www.ijarp.com ISSN 2456-9992 Page: 01-03

International Journal Advanced Research Publications

Research Article

Volume: 02
Issue: 01

TREE CLIMBING MACHINE

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Article Received: 09 December 2025, Article Revised: 29 December 2025, Published on: 17 January 2026

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DOI: https://doi-doi.org/101555/ijarp.4207

ABSTRACT

Tree climbing is a difficult and risky task when done manually. To reduce human effort and increase safety, a Tree Climbing Machine is designed. This machine helps a person climb trees easily using mechanical support, reducing accidents and saving time.

INTRODUCTION TO THE PROBLEM

Introduction to the Problem

Traditional tree climbing methods are unsafe and require high physical strength. Farmers and workers face problems like slipping, falling, and fatigue. There is a need for a safe, low-cost, and easy-to-use climbing device.

Proposed Solution

Proposed Solution

The proposed solution is a manual tree climbing machine that grips the tree firmly and allows smooth upward and downward movement. It provides stability, safety, and reduces physical strain.

Objective

Objective

To design a safe tree climbing system

To reduce human effort

To increase climbing speed

To minimize accidents

To provide a low-cost solution for farmers

Mathodology

 Methodology

Study existing tree climbing methods

Design the machine structure

Select suitable materials

Fabricate components

Assemble the machine

Test and analyze performance

Experimentation / Construction

Experimentation / Construction

The machine is constructed using a metal frame, gripping mechanism, footrests, and locking system. Components are welded and assembled carefully to ensure strength and safety.

Key Components Used

Key Components Used

Metal frame

Gripping jaws / rollers

Footrest

Belt or rope

Locking mechanism

Fasteners (nuts and bolts)

Working Principle

Working Principle

The machine works on the principle of friction and mechanical locking. When the user applies force, the gripping mechanism holds the tree tightly, allowing upward movement. Releasing pressure enables downward movement safely.

Experimental Setup & Testing

Experimental Setup & Testing

The machine is tested on different tree sizes. Load testing is done by climbing with body weight. Stability, grip strength, and ease of movement are observed.

RESULTS AND OBSERVATIONS

Results and Observations

Smooth climbing operation

Good grip on the tree

Reduced effort compared to manual climbing

Improved safety

Easy to operate

Future Potential & Impact

Future Potential & Impact

Can be motorized in future

Useful for coconut, palm, and areca nut trees

Helps farmers and workers

Reduces accidents and labor dependency

Advantages & Disadvantages

Advantages

Low cost

Easy to use

Portable

Safe and reliable

Reduces physical effort

Disadvantages

Manual operation requires effort

Not suitable for very thin trees

Needs proper maintenance

CONCLUSION

Conclusion

The tree climbing machine is a simple and effective solution for safe tree climbing. It reduces risk, saves time, and helps farmers perform their work efficiently. With further improvements, it can be widely used in agriculture.