

# Review Paper on Wheel Operated Spray Pump & Seed Sowing Equipment

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**Abstract**— In India most of land is based on agricultural field and to increase the productivity of field crop by use of agriculture sprayer. But advancement and mechanization of agricultural tools is slow as compared to other sectors. In agriculture, sprayer is a piece of equipment that is used to apply pesticides on agricultural crops. Mainly, the general spraying technique uses hand operated and power sprayers with backpack. To solve these difficulties a new equipment that is mechanically operated wheel driven sprayer. It is portable device and does not need any fuel to operate, which is easy to move and spray be pesticide by moving the wheel is to be developed. Thus considering today's demand, we have come up with mechanically operated spray pump and seed sowing which is purely mechanical. The basic objective of sowing operation is to put the seed and fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seeds. This wheel operated pesticide spray equipment consumes less time and avoids the pesticide from coming from front of the nozzles which will in contact of the person who sprays pesticide.

**Key words:** Wheels, Seed Sowing Box, Multinozzoles, Reciprocating Pump, Chain Drive Mechanism

## I. INTRODUCTION

Agriculture in India has a significant history, today it ranks second worldwide in farm output. In India 70% people lives in rural areas and main source of their income is forming. Agriculture sector is facing problems with capacity issues, shrinking revenues, and labour shortages and increasing consumer demands. The prevalence of traditional agriculture equipment intensifies these issues. In addition, most formers are desperately seeking different ways to improve the equipment quality while reducing the direct overhead costs (labour) and capital. In this regard have to make agricultural machine that can help to save their time. This device is having the advantage of taking less time for spraying and seed sowing once it starts. If we want to decrease the spraying time further we just need to increase size of our piston and no. of nozzles with relative change in effort. Mechanical energy can be used instead of direct energy sources.

India's geographical condition is unique for agriculture because it provides many favorable conditions. There are plain areas, fertile soil, long growing season and wide variation in climatic condition. Agricultural sprayer machine is designed to reduce human effort.it is used to agriculture field by spray pesticide in farm to better crop.

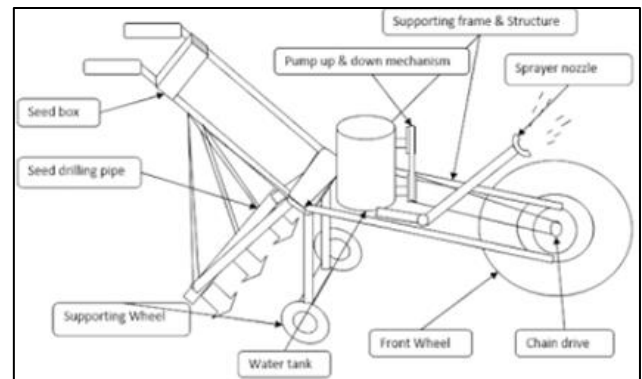


Fig. 1:

## II. LITERATURE SURVEY

- Sudduth K.A., Borgelt S.C., Hou J., (1995) Performance of a chemical injection sprayer system, Performance of a chemical injection sprayer system, found the time delay of concentrated pesticides through injection sprayers to be significant, and proposed injection at the individual nozzles as a possible solution to shorten delays. Development of a direct nozzle injection system that overcame the concentration variation problems reported by previous researchers. Simulation are used to compare chemical application accuracies for various designs of injection sprayers. They found that reducing the diameter of the fluid lines near the end of the spray booms improved overall application accuracy [1].
- Way T.R., Von Bargaen K., Grisso R.D., Bashford L.L., (1992) Simulation of chemical application accuracy for injection sprayers. An autonomous mobile robot for use in pest control and disease prevention applications in commercial greenhouses. They develop the robot platforms ability to successfully navigate itself down rows of a greenhouse, while the pesticide spraying system efficiently covers the plants evenly with spray in the set dosages. The main application of robots in the commercial sector has been concerned with the substitution of manual human labour by robots or mechanized systems to make the work more time efficient, accurate, uniform and less costly[2].
- Philip J. Sammons, Tomonari Furukawa, Andrew Bulgin, (2005) Autonomous Pesticide Spraying Robot for use in a Greenhouse, - The University of Nairobi develop the system like centrifugal pump is the most common non-positive displacement pump. The output from this type of pump is influenced by pressure. This pump is ideal for delivering large volumes of liquid at low pressures. A key component of the centrifugal pump is the throttling valve. A manual throttling valve on the main output line is essential for the accurate operation of the centrifugal pump. The use of herbicides has replaced much of the mechanical tillage done formerly. Chemical

application is done with attachments to tillage machines and seeders or with single-purpose chemical application [3].

- Shailesh Malonde et.al. (May-2016): They developed a multipurpose pesticide spraying machine based on solar panels .It gives maximum work output with minimum effort. The arrangement of nozzles is adjustable according to the crops and this alone pump can used for multiple crops[4]
- DhirajN. Kumbhare et.al. (Apr-2016): They developed an automatic tricycle operated pesticide spraying machine seems an alternative concept it work efficiently with respect to covering area time [5].
- SwapnilL. Kolhe et.al. (Feb-2014): They developed a eco-friendly mechanically operated multipurpose spray pump in this nozzles can be adjusted[6]

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