

通用刀片功率消耗影响因素分析与田间试验 Analysis of Influencing Factors on Power Consumption and Field Test of Universal Blade

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摘要: 在实验室土槽中对旋耕-碎茬通用刀片单刀扭矩进行了试验, 确定了在旋耕作业和碎茬作业时, 耕深、刀辊转速、机组作业速度对功率消耗的影响, 建立了这两种作业状态下扭矩与工作参数关系的回归方程。土槽试验结果表明, 转速对功率消耗影响显著, 耕深影响次之, 作业速度对功率消耗影响较小。将通用刀片安装到仿生智能耕整机上进行田间旋耕和碎茬试验, 田间测试结果表明, 耕深稳定性达93%, 平均碎茬率、根茬覆盖率、碎土率分别为81.8%、87.2%、87.9%, 均满足两种作业的农艺要求。Power consumption (torque) tests of a single universal blade for rototilling and stubble breaking were conducted in the soil bin, to investigate the influences of the tillage depth and rotary speed of the blade as well as the working speed of the machine on power consumption. The regression equations for the relations between power consumption and the above parameters were established. Soil bin tests indicated that the parameter that had significant influence on power consumption is the rotary speed, next is the tillage depth, and the working speed had less influence. Then the universal blades were mounted on the bionic intelligent rototilling-stubble-breaking machine to perform rototilling and stubble-breaking tests respectively. Field tests showed that the stability of the tillage depth is over 93%, stubble-breaking rate, stubble coverage rate and soil-crushing rate are 81.8%, 87.2%, 87.9% on average, respectively, which meets the agrotechnical requirements.

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