

## Development of Multifunctional Sowing Tool

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**Abstract**— Farmers are using an individual tool for performing of an individual operation while farming. There is no availability of assembly design which will reduce the labor work of using different tool for different operation. Our assembly design comprises arrangements for all the agricultural tools in single section. The single section is having arrangements for plough, harrow, liner, seed sowing with a hopper arrangement. It includes easy handling assembly system with having slots for positioning of tools. This innovation also includes anthropometric consideration.

**Key words:** Tool, Farm, Hopper, Plough, Harrow, Liner

### I. INTRODUCTION

India is agricultural country so, India's economy is mainly depends upon agriculture and agriculture based product. India's 50 - 60% population depends over agriculture and agriculture based industries. More than 65% farmers of India still using traditional agricultural tools. These tools are not that much efficient and well designed. They increases cost of the productivity of farm and farmer. India has been knows as agricultural country. Indian people 'as a race of farmers,' and Indian life as 'essentially a life of country'. Agriculture in India had developed in a remote antiquity, and down to the eighteen century India ranked among the among the few developed countries in globe. During the eighteen and nineteen centuries agriculture was really a vital industry of the people and with it were most closely linked all other local industries. It was on its development that the hope of raising the status of people depended. Compared with it other industries took 'a lower room'. Indian husbandman in the eighteen century had a rich stock of an agricultural techniques and implements. He used to employ a variety of instruments for husbandry purpose, some of which were introduced in England later.

As per " Anthropometric and strength data of Indian agricultural workers for equipment design", about 6.5% of the power used in crop production and related activities in the country is contributed by about 241 million workers, of which about 42% are female workers. Thus, the human workers play an major role in country. We have already known that farmers of India are still using traditional tools such as Plough, Harrow, Liner, Cultivator, Seed Sowing tools. The farmers who are having land of 1 to 2 acres cannot afford a cost of cultivation, harrowing ,Lining ,seed sowing by the use of tractors attachments and they are facing many problems while using traditional tools including more man power requirement, problems due to faulty design, less utility ,etc. Farmers which are using traditional tool system have to use different tools for different operations which are available individually. It is so time consuming and they have to pay more cost for individual tools.

### II. LITERATURE REVIEW

Satpal Sangwan[1] Instrument like plough is the main tool for cultivation, has been used in India since antiquity. Its structure and composition have changed according to needs and the knowledge. when the British first establish their rule over India in 1760s , Indian husbandman was already in possession of different types of ploughs serving him in a different soils and for different purpose. [3]The plough in a Bengal was drawn by an single yoke of oxen guided by an ploughman. Two or three yokes of oxen, assigned to each plough, relive each other until the work was completed. In Gujarat it was a light and neat instrument. It had no cotter but had a sheathing of iron. The furrows of the husbandman were straight lines of sufficient depth to produce abundant crops. The farm of the plough in Malabar was nearly the same, but it was still lighter and more rudely constructed. Instrument like Drill plough is the elegant and useful inventions in agriculture. [4]The drill of Gujarat had three teeth about eighteen inches long, and ten inches as under. Through the upper end of each tooth, near the back was inserted hallow bamboo on an inch in diameter, and about three feet in length. These three bamboo were set upright , and their upper ends were brought nearly together in the form of a triangle, and inserted through the bottom of the wooden cup.[5] This apparatus was supported and made steady by cords, by way of shrouds which led to the different parts of the plough, In southern part of the native drills consisted of twelve bamboos teeth.[6] The sowing of grain was performed by a woman walking along with. The Indian agriculture also benefited with the name harrow. It considered of a brand piercing with rough pegs, or more frequently of the bough of the tree on which one or two children seated themselves to give it a necessary pressure. In India we have been using two types of levelers.[7]

### III. CAD MODELS

#### A. Traditional Tools:

##### 1) Cultivator (Nangar):



Fig. 1: Cultivator (Nangar)

2) Harrow (Vakhar):

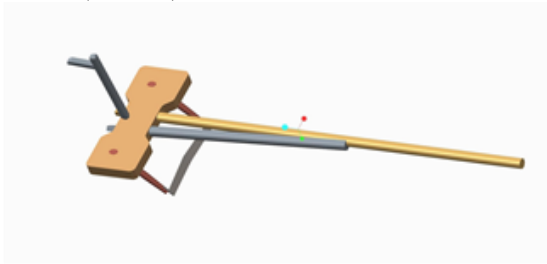


Fig. 2: Harrow (Vakhar)

3) Liner (Datar):

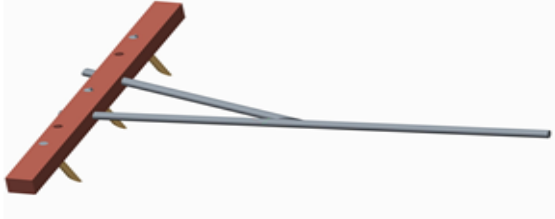


Fig. 3: Liner (Datar)

4) Seed Sowing Tool (Teefan):

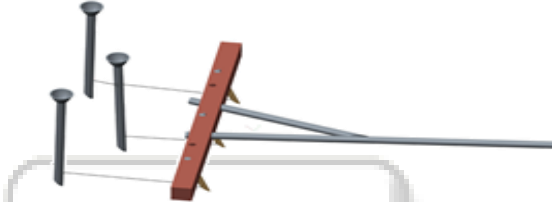


Fig. 4: Seed Sowing Tool (Teefan)

B. Proposed Design:

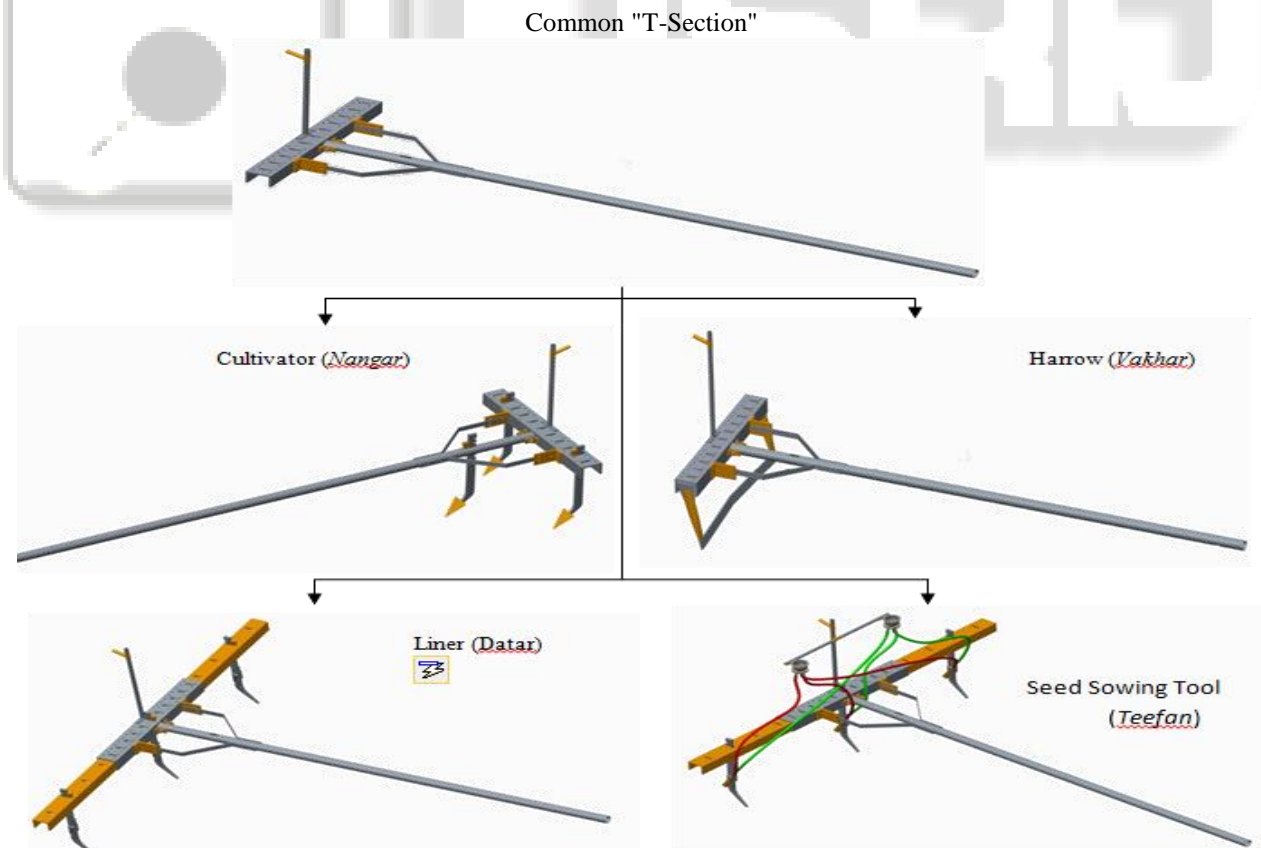


Fig. 5: Proposed Design

It is mainly used to pulverized and to smooth the tenacious texture surface and also conserve the moisture. R.T. Vyavahare, S.P.Kallurkar [1] Anthropometric and strength data of agricultural workers is very essential for the safe, user-friendliness and efficient design of the farm equipment. [2]The availability of an anthropometric database has unlimited applications. Western countries, where ergonomic awareness is much higher than in other areas of the world, have created huge database for anthropometric design reference (NASA,1978,Syed,1993).Hand tools and manually operated equipments are extensively used for digging, weeding and harvesting operation in agriculture. Weeding is one of the most important farm operation in crop production system. [3]The most commonly used hand tool and equipments by the farmers for manual operations are spade, weeders, threshers, sprayers, plough, harrow, liner. Manual weeding requires a huge labor force and account of 25% of total labor requirement. Manually operated weeders are maintained first priority of the researcher. In order to generate the anthropometric strength parameter data of workers, various body dimension and strength parameters need to be measured accurately. Custom designed and specially developed instrument used for this purpose.

#### IV. CONCLUSION

The designed assembly helpful for those people who are still using traditional tools. The assembly providing the arrangements for all 4 operations such as ploughing, harrowing, lining and seed sowing. It reduces the stress acting on human body parts as per anthropometric and strength data of Indian agriculture workers survey.

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