DESIgn AND FABRICATION OF ARECANUT PLUCKING MACHINE

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ABSTRACT:
Areca nut plantations are found in vast area in our state. Plucking arecanut during harvesting is now practiced manually. There are also few machines available, but they are not successful as the input for them is muscular power of the labor and it requires a person to physically climb the tree. There is no 100% safe arecanut harvesting device currently in the market. There is a need to develop a machine to address both efficiency and safety. The design of the device has to be simple enough for villagers to operate, yet work efficiently to appeal to the majority. This project aims at designing and fabrication of arecanut plucking machine, which can be used efficiently and easily.

INTRODUCTION:
In recent years, labor scarcity has emerged as one of the foremost challenges in farming. One crop that has been most affected by this is the supari, or areca nut. Areca nut trees attain a height of about 60-70 feet. It is mandatory to climb the tree a minimum of five times a year for a successful harvest - twice for the preventive spray against fungal disease, and thrice to harvest the areca nut.
This project device will help to overcome all these difficulties, where it consists of blade which cuts the bunch of arecanuts by very simple operation (both men and women can operate this device). Device is connected to tree by locking mechanism, with the help of engine and wheels it climbs the tree and cuts the arecanuts. Also, it eliminates the risk involved in traditional method. This device takes 2mins to harvest the single tree, means it takes very less time when compared to traditional method.

OBJECTIVES:
The main objectives of the project are:

- To apply mechanization and automation in agriculture to increase the productivity, and economy.
- Aims to bring fully automated arecanut plucking machine.
- To reduce the requirement of skilled man power.
- To make the machine operated by both men and women easily.
- To make plucking operation of tree fastly (this machine takes 2mins for each tree).

**METHODOLOGY:**

![FIG: WORKING OF DEVICE]
Here we are designing and fabricating motorized arecanut tree climber. The tree climber has a base(chasis) on which the rollers are fitted using self aligning bearings at a distance as the diameter of a standard areca tree. On one extreme end of the base, motor is mounted. The power from the motor to the rollers is transmitted by using sprocket and chain drive. To obtain the required speed of the wheels engine is accelerated.

The machine is placed around the tree and clamped to it using a swivel opening on one side of the base. Due to the weight of the motor, and some extra mass concentrated on one end of the base the machine locks itself to the tree. Now the engine is started and also starts to give acceleration. When the wheels’ gripping the tree rotates the whole setup is lifted along the length of the tree. After reaching the required height, the device is stopped. Then with the help of blade which is attached to device, branch of arecanut is cut. And also extra rods are attached to carry the arecanuts. Once the job is done the motor is made to rotate in the reverse direction to descend down the tree.

**CONCLUSIONS:**
The motorized arecanut tree climber is a safe, reliable, efficient and automatic tree climber which reduces the problems in climbing the arecanut tree to a good extent.