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Design and Manufacturing of Seed Sowing Machine

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Abstract: *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 seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agro-climatic conditions to achieve optimum yields. The comparison between the traditional sowing method and the new proposed machine which can perform a number of simultaneous operations and has a number of advantages. As day by day the labor availability becomes the great concern for the farmers and labor cost is more, this machine reduces the efforts and total cost of sowing the seeds and fertilizer placement.*

Keywords: *Seed Sowing Equipment's, Seed Metering Device, Seed Spacing, Fertilizer Box.*

1. INTRODUCTION

Seed sowing machine is a device which helps in the sowing of seeds in the desired position hence assisting the farmers in saving time and money. The basic objective of sowing operation is to put the seed and seed in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. The paper discusses different aspects of seed sowing machine which will be helpful for the agriculture industry to move towards mechanization. The agricultural industry has always been the backbone of India's sustained growth. As the population of India continues to grow, the demand for produce grows as well. Hence, there is a greater need for

Multiple cropping on the farms and this, in turn, requires efficient and high-capacity machines. Mechanization of the Agricultural industry in India is still in a stage of infancy due to the lack of knowledge and the unavailability of advanced tools and machinery. In traditional methods seed sowing is done by broadcasting manually, opening furrows by a plough and dropping seeds by hand. The agricultural has always been the backbone of India's sustained growth. As the population of India continues to grow, the demand for produce grows as well. Hence, there is a greater need for multiple cropping in the farms and this, in turn, requires efficient and time-saving machines. The paper discusses different types of seed sowing machine which will be helpful for the agriculture industry to move towards mechanization.

Traditional Sowing Methods: Traditional methods include broadcasting manually, opening furrows by a country plough and dropping seeds by hand and dropping seeds in the furrow through a bamboo/metal funnel attached to a country plough. For sowing in small areas dibbling i.e., making holes or slits by a stick or tool and dropping seeds by hand, is practiced. Multi row traditional seeding devices with manual metering of seeds are quite popular with experienced farmers. In manual seeding, it is not possible to achieve uniformity in distribution of seeds. A farmer may sow at desired seed rate but inter-row and intra-row distribution of seeds are likely to be uneven resulting in bunching and gaps in the field.

Traditional sowing methods have following limitations:

- In manual seeding, it is not possible to achieve uniformity in distribution of seeds.
- A farmer may sow at desired seed rate but inter-row and intra-row distribution of seeds are likely to be uneven resulting in bunching and gaps in field Poor control over depth of seed placement. Labor requirement is high because two persons are required for dropping seed and seed.

The effect of inaccuracies in seed placement on plant stand is greater in the case of crops India is set to be an agricultural based country approximately 75% of the population of India is dependent on farming directly or indirectly. Our farmers are using the same methods and equipment for the ages. E.g. seed sowing, spraying, weeding etc. There is a need for the development of effective spraying and weeding machine for increasing the productivity. Most of the developing countries of Asia have the problem of high population and low level of land productivity as compared to the developed nations. One of the main reasons for low productivity is insufficient power availability on the farms and low level of farm mechanization. This is especially true for

India. It is now realized the world over that in order to meet the food requirements of the growing population and rapid industrialization, modernization of agriculture is inescapable. It is said that on many farms, production suffers because of improper seedbed preparation and delayed sowing, harvesting, and threshing. Mechanization enables the conservation of inputs through precision in metering ensuring better distribution, reducing quantity needed for better response and prevention of losses or wastage of inputs applied. Mechanization reduces the unit cost of production through higher productivity and input conservation.

Agricultural implement and machinery program of the government has been one of selective mechanization with a view to optimize the use of human, animal and other sources of power. In order to meet the requirements, steps were taken to increase the availability of implements, irrigation pumps, tractors, power tillers, combine harvesters and other power operated machines and also to increase the production and availability of improved animal-drawn implements. Special emphasis was laid on the later as more than 70% of the farmers fall in small and, marginal category. It is generally said that mechanization of small farms is difficult. But Japan having average land holding even smaller than ours, with proper mechanization has led agriculture to great heights. In order to minimize the drudgery of small farmers, to increase efficiency and save farmer's time for taking up additional /supplementary generating activities, the use of modern time-saving machines/implements of appropriate size needed to be suitably promoted.

2. LITERATURE REVIEW

Mahesh R. Pundkar and A. K. Mahalle is presented review provides brief information about the various types of innovations done in seed sowing machine available for plantation. The seed sowing machine is a key component of agriculture field. The performance of seed sowing device has a remarkable influence on the cost and yield of agriculture products. Presently there are many approaches to detect the performance of seed-sowing device

Laukik P. Raut and et. al., studied to meet the food requirements of the growing population and rapid industrialization, modernization of agriculture is inescapable. Mechanization enables the conservation of inputs through precision in metering ensuring better distribution, reducing quantity needed for better response and prevention of losses or wastage of inputs applied. Mechanization reduces the unit cost of production through higher productivity and input conservation.

D. Ramesh and H. P. Girish Kumar presented review provide brief information about the various types of innovations done in seed sowing equipment. The basic objective of sowing operation is to put the seed and seed in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agro-climatic conditions to achieve optimum yields. Seed sowing devices play a wide role in the agriculture field.

Pranil V. Sawalakhe and et. al., are investigated the today's era is marching towards the rapid growth of all sectors including the agricultural sector. To meet the future food demands, the farmers have to implement the new techniques which will not affect the soil texture but will increase the overall crop production. This Paper deals with the various sowing methods used in India for seed sowing and seed placement.

3. OBJECTIVES

1. To manufacture seed sowing machine which can be operated by the single operator.
2. To set fertilizer with sowed seed.
3. To level the ground in small extent
4. To enable the machine for the sowing of several of seed like maize, wheat etc.
5. To maintain the same distance between two seeds at the time of sowing process.

4. SCOPE

Seed sowing machine is a device which helps in the sowing of seeds in the desired position hence assisting the farmers in saving time and money. So considering these points related to spraying and seed sowing an attempt is made to design and fabricate such equipment which will able to perform both the operations more efficiently and also will result in low cost. Decrease the operational cost by using new mechanism.

- Work reliably under different working conditions.
- Decrease the cost of the machine.
- Decrease labor cost by advancing the spraying method.
- The machine can be operated in the small farming land (1 acre).
- Making such a machine which can be able to perform both the operation.

5. METHODOLOGY

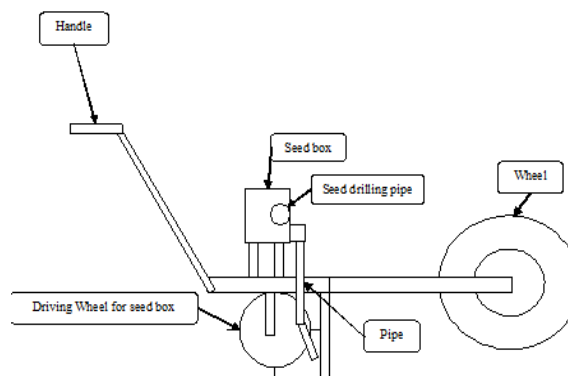


Fig: seed sowing machine

Spraying and seed sowing an attempt are made to design and fabricate such equipment which will able to perform both the operations more efficiently and also will result in low. Now the project mainly concentrates on designing a suitable operating system. To maintain simplicity and economy in the design the locally fabricated unit has been used.

Our project achieves higher safety, reduces human effort, increases the efficiency, reduces the workload, reduces the fatigue of workers and reduces maintenance cost.

6. WORKING OF THE PROJECT



Fig: Multi-Purpose seed sowing machine

Length(mm)	12 inches
Width(mm)	5 inches
Height(mm)	5 inches
Weight (kg)	5.0
Power Transmission	Through chain and sprocket
Seeding mechanism	Fluted roller with narrow flutes
Hooper capacity(kg)	2
No. of roller	3

In our country farming is done by the traditional way, besides that there is the large development of industrial and service sector as compared to that of agriculture. The spraying is traditionally done by labor carrying backpack type which requires more human effort. The weeding is generally done with

Specification:

The help of Bulls which becomes costly for farmers having small farming land. So to overcome these above two problems, we tried to eliminate these problems and designed the equipment which will be beneficial to the farmer for the spraying and weeding operations.

When the equipment is pushed forward by using handles, the front wheel rotates and the gear is mounted on the axle of the wheel is start to rotate and its rotation is then transferred to the pinion through the chain drive. The rotary motion of the pinion is converted into the reciprocating motion by the single slider crank mechanism, due to this arrangement the connecting rod moves upward and downward which then reciprocate the piston of the single acting reciprocating pump mounted at the top of the storage tank. During the upward motion of the connecting rod the pesticide is drawn into the pump and during the downward motion of connecting rod the pesticide is forced to the delivery valve, the delivery is connected to the pipe carrying the number of nozzles. Improved seed-cum-seed drills are provided with seed and seed boxes, metering mechanism, furrow openers, covering devices, frame, ground drive system and controls for variation of seed and seed rates.

REFERENCES

1. Mahesh. R. Pundkar and A. K. Mahalle, "A Seed-Sowing Machine: A Review" International Journal of Engineering and Social Science, Volume3, Issue3, Pp-68-74
2. Laukik P. Raut, Smit B. Jaiswal and Nitin Y. Mohite, "Design, development, and fabrication of agricultural pesticides. with weeder", International Journal of Applied Research and Studies, 2013, Volume 2, Issue 11, Pp-1-8
3. D. Ramesh and H. P. Girishkumar, "Agriculture Seed Sowing Equipment: A Review", International Journal of Science, Engineering and Technology Research, 2014, Volume 3, Issue 7, Pp-1987-1992
4. Pranil V. Sawalakhe, Amit Wandhare, Ashish Sontakke, Bhushan Patil, Rakesh Bawanwade and Saurabh Kurjekar, "Solar Powered Seed Sowing Machine", Global Journal of Advanced Research, Vol-2, Issue-4, Pp-712-717
5. Sridhar H .S "Development of Single Wheel Multi-Use Manually Operated Weed Remover", International Journal of Modern

- Engineering Research, 2013, Vol. 3, Issue. 6, Pp-3836-3840
6. D. Ramesh and H .P. Girishkumar, “Development of Agriculture Seeding Equipment”, International Journal of Informative & Futuristic Research, 2014, Volume -1 Issue -10, J, Pp-133-138
 7. Varikuti Vasantha Rao, Sharanakumar Mathapati, and Dr. Basavaraj Amarapur, “Multiple Power Supplied Seed .”, International Journal of Scientific and Research Publications, 2013, Volume 3, Issue 8, Pp-1-5
 8. Sankaranarayanan M and Nzamwitakuze A, “Development of A Push Type Seed Drill for Sowing Maize in Rwanda”, Pp-1-6
 9. I. Shrinivas, R. V. Adake, B. Sanjeeva Reddy, G. R. Korwar, C. R. Thyagaraj, Atul Dange, G. Veerprasad and Ch. Ravinder Reddy, “Comparative Performance of Different Power Weeder in Rainfed Sweet Sorghum Crop”, Indian Journal of Dryland Agriculture Research and Development, 2010, Vol-25, Issue-2, Pp-63-67
 10. Ayesha Akhtar, Ankit Munshi and Mohammad Fuzail Qaiser, “Automatic Seed Planter Punching Type”, International Journal of Emerging Technology & Research, 2014, Volume 1, Issue 3, Pp-71-75
 11. Mohd Taufik Ahmad, “Development of an automated mechanical intra-row weeder for vegetable crops”,
 12. R. Joshua, V. Vasu and P. Vincent, “Solar. - An Agriculture Implement”, International Journal of Sustainable Agriculture, 2010, Vol-2, Issue-1, Pp-16-19