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## DESIGN AND FABRICATION OF SOIL RUDDER AND WEEDER FOR SOIL FERTILITY & FERTILIZATION

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### Abstract

The Soil rudder and weeder is one of the many farm automation. In promoting Soil rudder and weeders especially considering the fact that the majority of farmers are having small land. It demands less body endeavor. The implements are mostly self guided. Working and construction of the project is based on engine and chain sprocket mechanism which moves the cutter or rudder. It is a great saver of time and expenses on field operations. Thus it will have very effective uses on the farm field either for tiling as well as for weeding. Development of high capacity energy efficient versatile machines and combination machinery for increased labour productivity, reduced unit cost of operation, improved timeliness of operation and suitable for custom hiring. In other words, it is a great saver of time and expenses on field operations. Because of smaller size, two wheels and limited constructional arrangements, the SOIL RUDDER AND WEEDER becomes one of the lightest yet most effective farm power sources.

## **1. INTRODUCTION**

The SOIL RUDDER AND WEEDER is one of the many farm mechanization. Unlike tractors, SOIL RUDDER AND WEEDERS are non-conventional so far as the displacement of labours is concerned. In promoting SOIL RUDDER AND WEEDERS especially considering the fact that the majority of farmers are having small land. So they can hardly afford costlier tractors. Therefore, the SOIL RUDDER AND WEEDER should become a useful machine in the internal cleaning of crops which having small distance between them like groundnuts, sugarcane, soya bin crops, cultivation of paddy, in particular, and other crops in general for the smaller farmers.



## **2. Objectives & Working**

The manually operated power weeder is one of the many farm mechanization.

Unlike tractors, manually operated power weeders are non-conventional so far as the displacement of labours is concerned in promoting manually operated power weeders especially considering the fact that the majority of farmers are having small land. So they can hardly afford costlier tractors. therefore, the manually operated power weeder should become a useful machine in the internal cleaning of crops which having small distance between them like groundnuts, sugarcane, soya bin crops, cultivation of paddy, in particular, and other crops in general for the smaller farmers. It demands less body effort. The implements are mostly self guided. The comparative higher output of operation reduces the operational time. it helps to achieves timeliness in operation. The maintenance is easy. Cost wise cheaper. it reduces the drudgery of collecting the waste grass between crops. It makes the manual of that wastage grass.

For this SOIL RUDDER AND WEEDER we are use the engine with petrol start and it works on kerosene. By using of hand priming start method, the engine starts and cutter starts to rotate which is situated on

driven axle which is drive by engine shaft with the help of chain sprocket mechanism and gears. Because of two wheels, an operator generally has to walk behind the SOIL RUDDER AND WEEDER to guide the direction of travel for various operations.

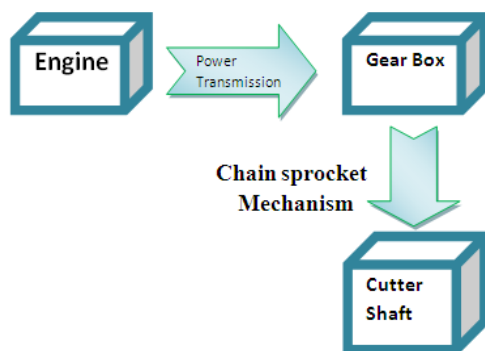


Fig. 1. Block diagram of Proposed model

### 3. Necessitate of this Project

SOIL RUDDER AND WEEDER demands less body effort as compared to operation by bullocks. The bullock implements require the hand and body pressure to achieve depth and alignment of the implement in use, whereas in Soil Rudder and Weeder, the implements are mostly self guided. This reduces human drudgery to a great extent. The comparative higher output of operation by the SOIL RUDDER AND WEEDERS as compared to bullocks reduces the operational time and achieves timeliness in

operation. The maintenance of the SOIL RUDDER AND WEEDER is easy. It is ideally suited for mechanizing small farm holdings which account for 80 % of the farm holdings of the country. Cost wise the SOIL RUDDER AND WEEDER should be an obvious choice of smaller farmers, if they are intending to have a mechanical power source for farm-operation. SOIL RUDDER AND WEEDER reduces the drudgery of collecting the waste grass between crops in the field during operations as compared to operations by bullocks. The SOIL RUDDER AND WEEDER makes the manual of that wastage grass by cutting it in small piece and thoroughly mixed with soil during operation.

### 4. Special Features



From the word "SOIL RUDDER AND WEEDER", one can make out that there is a rudder which is powered. In this case the rudder is powered by an internal

combustion engine and so is the name derived. The SOIL RUDDER AND WEEDER appears to be replacing the animal power more effectively and help in increasing demand for human labor. The small and marginal farmers form major clientele for custom hiring of SOIL RUDDER AND WEEDER. In highly fragmented and small holdings, SOIL RUDDER AND WEEDER is preferred for arduous farm operations like paddling and preparatory tillage. SOIL RUDDER AND WEEDER is preferred by small farmers and is being used primarily for earning cash income through custom hiring. Thus, this machine provides opportunities for self employment in rural areas. Even marginal farmers and landless laborers effectively and profitably use the SOIL RUDDER AND WEEDER for self-employment.

### **5. Types of Operation**

Depending upon the mode of operation, three types of SOIL RUDDER AND WEEDERS are there –

**Pull Type** - The SOIL RUDDER AND WEEDER in which pull to the rudder is required to perform the work like internal cleaning of

crops, cultivation in paddy when helical cutter is used.

**Push Type** - The SOIL RUDDER AND WEEDER in which push to the rudder is required to perform the work like grass cutting when ripper is used as a cutter uses an engine power driven tilling device, such as rotary and crank or screw blades.

**General purpose Type** - The SOIL RUDDER AND WEEDER which can be used for a number of farm operations, including the types defined under pull type and push types.

### **6. Advantages**

- In other words, it is a great saver of time and expenses on field operations. Because of smaller size, two wheels and limited constructional arrangements, the SOIL RUDDER AND WEEDER becomes one of the lightest yet most effective farm power sources.
- Since it has only two wheels, it has to be balanced to stand with the help of an implement attached to it for the desired operation.

- Its operations are controlled by an operator through its extended handles by walking behind it.
- One of the special features of a SOIL RUDDER AND WEEDER is that it's both the wheels can do two jobs at the same time.
- It makes the SOIL RUDDER AND WEEDER move forward through traction of its wheel with the ground and at the same time change the direction as operator desires.
- As a result of this arrangement the SOIL RUDDER AND WEEDER takes the least space to turn and man power in the smallest and irregular shaped fields with great ease which the bullocks or tractors can rarely do.

### **7. Application**

Internal cleaning of crops having minimum distance between them like wheat crops, soya bin crops, groundnuts, etc. In paddy cultivation, cutting of grass of height 3-4 feet's Weeding of crops. Remove useless plants growing in cultivated field. Therefore, it can be appreciated that there exists a continuing need for new and improved equipment with incorporated mechanical system which can be used as agricultural equipment that normally accumulates to be instantly consumed. In

this regard, the present invention substantially fulfills this need.

### **8. Conclusion**

- Conclusion of the project work is that it helps the students to their imagination, engineering skills and fundamental knowledge. This semi automatic machine is developed to reduce the time and effort required for production up to the great extent .also this machine manufacturing cost is less as compared to other.
- By selecting above topic we are understand , familiar and know the details of agricultural technology, with the help of this semi automatic machine we are trying to reduce labor cost, time of a middle class and small sector farmers.
- This is our little effort to make comfort to our farmers also this machine is manufactured in less cost as compared to other. The project also teaches the way of working as a unity proper co ordination is to be established with student in the project group. it enhance the thinking or filling of mutual co operation in the project

- Also the projectees learn to fabricate any model according to its requirements. All the manufacturing processes are carried out with a great concentration; any wrong calculation may have result in the failure of project model.

- Development of high capacity energy efficient versatile machines and combination machinery for increased labour productivity, reduced unit cost of operation, improved timeliness of operation and suitable for custom hiring.

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