



Design and Fabrication of Tapioca Harvesting Machine

M.Sengottaiyan¹, S.Balasubramaniam², V.Deepanraj², K.Kavin², P.Lalithkumar²

Associate Professor¹, UG Students²

Department of Mechanical Engineering, Nandha Engineering College, Erode -52,
Tamil Nadu, India.

sengottaiyan.malaisamy@nandhaengg.org¹, balamech10959@gmail.com²

Abstract- Custard, a starch removed from cassava root is developed around the slope stations. It grows up to a stature of seven feet. The cassava roots are extremely solid and it requires to be reaped perseveringly when utilizing hand. Substantial scale gatherers have reaping connections appended to the tractor. In any case, it might harm the cassava, so the outline is proposed to influence a reaping to machine which will gather the cassava with no harm and to make a successful gear accessible at ostensible costs. This high torqued rotational movement again changed over into response movement by utilizing gear mechanism to select a suitable speed.

Keywords- Tapioca Harvesting, farm Equipment, Agriculture.

I. INTRODUCTION

Custard is natural product which developed around Tamil Nadu. It was reaped by utilizing hand, it is extremely hard to collect product so we choose to make gathering machine which ought to be efficient and reap the harvest viable way. That is way we influence the reaping to machine which contains of linkage, outfit, turns, apparatuses are used to make this machine exceptionally basic instrument influences this machine to easy to use to and less support one. Riggings are utilized as torque changing over. Load was apply by utilizing hand and it change over into high torque by utilizing sequent of riggings linkage and turns are changeover connected movement to required movement The greater part of the Indian ranchers financial isn't great. So they not

ready to purchase tractor so this sort of hardware's are help to gather in low venture it decrease the reaping wages of agriculturists it will more accommodating to rancher.

II. LITERATURE REVIEW

- [1] Cassava is developed eighty rate in Tamil Nadu. It is significantly developed around namakkal, dissolve, salem, Kanyakumari. It develops in 1.39 lakes hectares in Tamil Nadu. The greater part of the ranchers are having underneath 2 hectares so they not utilizing tractor for reaping custard. They utilizing every day compensation people groups for gathering it required more vitality to reap custard from fielded al Cassava is developed eighty rate in Tamil Nadu
- [2] A.S. Akinwonmi et al, This composed is constrained to lose to reasonably free furthermore, clammy soil, it is along these lines relevant that further look into work be done to make the outline relevant to different sorts of soil structures.
- [3]. S.P. Pradeep kumar et al, A critical populace of cassava cultivators in Nigeria has made the progress from conventional generation frameworks to the utilization of high-yielding assortments and motorization of preparing exercises
- [4]. Ajibola, W.A et al In manufacturing the cassava peeling machine, the configuration in view of the plausibility think about was conveyed out with the accompanying contemplations.

III. DESIGN AND MODEL

The model was developed using Solid modeling software by using SOLID WORKS 2014. Solid works was the industry's de facto standard 3D mechanical design suit. It was the world's leading CAM /CAE software, gives a broad range of integrated solutions to cover all aspects of product design and manufacturing. Solid works provides the needs of small medium sized enterprises as well as large industrial corporations in all industries, consumer goods, fabrications and assembly. Electrical and electronics goods, automotive, aerospace, shipbuilding and plant design. It was user friendly solid and surface modelling can be done easily. The magnesium alloy wheel diameter is 12mm and the polyurethane flexible structure diameter is 16mm and the rubber tire diameter is 17.5mm. This design was full sketched in part area and it assembled in assemble area.

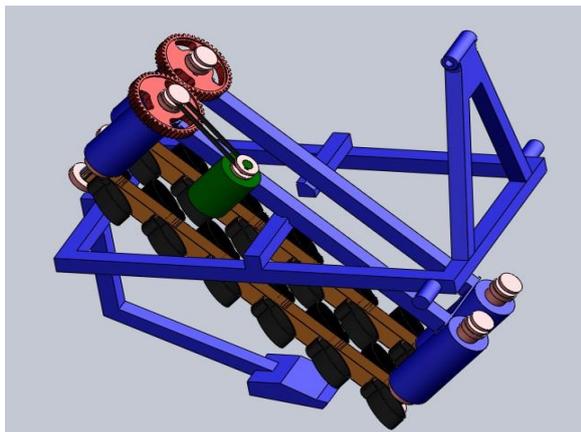


Fig.1 Tapioca harvester Made In Solid Works

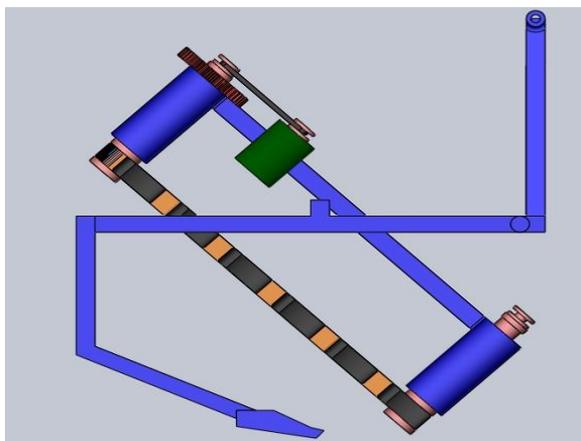


Fig. 2 Tapioca harvester Made In Solid Works



Fig. 3 Tapioca harvester Attached with tractor

IV. TECHNOLOGICAL DEVELOPEMENT FOR CASSAVA HARVESTING

Designers at home and abroad have made numerous endeavors towards the improvement of cassava removing gadgets. These incorporate manual gadgets, for example, cutlasses what's more, scrapers and semi-motorized gadgets, for example, Prairie moldboard furrows with various auxiliary designs, for example,

- Upsetting the entire edge and roots with a moldboard furrow body.
- Pulling a moldboard share (with the board expelled) underneath the dirt level.
- Using a moldboard furrow to part the edge along the peak.
- Pulling uniquely outlined cutting edges to cut underneath the tubers.

V. MATERIALS AND METHODS

- High Strength Steel,
- Yield Strength: 1000 MPa
- Allowable Stress: 833.3 MPa
- Safety Factor: 1.2 with known loading conditions.
- Flat Belts,
- Spur Gears,
- Motor.

This task has been done utilizing explanatory what's more, outline ideas. The Cassava developing agriculturists were gone to discover and think about

speed of the engine (Rpm)	Total number of stem harvested in one min.	With damage	Without damage	Efficiency %
2100	20	4 to 5	15	75%
1900	18	4 to 5	13	73%
1600	14	3 to 4	10	72%
1400	10	2 to 3	8	80%

the procedures engaged with evacuating Cassava. This examination was led at Tarkwa district, Western locale, Ghana in May 2011. The accompanying advances were found:

1. plucking off the upper parts of the stems with the leaves before reap
2. Cutting of the stem around 0.3 m over the dirt surface and gathering the stems as planting Material
3. The extricating of the dirt at the cassava root zone
4. Lifting the Cassava root framework out of the dirt and isolating the root framework from following soil before gathering tubers, stacking them on to transport vehicles and transporting them as Required

VI.RECOMMENDATIONS

- The gadget is prescribed to the Cassava developing ranchers to improve and appreciate the advantages.
- This composed is restricted to lose to tolerably free and clammy soil, it is in this way germane that further research work be completed to make the plan appropriate to different kinds of soil structures.

- This outline is equipped for evacuating two stands of cassava planted in columns at once; additionally research ought to be done to plan a gadget that will remove one cassava stand not planted in lines at once.

VII. RESULT AND CALCULATION

Force required = 6.6 Nm
 Angle of arm = 35 degree (downward movement)
 Speed of the engine = 2100Rpm

Table.1 Efficiency of stem harvested.

Subsequently the aftereffect of the higher effectiveness is 80% in 1400rpm. so we need to choose the lower speed of the 1400 rpm to collect the cassava with higher efficiency.

VIII. CONCLUSION

We have executed real time practices of cassava manor that will improve for the diminishment of work charge, time. Our created demonstrate have effectively performed in the agrarian field. Further changes can likewise be made in regards to the point of shaper utilized, drive framework prepared, etc.,

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