

变量施肥控制系统PID控制策略 PID Control Strategy of the Variable Rate Fertilization Control System

梁春英 衣淑娟 王熙 怀宝付

黑龙江八一农垦大学

关键词: 变量施肥 控制系统 数学模型 PID参数整定

摘要: 根据机械动力学原理和电学原理建立了变量施肥控制系统的数学模型, 为控制系统的设计、PID参数选择以及控制性能改进提供了理论依据。利用 Matlab/Simulink动态仿真工具构建了直流伺服电动机驱动无级变速传动机构的仿真模型, 采用临界比例度法对系统的PID参数进行整定, 获得了反映系统性能的仿真曲线, 仿真和试验验证结果表明, PID控制策略提高了控制系统的跟踪性能和抗干扰性能。 The mathematical model of the variable rate fertilization control system according to the principles of mechanical and electrical dynamics was set up and the theoretical basis for the system design, parameter selection and performance improvement was provided. The simulation model with direct current servo motor driving variable transmission mechanism was constructed by using Matlab/Simulink dynamic simulation tools. PID parameter tuning of control system was carried out by the critical proportioning method, the simulation curves of system performance was obtained. The simulation results showed that PID control strategy could improve the control system tracking performance and anti-jamming performance, and the test was carried out to verify the system performance.

[查看全文 \(请使用Adobe Acrobat 6.0版本浏览\)](#) [返回首页](#) [引用本文](#)