



# 跟随式菠萝收集装置设计

## 摘 要

国内长久以来的低科技含量的农业生产限制了菠萝产业的发展，国外的菠萝产业起步早、发展快、机械化程度高，值得借鉴。但又因为种植条件、环境、管理方式等各种因素导致了菠萝产业无法简单模仿国外的形式。为了提高我国菠萝收获效率，保证品质，需要设计一种适应国内菠萝收获环境的一种半自动辅助收获装置。通过对一些国内现有的菠萝收获装置分析，参考有价值的部分，避免一些不足。得到几种设计的方案，再对几个方案进行深入分析采用小车搭载、输送带运输菠萝来实现跟随式收集为总体方案。在初步确定装置的工作原理是通过可折叠的输送带进行菠萝的运输和通过收放绳装置来进行装置的折叠，得到机构简图后则开始结构的设计。通过对一些标准件的选型和非标准件的设计来完成装置的设计。最后在三维软件上对装置进行三维建模，并计算该装置的受力平衡和力学性能的分析，保证装置能够满足正常工作的需求。

**关键词：** 半自动；辅助收获；运输

# DESIGN OF FOLLOWING PINEAPPLE COLLECTOR

## **Abstract**

The development of pineapple industry has been restricted by the low-tech agricultural production in China for a long time. Foreign pineapple industry started early, developed rapidly and had a high degree of mechanization, which is worth learning from. But because of various factors such as planting conditions, environment and management methods, pineapple industry can not simply imitate foreign forms. In order to improve the efficiency and quality of pineapple harvesting in China, it is necessary to design a semi-automatic assistant harvesting device adapted to domestic pineapple harvesting environment. Through the analysis of some domestic existing pineapple harvesting devices, refer to valuable parts to avoid some shortcomings. Several design schemes are obtained, and then several schemes are deeply analyzed. The overall scheme is to carry Pineapple by car and conveyor belt to achieve follow-up harvesting. In the preliminary determination of the working principle of the device, pineapple is transported by foldable conveyor belt and the device is folded by rope retracting and releasing device. After the mechanism sketch is obtained, the structure design begins. Through the selection of some standard parts and the design of non-standard parts to complete the device design. Finally, the device is modeled in three-dimensional software, and the force balance and mechanical properties of the device are calculated to ensure that the device can meet the requirements of normal operation.

**Key word:** Semi-automatic; assistant harvesting; transport

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