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FABRICATION PUSH OPERATED AGRI SPRAY

Asst. Prof. Himanshu Mhatre[1] Sachin Wanjari[2], Prashant Shiwankar[3],

Ashwin Bilwane[4],Anand Kumar [5]

[1,2,3,4] Student of Mechanical Engineering Department
[5]Associated Prof. & Head Of Department
[3]Vidarbha Institute Of Technology, Nagpur

ABSTRACT

Now day's scarcity of labour is creating problem during agricultural operation because in agriculture more labour is required. Pests and weed problems, in crop production are serious both in rain fed and irrigated farms in Chhattisgarh. Farmers are forced to spray insecticides, pesticides and herbicides frequently using manually operated machines, This becomes time consuming poor in application uniformity, laborious, costly and human fatigue is major concern, these problems can be overcome by using manually wheel operated sprayer The sprayer was tested both in laboratory and field for the uniformity of application, discharge rate, field capacity and field efficiency and had achieved an application rate of 639.09 l/ha, with coefficient of variation (CV %) of 2.50% among the nozzles discharge rate, effective field capacity of 0.075 ha/hr., theoretical field capacity of 0.126 ha/hr. and field efficiency of 56%. Based on the performance result the newly developed sprayer can cover one hectare of land within about an hour with a better spray uniformity.

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 farmig as per requirement

1.INTRODUCTION

Plant protection equipment plays a significant role in agricultural field to the productivity of a several crops. Agricultural pests, which include organisms such as fungi, bacteria, viruses, insects, mites, nematodes, weeds and grain-eating birds, that live on and/or compete with plants determine, to a varying degree, ifcrops can be grown economically in certain situations. Usually agricultural pests inflict considerable damage to crops and represent a significant production constraint. Effective plant protection thus becomes essential to minimize the losses caused and to ensure that full benefit. Working Principal To begin, a chain- and crank-driven device is used. In order for the wheel axel to rotate in tandem with the driving chain sprocket, it is attached to the sprocket on that sprocket. A driven chain is attached to the driver chain on the crankshaft. As a consequence, when the crank is turned, it rotates. The crankshaft crank is connected to the lever mechanism of the pump through a chain in order to activate the spray.

2. METHODOLOGY

Multi sprinkle system work on principle of reciprocating pump. This reciprocating pump uses single slider crank mechanism, in which wheel sprocket works as crank. There are two sprockets which is mounted on two different axles in which one sprocket is directly attached to wheel axle. Connecting rod is attached to another sprocket axle through disc. In this power is given to piston of reciprocating pump through rotation of wheel. When piston reach at top dead centre, it creates negative or low pressure inside the cylinder due to pressure difference between reservoir and cylinder space, water moves to fill the cylinder chamber space. In this process suction valve open and delivery valve close. When piston reaches at bottom dead centre, it creates high pressure inside the cylinder chamber & due to the pressure difference between cylinder & delivery pipe. Water moves through discharge pipe to sprinkle. In this process suction valve closed and delivery valve open. This process repeats again and again to get desire output.

Fig. old method

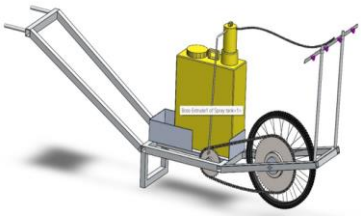

Fig. New updated method

3. CONCLUSIONS

The suggested model has removed the problem of back pain, since there is no need to carry the tank on the backbone and solder. More no of nozzle which cover maximum area of spray in minimum time at maximum rate. Proper adjustment facility in the model with respect to crop helps to avoid excessive use of pesticides which result in less pollution. The Imported hollow cone nozzle should be used in the field for the better performance. Muscular problem is removing and there is no need to operate the lever. This alone pump can use for multiple crops. After having a trial , we have found that one finds it easy to operate push type machine. The pump can deliver the liquid at sufficient pressure where the output of the nozzle in1min is 0.3 and spray width 0.4m from calculation so that it reaches all the foliage and spreads entirely over the spray surface. It is less heavy, but efficiently working in rough conditions of the farm. It is economical, therefore affordable for all kinds of farmers. It requires comparatively

less time for spraying so we can get more fields spraying per day. It is cost effective than the existing spraying pumps available in the market as no direct fuel cost or cost for maintenance is needed for this. Also, it can be used for any crop as its maximum width is not more than one foot. Its nozzles can be adjusted to any height.

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Injecting concentrated pesticides at the individual nozzles may be a viable option to shortening the time it takes for the concentrated pesticides to reach the nozzles. An injection device with a direct nozzle was developed to overcome earlier researchers' concerns about concentration fluctuation. Injection sprayer designs may be compared using simulations to see how accurate the chemical application is. Reduced fluid line diameter at the spray boom ends enhanced overall application accuracy, they discovered. An autonomous mobile robot for the management of pests and the prevention of disease in commercial greenhouses. During this time, they work on the robot platform's capacity to properly traverse through rows of a greenhouse while the pesticide-spraying system efficiently covers the plants with spray in the prescribed quantities.

The most popular non-positive displacement pump is the centrifugal pump, which is being developed at the University of Nairobi. Pressure has an effect on the pump's output. Large amounts of liquid may be delivered at low pressures with this pump. The throttling valve is a critical part of the centrifugal pump. The centrifugal pump requires a manual throttling valve on the main output line. In many cases, mechanical tillage has been substituted by the application of herbicides.

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