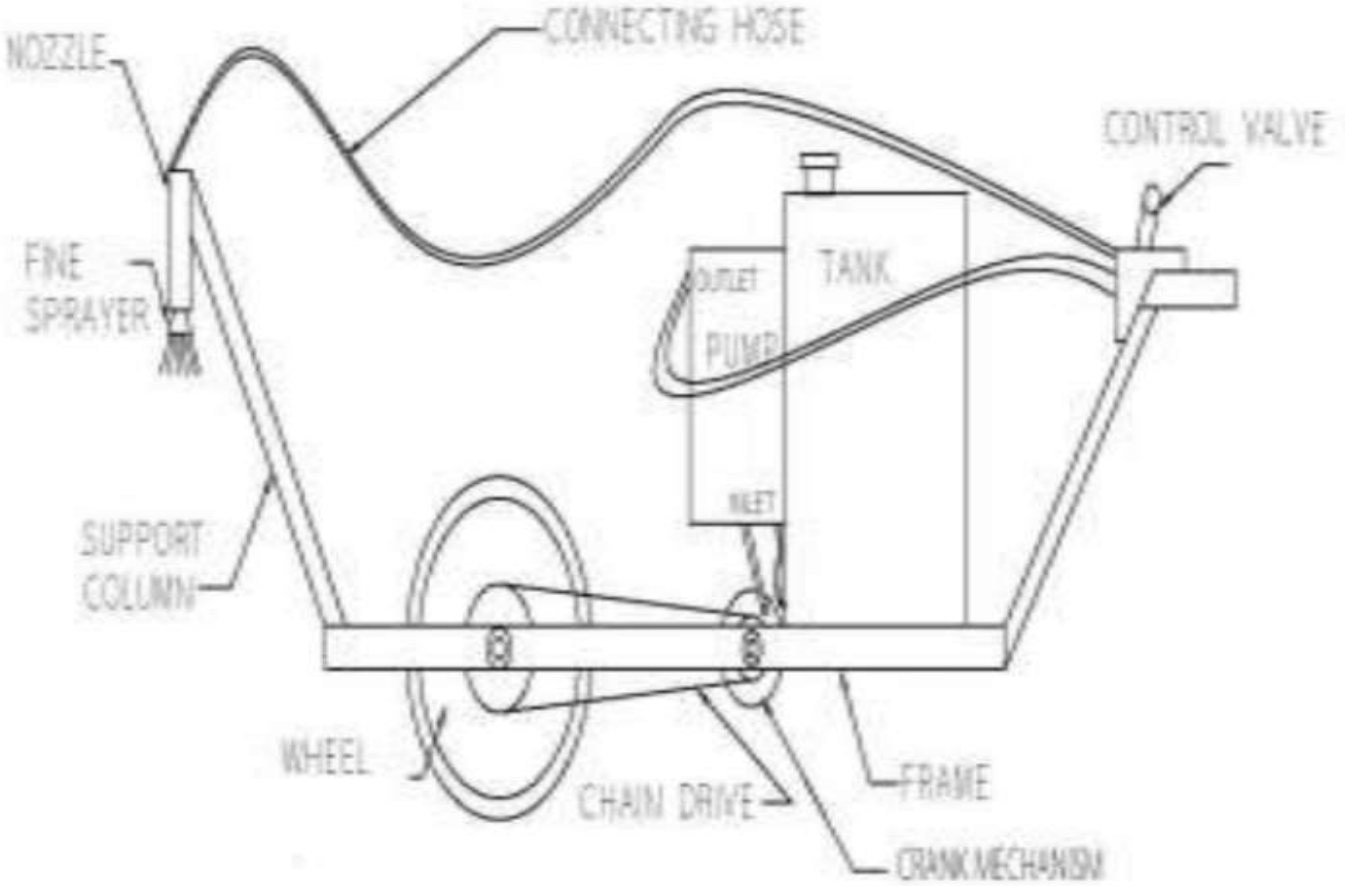
In this project the pesticides have sprayed on the agricultural lands. In this project all arrangements are mounted above the trail.Trail has moved by the rotating of wheel. In this arrangements here we are use one wheel for moving the trail. By using above crank mechanism the rotary motion is converted in to linear motion of the wheels.

7. OPERATION METHOD

The tank was mounted above the trail the bottom side of tank inlet tube of pump has connected to the pump has attached with the tank. The pump operates by using the crank mechanism this mechanism has convert rotary motion into reciprocating motion.The pump mechanism has connected to the trailed wheel by chain drives. They were use the larger pulley above trailed wheel as well as smaller wheel above the crank mechanism.If trail was moving the wheel is rotates so the chain drive operates the crank mechanism to this pump.The single slider crank mechanism, due to use this arrangement the connecting rod move upward as well as downward which then reciprocates the plunger of single acting plunger pump which is mounted above the storage tank.During the upward motion of connecting rod the pesticide has drawn iside the pump and during the downward motion of connecting rod the pesticide has forced to the delivery valve, the delivery valve is directly connected to the pipe.The delivery pipe has

connected to control valve. It controls the flow of pesticides. If we can spray light quantity of the pesticides that means the control valve has lightly opened so the flow rate reduces as well as controlled.If they are spraying high quantity of the pesticides means the control valve is fully opened so the valve allow the fully quality pesticides to the sprayer and then spraying side could be change by rotating spraying support beam.

8. LAYOUT



Left side View

9. MERITS

1.Construction is simple.

2. No need of fuel to operate.

3. Easy to handle.

4. Use and repair.

5. Totally non pollutant for environment.

6.Less maintenance.

10.CONCLUSION

1.The suggested model has removed the problem of back pain, since there is no need to carry the tank (pesticide tank) on the back

2.Proper adjustment facility in the model with respect to crop helps to avoid excessive use of pesticide which result into less pollution.

REFERENCES

[1]. R. Joshua, V. Vasu and P. Vincent "Solar Sprayer - An Agriculturea. Implement", "International Journal of Sustainable Agriculture 2 (1): 16-19, 2010 ISSN 2009-2017"

[2]. M. A. Miller, B. L. Steward, M. L. Westphalen "Effects of multi−mode four−wheel steering on sprayer machine performance", American Society of Agricultural Engineers ISSN 0001−2351

[3]. Taiwo K. Oje, "Development and testing of a swirl chamber nozzle",a. Journal of Agricultural Engineering and Technology (JAET), Volume 16 (N0.1) June, 2008.4. Boom Sprayers, NRAES 19, Pennsylvania State University, 1983.

[4]. Mr.Venkatraman J., Kamalraj R. "Fabrication of manually operated multipurpose agricultural sprayer (IRJET) Volume no 1,Issue:07 July 2018

BIOGRAPHIES

	Taware Sagar Dattatray BE Mechanical From Pune University Email Id- sagartaware182@gmail.com Mob no.-976293358
	Gite Kartik Chandrakant BE Mechanical From Pune University Email id- Kartikgite26@yahoo.com Mob no.- 9822952515

	Mahajan Akash Shivaji BE Mechanical From Pune University Email id- akashmahaja178@gmail.com Mob no.-9503785395
	Gurgude Jagdish Sanjay BE Mechanical From Pune University Email id- Jagdishgurgude1@gmail.com Mob no.-9860608991
	Kolhe Mahesh P Assistant professor at SVIT Nashik Email id- Mob no.-