19K41A0592

CHAPTER I

OBJECTIVES AND DELIVERABLES

Objectives of the Project:

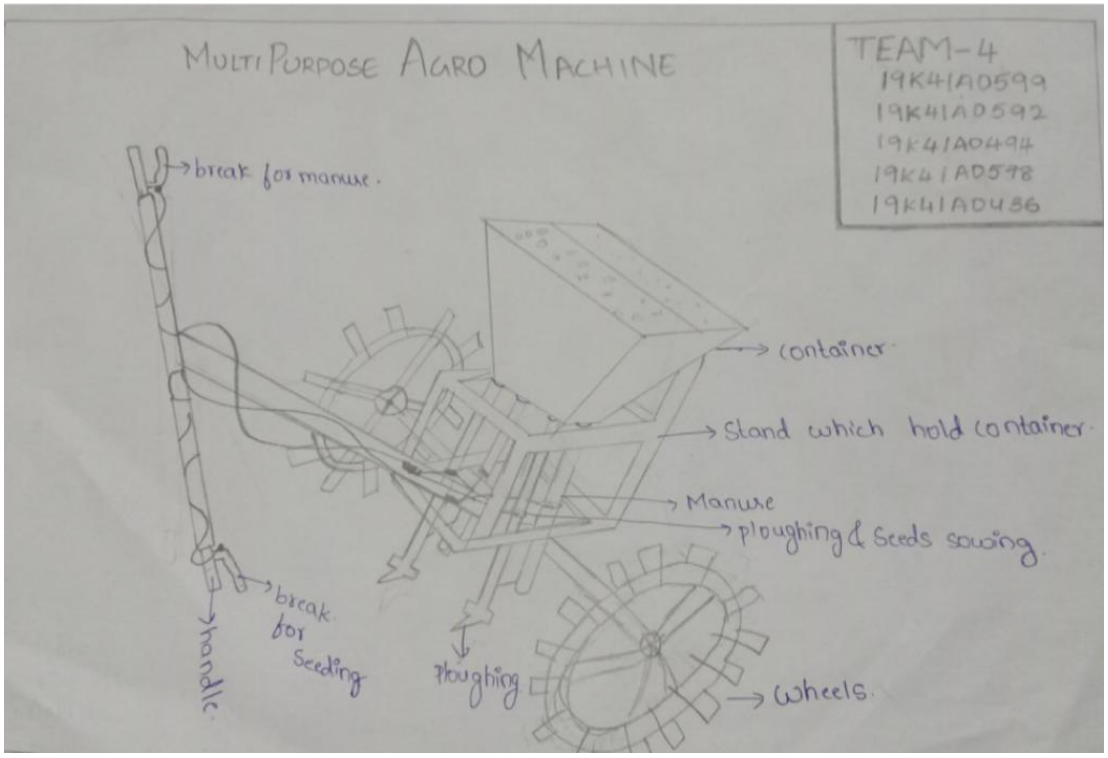
1. To be in need for low level farmers.
2. To reduce the labor cost.
3. To be able to access easily.
4. Reduction of extra investment.
5. To get a good amount of yield with technology.

Deliverables:

1. At the end of the project, our team will deliver the product, i.e. Multi-Purpose Agro machine.
2. The working principle of our product is to plough the land, sowing of seeds and applying of fertilizers.
3. The user has to use separate machine for ploughing and for sowing of seeds and application of fertilizers he has to hire the labors.
4. Now-a-days labor cost is very high and there is scarcity of labors but our product requires only single person to perform all the three tasks.
5. To plough the land, we used the rods with sharp edges so that they dig the soil.
6. Arrangement is done in such a way that, both the seeds and fertilizers are dropped at a perfect place. They both will be dropped from two separate channels bot at the same place. So that the fertilizers will also not get wasted.
7. Generally, after ploughing of the entire land, sowing of seeds process is done and then application of fertilizers is done. But our product simultaneously ploughs the land and sow the seeds and fertilizers are also applied.
8. Most commonly farmers carry fertilizers bag in their hand and spray the fertilizer in the fields this may cause arm and shoulder pain and some other health problems. Whereas our product can reduce the pain by just dropping the fertilizers powder into the fertilizer container.
9. While sprinkling of fertilizers with hand or any other machine it may or may not reach every seed bot our product makes sure that every seed will get the fertilizer.
10. Dropping of seeds and fertilizers are done with break mechanism.

CHAPTER II

PRODUCT ARCHITECTURE AND BUDGET



BUDGET PLAN:

	TEAM 4			
sno	name of component	quantity	price	total
1	wheels	2	500	1000
2	metal rods	10kg	100	1000
3	containers	1	300	300
4	chain	1	100	100
5	handle	2	100	200
6	nuts	1/2 kg	50	50
7	bolts	1/2 kg	50	50
8	plastic pipes	10	50	500
9	breaks	2	100	200
10	labour cost			1500
11	mseal	3	10	30
12	break wires	10	20	200
				total amount
				5130

CHAPTER III

DETAILED DESIGN OF THE PRODUCT

3.1 MIND MAPPING:

Provide rough details for the proposed design.

(a)New product strategy

Farmers are faced with the challenge of producing sufficient crops to meet growing consumer demand while maintaining the quality and quantity of resources for future generations. They are the ones who provide us food to eat. Since every person needs proper food for their living, so they are a necessity in society. There are different types of farmers.
Thus, we chose agriculture as our major domain to apply technology to solve the problems of the farmers.

Thus, according to our observation in survey we listed major ones:

- **Lack of mechanisation:**
  In spite of the large scale mechanisation of agriculture in some parts of the country, most of the agricultural operations in larger parts are carried on by human hand using simple and conventional tools and implements like wooden plough, sickle, etc

- **Poor Irrigation facilities:**
  India has the second-largest irrigated land in the world, but still, India faces this problem.

- **Lack of Storage facilities:**
  In the absence of market place, the local traders dominate the market and exploitation of farmers takes place

(b) Idea generation

we need to develop a Innovative multipurpose mechanism to overcome the problems by decreasing the man power , that user can access sowing, applying nutrition and ploughing

(c) Screening and evaluation

- Generally, farmer assign some labours for sowing and ploughing and applying nutrition, farmer also faces problem to carry seed along with them.

- As our product is multipurpose agro machine, product provides phoughing, sowing seeds, and applying nutrition in one machine .

- It also provides container to put seeds into it , inseated of carring it.

DESCRIPTION OF THE DESIGNED MODEL

- Our product is a Multipurpose agro machine
- This product is a multi-use agro machine
- It is used for agricultural processes like ploughing, sowing seeds and applying nutrition.
- It provides a handle where ploughing is controlled
- It uses a break mechanism, where labour can control the seeds to sow & Apply nutrition simultaneously.
- It provides the container with two sections where labour can place seeds and nutrition to use.
- The machine has wheels with chips that help to move in soil easily.
- Our product is invested only one time.
- In place of 9 labours, This process can be done by one labour
- Our product reduces labour cost
- Our product is easy to use

Failure mode analysis

- Farmer should move the machine manually.
- Product is not suitable for huge acres of land.

Mechanical design and formula

Ploughing :

plough is attached to the machine and handle where user can handle to plough.

Seed sowing:

Sower is attached to plough and it is used using break mechanism attached to handle.

Applying nutrition:

Nutrition applier is behind the sower as it could be simultaneous process , it uses break mechanism

Team involvement:

PHOTOS OF THE PROTOTYPE:

Prototype model

Photos-User Interaction




Fig.No.3.2 Testing stage

Fig.No.3.3 High Fidelity Prototype

PHOTO OF THE PRODUCT:

Fig.No.3.3 Product

CHAPTER IV

USER TESTING AND FIELD TESTING

The conceptual design document mentioned in the above chapter was implemented and the detailed design of the product was completed. To validate the product we have done the user testing at user premises. The below shown images are representing the user testing of the designed model.

User Testing

- Our multi-use agricultural machine can reduce the body pains as they carry all the seeds in the container
- Our product requires only one labour to operate the machine which benefits in labour cost.
- This machine can perform operations simultaneously.

Fig.No 4.1 Photos taken during testing in lab/centers/ anywhere at campus

Fig.No: Photo taken with user during testing/demo at the residence

Test photos:

Fig.no. Interaction with the users while testing of the product.

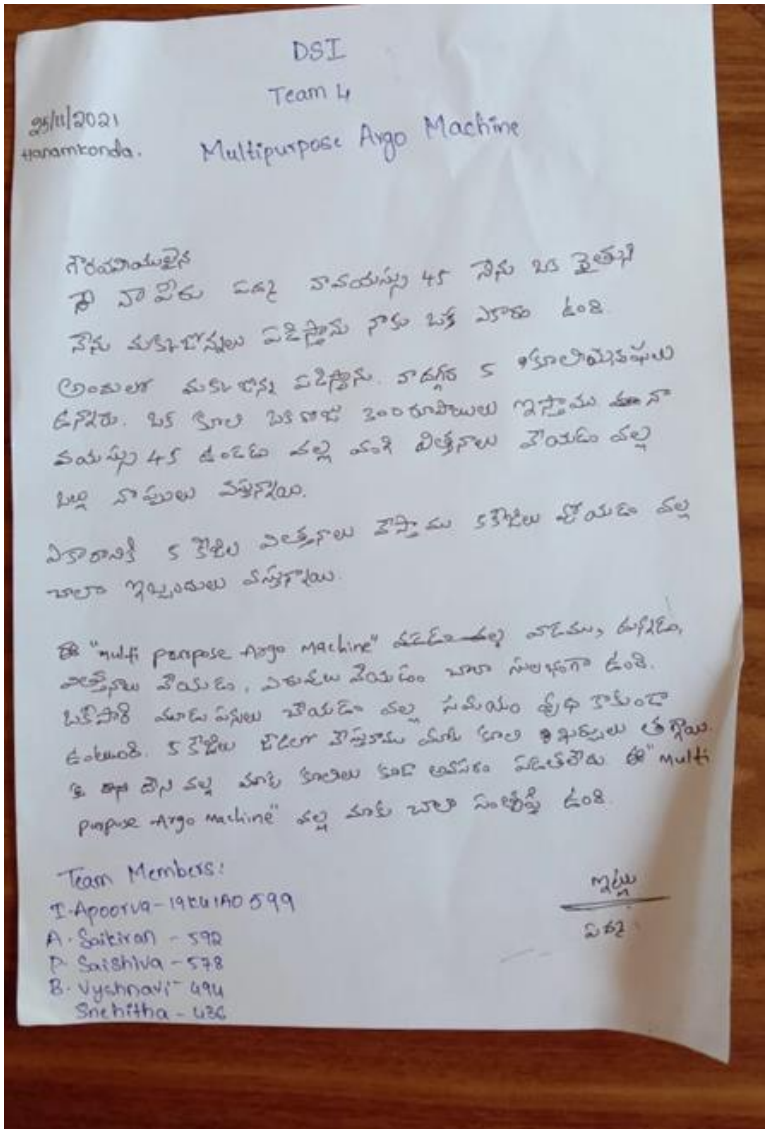
CHAPTER V

USER FEEDBACK

The user's name is Padma of age 45, she is a farmer, she farms maize in her field, she used our product, our product made her easier to handle and she could sow the seeds and add the manure comfortably using break mechanism. Because of strips to the wheel, she can pull the product with a weight of 1kg of seeds.

Previously she used to assign some labours for ploughing, sowing seeds and applying the manure in fields and said labour cost is very high these days. But our product requires only one person for ploughing, sowing and fertilizing and also it reduces the work load and time consumption as well as our product is ease of use, portable and durable with low cost.

Product made her save time. She was so satisfied with the product.


DSI

Team 4

25/11/2021
Hanamkonda.

Multipurpose Argo Machine

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CHAPTER VI

USER MANUAL

6.1 AGRI MACHINE FOR PLOUGHING, SOWING SEEDS,APPLYING NUTRITION

Capacity:

Product description:

In this mechanism, the user of maize land, firstly land must be semi-wet for plouging, the user must pour maize seeds in the first half of the container and suitable manure in the second half of the container.

Secondly, The user must hold the handle then pull the product to his direct, so that the force applied to the plouging will be more.

Thirdly, 2 wheels are attached to the container, ploughing, seed sowing, manure and handle.

Using a handle that is provided, the user can pull the wheel comfortably and wheels are provided with iron strips around the wheel. so that the wheel will be moved easily in the land.

Thirdly, the break mechanism is provided to 2 handles with 2 break wires, the right break is provided for manure and the left break is provided for seeds sowing. Each break is connected to two sowings and two manure so that the user can use the break when he wants to sow the seed and add manure.

Benefits of machine :

- Ease-of handling.
- Avoids the labour cost and scarcity of labour.
- Budget-friendly
- Functions multiple actions simultaneously like ploughing, sowing, applying nutrition

Fig 6.1 AGRI MACHINE FOR PLOUGHING, SOWING SEEDS,APPLYING NUTRITION

CHAPTER VII

CONCLUSION

On the whole, we can say our product has many benefits, can be Ease-of handling, used for ploughing, sowing seeds, applying manure as well as it avoids the labours cost and scarcity of labour, even it is budget friendly and also reduces heavy time consumption.

It's a multi-purpose agro-machine for ploughing, sowing and fertilizing along with gripped tyres that are comfortably movable in soil.

These results reducing the difficulty of the farmer. The farmers used to plough with tractor or using bullocks, sow the seeds by hard physical work. But our product reduced the difficulty by carrying the manure tank, seeds tank on wheels as well as four nozzles (two for carrying seeds and other two for manure) are kept to the tank for ploughing, sowing seeds and applying the manure and also it reduces the work load and time consumption.

The user used to assign some labours for ploughing, sowing seeds and applying the manure in fields and said labour cost is very high these days. Let's say a person does the three tasks of ploughing, sowing, and manure appliance, it takes very much time for completing the task. Let's suppose three persons does three respective works, it takes less time but the labour cost will be huge.

But our product requires only one person for ploughing, sowing seeds and applying the manure and also it reduces the work load and time consumption as well as our product is ease of use, portable and durable with low cost.

The user used to carry the seeds and fertilizers in the bags, but our product can carry them at a time and simultaneously the works are done. Finally, the farmers can be very satisfied by the profitable use of our product that helps them in a drastic way.