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果园钢索牵引悬挂式货运系统关键部件设计

Design on key parts of cable-driven hanging transportation syst

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中文摘要:

为解决山地果园果品和农资运送强度大、效率低以及果品易损伤的实际生产问题，设计了一种果园钢索牵引悬挂式货运系技术要求，进行了货运系统关键部件的结构设计。建立了复杂工况下的钢索拉力数学模型，单因素试验得到的回归方程与数映钢索拉力状况。该文研究结果可为钢索牵引悬挂式货运系统的动力选型与结构参数匹配提供参考。

英文摘要:

Abstract: The majority of domestic orchards have poor site conditions. It is difficult for the traditional wheeled or crawler transpo orchards. The cargo transportation is mainly done by manpower, which is labor-intensive, has low efficiency, easy damage of the fru in hilly orchards, a cable-driven hanging transportation system for orchards was designed. Based on the technical requirements of tv derailment prevention, the structure of the key parts of the system was designed. This mainly included the cable hoist, a pulley-hook turning mechanism, a tension mechanism and a limit switch. The stability and security of this system has been tested through measu group collided with the limit switch installed on the supporting pipe. The results indicate that the braking distance is unrelated to the tension under the complicated condition is proposed, along with considering the climbing angle, number of supporting and turning m tension and friction coefficients. The experiments were conducted on the system built at South China Agricultural University. The m experimental system is F=11.4m+587. By detecting the force on the guiding mechanism and the turning angle with sensors, the tensic equation calculated from the experimental data is F=11.95m+554. The coefficients of the regression equation obtained from the single mathematical model, which illustrates that the proposed model can reflect the variations of the rope tension. The results of this paper and the structure parameter matching of the system. The 7YGQX-5.5 type cable-driven hanging transportation system for orchards h Science Research Center, which has proven to be easily manufactured and constructed, economical and highly efficient. The system bananas or other fruits without damage.

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