

## Fabrication and Development of Plough and Weeder

Chirag Meshram<sup>1</sup> Saurabh Pole<sup>2</sup> Sachin Garbade<sup>3</sup> Chandrapal Thakare<sup>4</sup> Pratik Devikar<sup>5</sup>

<sup>1,2,3,4,5</sup>Department of Mechanical Engineering

<sup>1,2,3,4,5</sup>J D College of Engineering & Management, Nagpur, Maharashtra, India

**Abstract**— Currently, little land holding agriculturists use work bulls for the most part for land planning. Their utilization can be expanded and made progressively affordable by utilizing them for other ranch tasks, for example, furrowing, frightening, compost application, sowing and weeding. Enhanced hand apparatuses will likewise encourage cultivate work. Since a huge number of years as of recently the cultivating is reliant on bulls drawn furrow. But, in this system, more labor required, takes more time and its depth of furrowing is not deep. For the most part development of any yield includes different advances like seed choice, field arrangement, preparing, sowing, water system, germination, diminishing and filling, weed expulsion, vegetative stage, blossoming stage, pesticide showering, natural product or case arrangement stage. Our motivation is to consolidate all the individual instruments to furnish agriculturists with multipurpose hardware which executes all the logical cultivating procedures and determinations and reasonable for all kind of seed to seed development with as least expense. Fabrication and development of ploughing, weeding and seeding machine for agriculturists so as to build profitability, decrease undesirable work use and time utilization.

**Key words:** Plough, Weeder

### I. INTRODUCTION

Agriculture has been the foundation of the Indian economy and it will continue to remain so for a long time. “A man without food for three days will quarrel, for a week will fight and for a month or so will die”. Agriculture is a part of applied science. Horticulture is the science and specialty of cultivating including developing the dirt, creating harvests and raising domesticated animals. It is the most imperative endeavor on the planet. Throughout the years, rural practices have been completed by little holders developing between 2 to 3 hectare, utilizing human work and conventional apparatuses, for example, wooden furrow, burden, leveler, harrow, mallet, spade, enormous sickle and so forth. These apparatuses are utilized in land arrangement, for sowing of seeds, weeding and collecting. Modern horticultural strategies and types of equipment are not utilized by little land holders in light of the fact that these types of equipment are excessively costly and hard to acquire. By adopting logical cultivating strategies we can get greatest yield and great quality products which can spare an agriculturist from going bankrupt yet greater part of farmers still uses crude strategy for cultivating methods because of absence of information or absence of speculation for using present day hardware.

At the present stage of crop production development there is an acute task of its ensuring with technical and human resources, as their lack increases actual operation periods, leads to technology simplifications and causes significant production losses[3]. Farmers use mainly agrochemicals for plant disease, pest and weed control, and they follow conventional crop protection strategies (utilizing a vast

amount of chemicals) despite the negative impacts on the environment and human health[1]. Trench-ploughing is defined as the process by which soil is disturbed and displaced during trench formation. This process has been used by mankind for thousands of years for agricultural purposes, but more recently for the creation of trenches to accommodate cables and pipelines on the seabed[4]. Utilization the equipment proposed for sowing seeds in seedbeds decreases the volume of manual force required to do the work, decreases the amount of seed per surface unit, eliminates the execution of works thus reducing costs for obtaining seedlings[5].



Fig. 1: Traditional weeder



Fig. 2: Bullock draw ploughing



Fig. 3: Traditional sowing method

## II. FUNDAMENTAL FEATURES OF INDIAN AGRICULTURE

### A. Source of Job:

Farming is the fundamental occupation. It gives work to about 61% people of all out populace. It contributes 25% to national pay.

### B. Dependence on Rain:

Farming in India essentially relies upon rain. On the off chance that rain is great, the creation will be more and in the event that rain is not exactly average, the products come up short. As water system offices are very deficient, the farming relies upon rain.

### C. Labor Serious Development:

Because of increment in populace the weight ashore holding expanded. Land property get divided and subdivided and wind up uneconomical. Machinery and equipment cannot be used on such farms.

### D. Under Work:

Because of deficient water system offices and questionable precipitation, the creation of agribusiness is less; agriculturists look for some kind of employment a couple of months in the year. Their ability of work can't be legitimately used. In agribusiness there is under work just as masked joblessness.

### E. Small Size of Holdings:

Because of expansive scale sub-division and fracture of possessions, arrive holding size is very little. Normal size of land holding was 2 to 3 hectares in India while in Australia it was 1993 hectares and in USA it was 158 hectares.

### F. Traditional Strategies for Production:

In India techniques for creation of yields alongside hardware are traditional. It is because of neediness and absence of education of individuals. Conventional innovation is the primary cause of low production.

### G. Low Agricultural Production:

Agricultural generation is low in India. India produces 27 Quintals Wheat for every hectare. France produces 71.2 Quintals per hectare and Britain 80 Quintals per hectare.

Normal yearly efficiency of an agricultural work is 162 dollars in India, 973 dollars in Norway and 2408 dollars in USA.

### H. Dominance of Food Crops:

75% of the developed region is under nourishment crops like Wheat, Rice and Bajra, while 25% of developed zone is under business crops. This example is reason for in reverse farming.

## III. PROBLEM STATEMENT

Based on current circumstance of rural framework, the development of products is as yet laid on conventional bulls driven component. During cultivating the most over looked steps are ploughing, seeding and preparing. To work with this framework one individual is required to control the straight line way, one individual to put the seeds and other individual to distribute the fertilizer. Additionally, same situation done for ploughing, seeding and treating the entire surface area. Subsequently, there is high wastage of human energy, time and effort.

## IV. OBJECTIVES

Fabrication and development of ploughing, weeding and seeding machine for agriculturists so as to build profitability, decrease undesirable work use and time utilization.

## V. METHODOLOGY

### A. Data Collection Methodology

#### 1) Primary Data Sources

- Talked with farmers.
- Meeting to Agricultural Transformation Agency concerned bodies.
- Field perception of agricultural practices.

#### 2) Secondary Data Sources

- Structure course readings, reference books, past looks into, and papers.
- Relevant documents from Agricultural Transformation Agency.

### B. Data Analysis Methodology

- Specialized translation of farmers plan needs.
- Ideas age for structure.
- Investigating elective plan ideas by assigning weight and choice of one best idea.
- Detail dimensional plan of chosen idea.
- 2D and 3D drawings by AutoCAD and CATIA.

## VI. RESULTS & CONCLUSION

For all intents and purposes our farming hardware can be utilized for working, treating, sowing, leveling and also utilized for weed removal purposes. Every one of the parts are associated so that in each phase of horticulture the hardware can be improved or effortlessly collected with latches to required length and details of field activity.

## REFERENCES

- [1] Victor Partel, Sri Charan Kakarla, Yiannis Ampatzidis, Development and evaluation of a low-cost and smart

- technology for precision weed management utilizing artificial intelligence, *Computers and Electronics in Agriculture* 157 (2019) 339–350.
- [2] A.P.Tarverdyan, Sh.M. Grigoryan, A.M. Esayan, Investigation of the regularity of movement of furrow slice at tillage with a plough with ripping moldboard, *Annals of Agrarian Science* 16 (2018) 218–221.
- [3] S. Shepeleva, V. Shepelevb,, Z. Almetovab, Optimization of Technical Equipment for Crop Sowing Processes, International Conference on Industrial Engineering, ICIE 2016.
- [4] Michael Cortis, William M. Coombs, Charles E. Augarde ,Scott Robinson, Michael Brown, Andrew Brennan, Modeling Seabed Ploughing Using The Material Point Method, 1<sup>st</sup> International Conference On The Material Point Method, MPM 2017.
- [5] TAO Zhi-qiang, WANG De-mei, MA Shao-kang, YANG Yu-shuang, ZHAO Guang-cai, CHANG Xu-hong, Light interception and radiation use efficiency response to tridimensional uniform sowing in winter wheat, *Journal of Integrative Agriculture* 2018, 17(3): 566–578.
- [6] Olimpia Pandiaa, Ion Saracinb, Ion Bozga, ȕtefania Eliza Tanasiec, Studies regarding pneumatic equipment for sowing small seeds in cups, *Agriculture and Agricultural Science Procedia* –6 ( 2015 ) 690 – 695.
- [7] Mebrhit .A, Elias. B, Bezawit.D, Henok.B, Samual.N, Zenawi.T, Design and Prototype Development of Hybrid Ploughing, Seeding and Fertilizing Machine, ISSN (e): 2250 – 3005 || Volume, 07 || Issue, 01|| January – 2017 ||
- [8] Pavan B.Wayzode, Sagar R.Umale, Rajat R.Nikam, Amol D.Khadke, Hemant More, Design and Fabrication of Agricultural Sprayer, Weeder with Cutter, *International Journal of Research in Advent Technology (IJRAT)* (E-ISSN: 2321-9637).