



A Review Paper on Rice Planting and Seed Metering Machine

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Abstract: The performance of the rice planting machine was investigated field conditions to optimize the design and operating parameters for rice planting. The effect of operational speed of the disc, and shape of the entry of plant spacing (coefficient of variation) then crank mechanism put the plant and pushing downward direction. Optimization of the regression equations incorporating speed of the disc and operating vacuum pressure through iteration further revealed that a disc, operating at speeds from 0.34 to 0.44 m/s, yielded similar performance. Based on the optimized operational parameter, performance indices of the rice planting machine were determined under field condition by measuring the distribution of rice plants spacing.

Keywords: Rice planting device, seed metering device, chain drive system.

I. INTRODUCTION

India is a country of villages, having large population around two third of its population are dependent on agriculture. Although agro industry is accreted of lingering peace. The sole culprit for slogging in pace of accretion (in agro industry) is "dependency on traditional approaches and equipment. For enhancing the per capita agricultural production, various innovative efforts are made at national level under the name "Agricultural Revolution."

Revolution is confined to economic growth which may result from various economic factor but technological progress have been and will continue to be the primary source of development. Technology refers to the application of scientific knowledge for practical purpose as well as industrial process for enacting and enriching goods and services.

For the production of rice and onion, which is gradually a major production crop in konkan the rice should be dropped at a regular interval. But the existing equipment does not fulfill these criteria in India. In existing system, plant are dropped manually at the cross point of longitudinal and lateral cultivation which increase the cultivation time as well as labor cost. But by this device both the operation i.e. cultivation and rice planting can be done simultaneously.

In this system there is no need to drops the rice plant more than one times and no wastage of costly rice plants. And we save the production cost as well as cultivation time and labor cost. And, get more yields. In existing system there was a possibility to germination of more than one plant at a single position, and transplantation of that extra plant was necessary. But in this system of drilling, this type of problem considered as negligible.

II. LITERATURE SURVEY

M. R. Kotwal [1] "A review paper on various seed sowing metering devices" Seed metering devices are those devices that meter the seed from the seed box and deposit it into the delivery system that conveys the seed for placement on or in the seedbed. The major functional requirements of seed metering systems are to meter the seed at a predetermined rate/output (e.g. kg/ha or seeds/meter of row length) meter the seed with the required accuracy (spacing) to meet the planting pattern requirements (i.e. drill seeding, precision drilling, etc.); and cause minimal damage to the seed during the metering process. The present review provides brief information about the various types of innovations done in seed sowing machine available for plantation.

Kalay Khan et al [2] "The design and fabrication of a manually operated single row multi crops planter" Manual method of seed planting, results in low seed placement, spacing efficiencies and serious back ache for the farmer which limits the size of field that can be planted. The cost price of imported planters has gone beyond the purchasing power of most of our farmers. . To achieve the best performance from a seed planter, the above limits are to be optimized by proper design and selection of the components required on the machine to suit the needs of crops. This project work focused on the design and fabrication of a manually operated planter sowing for different crop seed that is cheap, easily affordable by the rural farmers, easy to maintain and less laborious to use. The multi-crop planter has the capability of delivering the seeds precisely with uniform depth in the furrow, and also with uniform spacing between the seeds .The seed planter consist of the main frame, adjustable handle, seed hopper, seed metering device, adjustable furrow opener, adjustable furrow closer, drive wheels, seed tube and ball bearings.



Seed metering device was designed to be interchangeable to allow for the different varieties and types of seeds.

H.K.S. Madusanka et al [3]“Design and development of paddy seedling transplanting mechanism”. It is the most important source of employment for the majority of the work force in the country. Rice is the major staple food of the country. Releasing of work force to sectors other than Agriculture is important to develop the country. To release the work force in paddy sector mechanization plays a big role. To feed growing population is a huge challenge. Importation of rice will lead to drain out the economy of the country. Mechanization of paddy sector will lead to higher productivity with releasing of work force to other sectors. The objective of this project was to design a paddy transplanting mechanism to transplant paddy seedlings by small scale farmers in the country.

III.CONSTRUCTION OF MACHINE

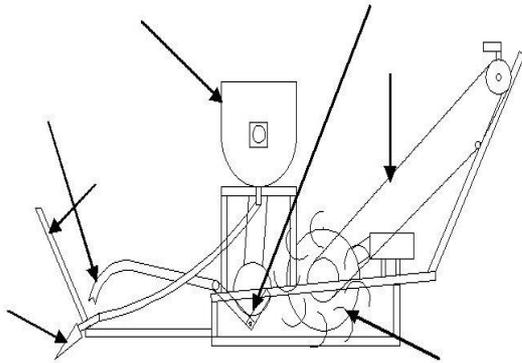


Fig. 1. 2D Rice planting machine

A. Parts name of machine required for construction of rice planting machine are as follows

- i. Frame
- ii. Tray
- iii. Shaft
- iv. Disc
- v. Chain sprocket
- vi. Crank mechanism
- vii. Gear motor
- viii. Hopper
- ix. Plough

B. Details of component

- Frame: It is made up of C. I. angle bar of dimension 35mm x 35mm x 4 mm on which other components like tray, disc, shaft etc., are mounted.
- Tray: tray is made by mild C. R. Sheet which contains Rice plant. There are two sided plant is store with help of supporter plate supporter plate is mounted on frame on each side.
- Shaft: It is made of C. I. on which disc and gear sprocket is mounted. It is used to transfer the power from hand wheel to each disc.
- Disc. : It is made up of mild steel which is circular in shape.

- Chain: The chain are made up of no. of rigid links which are hinges together by pin joints in order to provide. The necessary flexibility for wrapping round the driving & driven wheels. These wheels have projecting teeth of special profile a fact into the corresponding recess. The toothed wheel is known as sprockets wheel.
- Plough: It is made of rectangular C. I. material which is used for cultivating the soil be for dropping the seed.
- Hopper: Hopper is made by mild C. R. Sheet which contains Seed.
- Wheel: A circular plate is mounted on the bush with the help of C. I. Strip and spikes of certain measurements (according soil condition) on the surface of circular plate.
- Gear Motor: It is a specific type of electrical motor that is designed to produce high torque while maintaining a low horsepower, or low speed motor output. Gear motors are commonly used in conveyor-belt drives, home appliances, in handicap and platform lifts, medical and laboratory equipment, machine tools, packaging machinery and printing presses. They reduce speed in a series of gears and in turn create more torque. Soit is space-saving, reliable and durable, consumes low energy and has small vibrations to name a few advantages.

IV.PROCEDURE

- The motion gives to the handle, transfer the power from handle to the shaft of wheel through chain drive.
- This power use wheel for forward motion of the machine.
- The wheels are mounted on the shaft. These power again transfer to another shaft with the help of chain drive.
- Then the planting arm are oscillating by the crank mechanism and then the plants are catch and planted in the soil.
- When the using seed metering devicethe motion transfer from crank mechanism to the hopper through the chain drive.



Fig. 2. Photo: Rice planting and seed metering device.



Fig. 3. Photo image of: Plantcatching arm.

V. ADVANTAGES

- It saves labour cost.
- It saves operating time and saving on cost of operation as compared to conventional method of behind country plough.
- It is light in weight as compared to present devices.
- It reduced the use of man power up to 50 %.
- It is cheaper so poorer farmer can also afford this modern devices

VI. CONCLUSION

Hence we are study properly rice planting and seed metering device. It is conclude that the device is independent of tractor so it is suitable for poor farmer. It save the time as well as labor cost. This device use rice planting and seed metering device.

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