

基于施肥处方的烤烟变量施肥机设计及应用

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摘要: 采用土壤网格采样法研究了贵州省烟草公司遵义乐山科技园内土壤的变异状况, 提出了相对应的肥料变量处方。以小型手扶拖拉机为施肥机载体, 组装了变量施肥机具, 并对其自动实施和施肥效果进行了田间验证, 形成了完整的变量施肥技术体系和施肥机。试验结果表明, 烤烟变量施肥较农户习惯施肥可节省肥料 4.6%; 提高烤烟的整齐度, 变量施肥烤烟株高的变异系数下降 29.6%, 上等烟率和下等烟率同步减少, 而中等烟率增加 13.05%; 增加农户收益, 变量施肥产值较农户习惯施肥增加 4310.65 元/hm²。变量施肥对提高肥料资源效率、农民增收具有重要意义。

关键词: 变量施肥机; 精准农业; 烟草

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Design and testify of a self-manufactured fertilization machine for tobacco variable fertilization based on soil nutrient variation

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Abstract: Using small manual tractor as the carrier, a automatic fertilization machine with necessary parts and softwares was designed and manufactured. Its availability and the yield and economic profit obtained through variable fertilization were testified in tobacco at Leshan Tobacco Hi-tech Park in Zunyi City, Guizhou Province. The soil nutrient variation was studied by sampling soils in grid, and fertilizer application rates of N, P and K prescription were made and automatic implementation of variable fertilization rate was achieved using the small machine. The results show that variable fertilization rate can save 4.6% of fertilizer amount compared to even fertilization, the variation in tobacco plant heights decline 29.6%, improving the uniformity of flue-cured tobacco. The proportion of the first-grade and low-grade commercial flue-cured tobacco was all decreased, and middle-grade was increased by 13.05%. Through variable fertilization, the farmers' profit can increase 4310.65 yuan/ha compared with even fertilization. In conclusion, the variable fertilization machine is effective and practical in decreasing labor and fertilizer input, and increases the fertilizer resource efficiency and farmers' income.

Key words: variable fertilization machine; precision agriculture; tobacco

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