

题 目： 菠萝麻纤维提取机设计

摘 要

菠萝又被称作风梨，是一种著名的热带水果。菠萝主要分布在热带国家和地区。就中国境内来说，海南是菠萝的一大产地。菠萝的果实，酸甜可口、水分充足又有营养，深受广大人民的喜爱。菠萝的叶子含有 2%左右的纤维，可以通过机械和生化等方法进行提取。菠萝叶也叫菠萝麻，因而通过机械或者生化手段去除叶肉而得到的纤维也叫菠萝麻纤维。菠萝麻纤维经过加工后强度高，手感柔软丝滑，可纯纺也可同涤纶、棉麻等纤维混纺。由菠萝麻加工而成的衣物吸湿透气，但又不会被汗水浸渍而贴身，因此也十分凉爽，因而适宜制作夏季衣物。如果用它来制作中高档衣物，则衣物不易变形起皱，无需熨帖。此外，由于菠萝麻纤维的特性，由它制作而成的衣物易烫染，节约了大量加工成本。因此，菠萝麻纤维提取机的研究具有重要意义。

本课题通过对国内外菠萝麻纤维提取技术的研究与应用状况的调研与相关资料的查阅，初步了解菠萝麻提取机械的类型与特点，掌握菠萝麻提取机械的大概基本参数。根据菠萝叶的外观形态和本课题的目的，首先考虑到其工作原理，由此来规划其结构特点和相关性能指标，在这些的基础上进一步确定加工方式。广泛查阅相关资料后，结合国内外菠萝麻纤维提取机械所具有的优势和不足，对初始方案进行改进和完善。在此过程中，需要应用现代化设计方法，以机械原理、机械设计的有关理论为基础，对各个机械部件进行选定和设计。此后，再以此确定相关设计参数，并对此进行计算和校核，使其能达到设计预期，实现基本功能。本课题研究旨在通过自动化设计来加快菠萝叶刮麻速度并减轻农户的劳动强度。

本课题设计的菠萝麻提取机械靠输送带和夹持带输送菠萝叶片至刀具，并通过主轴和传送带将动力传送至刀具处，对叶片进行打击和刮擦，去除叶片的叶肉，将叶纤维剥离出来。机器主要包括动力系统，传动系统，叶片传送装置，刀架，机架。

关键词：菠萝麻；加工机械；切削；研究设计

Abstract

Pineapple, also known as pineapple, is a famous tropical fruit. Pineapple leaves also called pineapple hemp, pineapple hemp fiber belongs to the vein fiber. After processing, the strength of pineapple hemp fiber is higher than cotton, feel like silk, can be blended or pure spinning. If it is used to make medium and high-grade clothes, the clothes are not easy to deform and wrinkle, and there is no need to iron them. In addition, due to the characteristics of pineapple hemp fiber, the clothes made of pineapple hemp fiber are easy to be ironed and dyed, which saves a lot of processing costs.

Through the research and application of the extraction technology of pineapple hemp fiber at home and abroad, and the reference of relevant data, this paper preliminarily understands the types and characteristics of pineapple hemp extraction machinery, and grasps the basic parameters of pineapple hemp extraction machinery. After that, the relevant design parameters are determined, calculated and checked to make it reach the design expectation and realize the basic functions. The purpose of this research is to speed up the speed of peeling Pineapple leaves and reduce the labor intensity of farmers through automatic design.

The pineapple hemp extraction machine designed in this project transports the pineapple leaves to the cutter by the conveyor belt and the clamping belt, and transmits the power to the cutter through the main shaft and the conveyor belt, strikes and scrapes the leaves, removes the mesophyll of the leaves, and peels off the leaf fibers.

Key words: pineapple hemp; Processing machinery; Cutting; Study design

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