2024 International Conference on Applied Mathematics, Modeling and Computer Simulation (AMMCS 2024)

Mulberry leaf picking device design and motion simulation

Yingfu Deng, Bo Wang[Corresponding Author, Bo WANG, School of Artificial Intelligence and Smart Manufacturing, Hechi University, Yizhou 546300, China; E-mail: 64909240@qq.com.], Ding yongYang , Licheng Wang, Zhijun Li, Jincheng Zhong , Sitong Liu , Mengji Chen School of Artificial Intelligence and Smart Manufacturing, Hechi University, Yizhou 546300, China

Introduction

By adjusting the inclination angle of the picking device and the motor speed, the theoretical analysis and calculation are carried out to verify the feasibility of the design, which provides a certain idea for the design of the mulberry picking machine.

Experts and scholars from all over the world have devoted a lot of energy and resources to the development and improvement of picking machinery, but there are still various problems in the invented device, such as complex operation process, low efficiency and imperfect collection device. Based on the previous design, this paper determines the appropriate picking mechanism and the collection device to establish a three-dimensional model, and then carries out static analysis and kinematics analysis of the important parts, which provides a theoretical basis for the subsequent development of a new mulberry leaf picking machine.

Research objectives

- 1. Mulberry leaf picking device design
- 2. Statics simulation analysis of picking device
- 3. 4. Kinematics simulation analysis of picking device

Methods

Composition of the whole machine



Fig.1 Overall structure diagram of mulberry leaf picking machine



Fig.3 Three-dimensional model of support frame

Picking execution device design







Fig.7 Equivalent str am of support frame

Kinematics simulation analysis of picking device



Figure 8. ADAMS simulation three-dimensional diagram



Fig 9. Trajectory of drum movement

Conclusions

In order to improve the picking efficiency and meet the large-scale mechanized collection and collection of mulberry leaves, this paper adopts a comb-brush picking scheme. In order to achieve efficient mulberry leaf collection, a scheme combining gravity drop and air-suction hybrid collection is adopted. This scheme not only ensures the compactness of the overall mechanical structure, but also provides a more convenient way for mulberry leaf collection. Through three-dimensional design, dynamic simulation, strength, stiffness and stability analysis, the rationality of the mechanism design is verified to provide an effective reference for the mechanized harvesting of mulberry leaves.

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