ABSTRACT: Our project deals with fabrication of 'Pongamia seed harvester'. Pongamia seeds are used for extracting bio-diesel, which can be used as fuel in locomotives instead of fossil fuels (diesel, petrol etc.). Therefore, the bio-diesel extracted from pongamia is called as 'Future diesel'. Our device helps in plucking and collecting the seeds without any wastage and with zero risk involved when compared to conventional method. After testing we got to know the time taken for collection of seeds and the wastage of seeds has reduced in comparison with conventional method. Like in conventional method, no laborers are required with the implementation of our device for seed collection. It makes the process much simpler, easier and time-cost effective.

INTRODUCTION: The Pongamia seed oil has been found to be useful in diesel generators and, along with Jatropha and Castor, it is being explored in hundreds of projects throughout India. It is especially attractive because it grows naturally through much of arid India, having very deep roots to reach water, and is one of the few crops well-suited to commercialization by India's large population of rural poor. Several un-electrified villages have recently used pongamia oil, simple processing techniques, and diesel generators to create their own grid systems to run water pumps and electric lighting. Assuming 200 trees per acre and 25% oil per pound of seed you would get about 100 to 600 gallons of oil per acre. Genetically modified plants produce more.

Objectives:
1. Combining Beating + Collection of seeds.
2. To reduce time, money and man power involved.
3. To eliminate the life risk involved in climbing trees for seed beating.
4. To reduce the wastage of seeds due to manual beating.

Working principle: Using beater the seeds are plucked from the tree and the plucked seeds flow easily into the collecting bag through the passage provided due to gravitational pull (because of its weight). Here the plucking and collecting process are integrated into a single device.

Construction involved:
Steps involved in construction:
1. Using sheet metal, funnel of required dimensions is made.
2. The funnel is provided with hooks around its lower circumference.
3. Inside the funnel, harvesting part (i.e., motor with beater arrangement) is made and attached to it.
4. The passage is made which connects funnel to collecting bag and it is supported by hooks at the lower circumference of the funnel. The passage can be attached or detached to the funnel as per requirement.
5. The funnel is fastened to extendable pipe using fasteners.
6. The harvesting part is powered using battery of suitable specifications.
7. The collecting bag is provided for collecting plucked seeds which are falling from the funnel.

Working process:
1. Pongamia seeds from the tree are focused into the funnel/harvesting unit with the use of extendable pipe which can reach to required height when ever required.
2. The harvester part is connected with the battery through switch. As required the motor can be made ON/OFF, hence the device.
3. Then with the help of harvesting part i.e., motor with beater arrangement the seeds are plucked from the tree. They are guided by the funnel to enter into the passage.
4. The plucked seeds are then sent directly into the collecting bag with the help of passage connecting the harvesting unit and the collecting bag.
5. The collecting bag is placed on the ground for collecting seeds from the passage.

Test results:

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Method</th>
<th>Time taken in mins</th>
<th>Seeds in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conventional Method (2 laborers)</td>
<td>21:39*</td>
<td>2.45 with wastage</td>
</tr>
<tr>
<td>2</td>
<td>Using our device</td>
<td>10*</td>
<td>1.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Method</th>
<th>Time in min.</th>
<th>Seeds in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conventional Method (2 laborers)</td>
<td>60*</td>
<td>6.8 with wastage</td>
</tr>
<tr>
<td>2</td>
<td>Using our device</td>
<td>60*</td>
<td>9</td>
</tr>
</tbody>
</table>

*(Beating 10mins + Collecting fallen seeds 11:39mins)
*Direct collection using our device.

CONCLUSION
From the above result we get to know that by the usage of our device the time involved in beating and collecting process can be reduced. Large amount of seeds can be collected with very less wastage and huge amount of money being invested on the laborers (i.e., .1 labor for climbing the tree for beating + 2 women for collection of fallen seeds) can be reduced. Also the man power involved can be reduced. The life risk involved in climbing the tree can be completely eliminated.
With the usage of our device the beating and collection process becomes one single process with less time consumption and more number of seeds can be obtained.

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