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Rose De-leafer Machine

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Abstract—

Rose production in one of the popular agricultural product in the countries like Netherlands, Switzerland where the market conditions are superior for this production. Due to high demand of product latest technology can be develop in this nations. But our mission is to product the machine using technology in such way that it is suitable for Indian rose production in India having poor performing can be increased effectively. Due to this Operating labour cost will be reducing. So by using deleafer machine the production rate of rose for Packing can be increased effectively. Due to this operating labour cost will be reducing .So easy to handle production rate with one day hazardous. Thus machine is useful for entrepreneur to increase it's with less increment labour cost.

I. INTRODUCTION -

Floriculture industry in India is a tremendous growing industry with substantial potential with India being a basically an agriculture base country. Presently India takes only about 5% share of the global exporting of this product. The packing of these rose flowers is of prime importance with regards to the self-life and aesthetic appeal. The rose steams, normally in 20 numbers are packed together in a bunch, the area in which the wrapping paper is wrapped has to be effectively de-leafed leaving the stem void of any leaf or thorns.

The present method of de-leafing is an manual one where in the labour holds the rose stem to be de-leafed in hand either one or maximum three and beats it with an wooden strip to remove the leaves and thorns from stem.

In the above can described method of de-leafing there are the following Problems

1. The labor can de-leaf either one or a maximum of three stems at a time, so per bunch he has to handle approximately seven sets of stems. This takes approximately four to five minutes to de-leaf one bunch of roses.
2. The excessive handling of these stems is tiresome, and hence productivity of labour reduces, thereby reducing the daily produce.
3. The process of beating has to be done carefully as the stem may break, more over the beating actions damages the stem at the nodes or may also strip the stem. This reduces the shelf of the flower.
4. As the process is slow, in order to cope up with the daily demands of production, the number of labour has to be increased which further increases the expenses on the packing process which actually is a non-value adding process for the produce.

The solution to the above problem is to mechanize the process of De-leafing with the following targets in mind.

1. Reduce the time required for de-leafing per bunch.
2. Reduce the amount of handling.
3. Reduce the labour requirements for process.
4. Reduce the damages on stem thereby improving the quality and Self life of product.

The De-leafing machine is one step towards this mechanization of the process which proves to be a complete is a solution for small scale & large scale production. The machine is a two station with deafer roller sets on either ends of the main shaft. The machine is driven by an electrical motor and drive system comprising of open belt drive and a set of spur gears. The de-leafer set of rollers are basically rubber combs that are fitted at the either endues of shaft.

II. EXPERIMENTAL SETUP -

A. Construction-

The construction of de-leafer machine is very simple consisting minimum number of parts.

1. Frame:-

Frame is mainly basic element. Which support all other parts the component of frame is welded. It is made up of mild steel. The frame provides to stability to working mechanism.

2. Spindle:-

There are two main spindles one is driver spindle which is connected to the motor through belt & second is

drive spindle the two spindles are connected through pair of spur gear. Each spindle has two brushes the spindle is formed to various steps & keys.

3. Bearing plate:-

The machine has two bearing plate with rectangular shape each Bearing plate contains two bearing. The bearing is used to minimize the friction & smooth functioning of spindle.

4. Single motor:-

The single phase induction motor is placed lower part of frame. The motor is used to drive to drive spindle & it is main part of machine. The motor has 1440rpm.

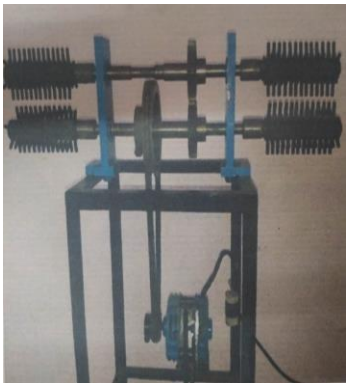
5. Belt:-

Belt is made of synthetic rubber. The type of belt is V Belt. This has good gripping to pulley. The belt is main transmission device to transmit power main spindle to drive pulley.

6. Brushes:-

Brushes are main working part of machine. These are made of rubber & fabricated in special shape. The arrangement of rubber is in such a way that two teeth of upper rubber enclose one teeth of lower brush.

B. Working -



The working of machine is simple & easy to understand. The working is free from vibration. This can be explained as follow.

When single phase capacitor motor start the belt mounted on motor shaft transmit power to pulley. The pulley is directly connected to lower spindle which revolve with pulley. The two spindles are connected through pair of gears. The power is transmitted from upper gear to lower gear. The gears are revolving opposite to each other.

As the speed of lower spindle & upper spindle is equal the brushes are rotating opposite to each other. The clearance is kept between upper & lower brushes so that the bunch of rose is passing easily through brushes to get desired action of deleafing. For removing leafs & thorns take ten to fifteen roses are taken in hand & passes through pair brushes. Take two or three pass. The leaves & thorns can be removed without any injury to stem of rose.

C. Advantages -

- The process of deleafing takes place at fast rate reducing the time consumption.
- The floor space required for the machine is very small also. It requires no foundation (heavy) reducing the cost further.
- During the working of the machine various cutting forces act on the machine elements. These forces cause the vibrations in the machine elements. But the machine is must robust to take up the vibrations.
- The machine uses ball bearing which is pre lubricated with bearing grease & are provided with dust covers thereby eliminating the need for frequent lubrication.
- The machine is simple is construction with minimal maintenance cost & extreme simplicity in replacement of part in case of failure.
- The machine is having less cost.
- Special skill is not required to perform operation.
- Injury is not serious because the working brushes are made up of rubber.
- Machine working time is less than manual working time.
- The stem of rose is not having any injury as rubber brushes are used.
- At time 10-15 stem to be deleafing.
- Export quality can be maintained by using this machine.
- Most of the machine part are standard so easily available in market

D. Disadvantages-

- The brushes are made up of rubber they can wear out.
- This machine cannot be used in large scale industry.

CONCLUSION -

The concept of group project was included in our engineering syllabus either the view to inculcate within us the application ability of the theoretical concept of design & production engineering to practical problems. So it also

helps us to learn to work more as a team rather than an individual. In completing our project titled 'ROSE DELEAFER MACHINE'S' Per our time estimate gives us immense pleasure & a feeling of achievement. During the course of project we encountered numerous problems which we overcame with the able guidance of our project guide. This project report presents a brief mention of our efforts project work has given us good exposure to the practical filed which in the future is definitely going to help us.

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