Developed vibratory tillage cultivator

- A vibratory tillage cultivator is designed and developed in this research work to improve agricultural efficiency parameters.
- Dimensions are yielded through proper mechanical design synthesis procedure to provide vibrations to the cultivator frame.

Introduction

- India is a agricultural country and it plays an important role in Indian economy.
- 85% of the population of Indian farmers comprises of small and marginal landholders which means that they are having land holding between 1-2 hectares.
- Cultivator is a kind of soil engaging tool that is extensively used by farmers and it makes us to think to work on application of vibrations to the tillage system.
- Thus to meet all these there is a need to work and accelerate the process of improved mechanization concepts for small and marginal farmers which can contribute in the nation building and improve productivity.


Justification of the Work

- The literature survey concluded that there is a need to explore the active tillage systems properly.
- It is observed that vibratory tillage concept is used for the implement subsoiler to provide oscillation to the wing of the subsoiler.
- Mechanism design concepts have not been properly synthesized, explored and applied in agricultural machinery design in the previous works.
- Vibratory tillage concept is still not fully explored well for the secondary tillage equipment and developing a tractor operated vibratory tillage secondary tillage equipment will definitely boost and encourage the farming community.
- This concluded to work on sustainable efficient and improved agricultural machinery which can enhance the efficiency.

Kinematic synthesis procedure for the mechanism

Conclusion

<table>
<thead>
<tr>
<th>Performance parameters</th>
<th>Rigid cultivator</th>
<th>Developed vibratory cultivator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft (kgf)</td>
<td>250</td>
<td>193</td>
</tr>
<tr>
<td>Fuel consumption (litre/h)</td>
<td>3.5-4.0</td>
<td>2.02-3.0</td>
</tr>
<tr>
<td>Depth of Cut (cm)</td>
<td>10-15 cm</td>
<td>15-25 cm</td>
</tr>
<tr>
<td>Power Consumption (kW)</td>
<td>1.68</td>
<td>1.37</td>
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</tbody>
</table>

- It is established from the preliminary field evaluation that the developed prototype consumes less draft and power as compared to the rigid cultivator (traditional cultivator).

Selected Publications and Patent


- Patent Filed : 