Review Paper on Power Weeder

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***Abstract*: Weed control is one of the most difficult task in agriculture that accounts for a considerable share of the involved in agriculture production. Farmers generally used two types of weed control method which is include traditional bullock power equipment and chemical method of weeding. But these two weeding method having certain disadvantages bullock power is not effective method of weed control and chemical weed control reduces the quality of soil. To overcome this problem we decided to make engine operated power weeder which is used to reduce human effort at appropriate efficiency.**

***Keywords*: Engine, farmers, Weeding, Equipment.**

I. INTRODUCTION

In a study the loss due to soil erosion was assessed to be 13.6% and due to insect and diseases was 35.8% while the losses due to weeds alone was assessed to be 33.8% An analysis reveals that one third cost of cultivation is being spend for weeding alone. Weeding require 560 labour-hour/ha whereas 1356 labour-hour/ha is require for the cultivation of crop. Manual weeding requires higher level labour input and also very tedious and time consuming process the availability of labour is also major issue in agriculture it is very difficult to remove the unwanted plant by using manual weeding and bullock power but in mechanical power we get some advantages such as reduction in time increases man working efficiency.

Power weeder is compact and light weight machines which is powered by either petrol or diesel engines the main purpose of this machine is to inter cultivate or de-weed between rows of different agriculture, horticulture and plantation produce such as paddy, sugarcane, fruits, vegetables, etc. these machine are machine become popular in farmer due to its light weight mechanical weed control not only kills the weed but also keep soil surface loose ensuring better soil aeration and water holding capacity. In the mechanical weeder different types of equipment are available which run by tractor or power tiller these are large in size cannot work for low inter row spaced crops these types of weed control is not affordable for medium and small scale farmer. So our intension is to make the power weeder for medium and small scale farmer our power weeder can perform flexible task such as weeding, cultivation, sowing etc.

II. LITERATURE REVIEW

S. S. Meena.et.al.[1] studied about weed management is an ever-present challenge to crop production. Presence of weeds in general reduces crop yield by 31.5 per cent (22.7 % in Rabi season and 36.5 per cent in Kharif and summer season). Yield losses due to weeds were about 65 per cent depending on the crop, degree of weed infestation, weed species and management practices. Presently available weeder mostly runs by tractor or power tiller, these are large in size, cannot work for low inter row spaced crops. The main working components of power weeder were flexible drive shaft, worm gear box, rotor shaft, flanges and blades.[1]

B Prasan Patil.et.al [2] Indian economy is fully based on the agriculture sector. Rice is the most important staple food in Asia. More than 90 percent of the world's rice is grown and consumed in Asia, where 60 percent of the world's population lives. Rice production accounts for between 35-60 percent of the calorific intake of three billion Asians. India occupies 39.19 Mega-hector areas under paddy cultivation with the production of 106.0 million tonnes. India is second larger producer of rise. In India west Bengal stands first in production of paddy. And it is essential to remove unwanted corps. It is a plant that completes with crop for water, nutrients and light. Weed takes 30 to 40 percent of applied nutrients resulting in yield reduction. Paddy production in India during the year 2012-13 which is about 85.599 million tones and total loss of rice yield due to weeds is about 14.91 percent. More than 33 percent of the cost incurred in cultivation is diverted to weeding operations there by reducing the profit share of farmers.[2]

A.K.M Saiful Islam.et.al. ([3] Mechanical intervention in crop production is increasing rapidly in Bangladesh. Researchers are finding ways to manage weeds in rice field using suitable mechanical devices instead of conventional hand weeding. The weeding efficiency was the highest in HW (92%), followed by BPW (78%) and BW (73%).

It was found that BW damaged the lowest number of plants (9%) compared to BPW (11%) during weeding operation, although the damaged plants recovered after a few days. BW and BPW reduced 74 and 85% of labour requirement in weeding operation compared to HW. The highest weeding cost was involved in HW (Tk. 4287 ha-1) compared to BW (Tk. 1103 ha-1) and BPW (Tk. 950ha-1). Weed control methods exerted insignificant effect on grain yield.[3]

Mr. Vivek D Raut.et.al [4] In agriculture sector 33 percent cost of cultivation is spent on weeding alone when carried out with the manual labour. Complicated operation of weeding is usually performed manually with the use of traditional hand tools in upright bending posture, inducing back pain for majority of labourers. In India, farmers mainly follow the hand weeding though chemical

weeding is slowly becoming popular, in spite of it being costly. Use of herbicides will have residual affect and change in the quality of soil.

Flaming weeding produces more heat and it causes the plant and it is very expansive than other process. Hand weeding requires more labour, consumes extra time leading to higher cost of weeding. An approximately estimate of 400-600 man hours per hectare is the normal man-hour requirement of hand weeding which amounts to Rs.2200 per hectare, which also depends upon weed infestation. Availability of labour is also a main issue. Among all the weeders, In animal drawn blade hoe recorded maximum values of average actual field capacity and minimum number of man-hrs. Requirements while the maximum value of weeding index and man-hrs. Requirements were observed for weeding operation by hand spud.[4]

III. POWER WEEDER

Power weeder are classified with their implement basically the power weeder are broadly classify in four categories which include power weeder with rotary blade set, power weeder with chisel plough, power weeder with single blade cultivation and power weeder with ridge plough these all operation is done with different power weeder our aim to combine these all operation and make one single power weeder for performing these operation

i. Power Weeder With Rotary Blade

A power weeder rotary blade is basically a set of blades (called tines) that are mounted within a wheeled housing and are powered by either a gasoline engine or an electric motor. Some power weeder is specially design for rotary the example of such type of weeder.

Fig(a): Power Weeder With Rotary Blade Set

ii. Power Weeder With Chisel Plough

The main function of this plough is to loosen and aerate the soils while leaving crop residue at the top of the soil. This plough can be used to reduce the effects of compaction and to help break up the plough pan and hardpan. Unlike many other ploughs the chisel will not invert or turn the soil. The example of chisel plough is shown in below.

Fig(b): Power Weeder With Chisel Plough

iii. Power Weeder With Single Blade Cultivator

The main function of the field cultivator is to prepare a proper seedbed for the crop to be planted into, to bury crop residue in the soil to helping to warm the soil before planting, to control weeds, and to mix and incorporate the soil to ensure the growing crop has enough water.

Fig(c): Power Weeder With Single Blade Cultivator

iv. Power Weeder With Ridge Plough

The ridge plough is used to split the field into ridges and furrows and for earthing up of crops. Ridge ploughs are used to make broad bed and furrows by attaching two ridge ploughs on a frame at 150cm spacing between them the image shows the structure of ridge plough.

Fig(d): Power Weeder With Ridge Plough

IV. CONCLUSION

In the traditional method of weed control require more labour cost and time rather than the power weeding method so in these review paper we discuss about the different types of power weeder equipment for different operation.

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