

俞高红,张玮炜,孙良,赵匀.偏心齿轮-非圆齿轮行星轮系在后插旋转式分插机构中的应用[J].农业工程学报,2011,27(4):100-105

偏心齿轮-非圆齿轮行星轮系在后插旋转式分插机构中的应用

Application of planetary gear train with eccentric gears and non-circular gear in backward rotary transplanting mechanism

投稿时间: 7/21/2010 最后修改时间: 8/10/2010

中文关键词: [插秧机](#) [优化](#) [设计](#) [旋转式分插机构](#) [行星轮系](#) [偏心齿轮-非圆齿轮](#)

英文关键词: [transplanters](#) [optimization](#) [design](#) [backward rotary transplanting mechanism](#) [planetary gear train](#) [eccentric gears and non-circular gear](#)

基金项目:浙江省自然科学基金项目(Y107361); 国家自然科学基金项目(50875244)

作者	单位
俞高红	浙江理工大学机械与自动控制学院, 杭州 310018
张玮炜	浙江理工大学机械与自动控制学院, 杭州 310018
孙良	浙江理工大学机械与自动控制学院, 杭州 310018
赵匀	浙江理工大学机械与自动控制学院, 杭州 310018

摘要点击次数: 147

全文下载次数: 79

中文摘要:

针对步行式水稻插秧机的工作要求,将偏心齿轮-非圆齿轮行星轮系应用于水稻插秧机后插式分插机构的设计中,研制出偏心齿轮-非圆齿轮后插旋转式分插机构。分析了偏心齿轮-非圆齿轮行星轮系的运动学特性,建立运动学模型,并自主开发了分插机构辅助分析与优化软件,通过人机交互优化方式对该分插机构进行参数优化,完成了该分插机构的二维和三维设计,并进行了虚拟样机试验,试验结果表明:该分插机构可以形成“海豚形”插秧静轨迹,满足步行式水稻插秧机的工作要求。

英文摘要:

According to work requirements of walking-type rice transplanter, backward rotary transplanting mechanism with eccentric gears and non-circular gear was developed, in which planetary gear train with eccentric gears and non-circular gear were used. In this paper, the kinematic characteristics of planetary gear train with eccentric gears and non-circular gear were analyzed and kinematic models of the transplanting mechanism were established. Based on the optimization software, which was developed by the authors, parameters of the transplanting mechanism were optimized and the one which met the work requirements of walking-type rice transplanter was given by the method of man-machine conversation. Virtual prototype test was performed after finishing the 2D and 3D design of the transplanting mechanism, and the results showed that the transplanting mechanism can create static locus which looks like a 'dolphin' in shape and meet the work requirements of walking-type rice transplanter.

[查看全文](#) [下载PDF阅读器](#)

关闭

您是第3124891位访问者

主办单位: 单位地址: 北京朝阳区麦子店街41号

服务热线: 010-65929451 传真: 010-65929451 邮编: 100125 Email: tcsae@tcsae.org
本系统由北京勤云科技发展有限公司设计