

## 激光平地乳芽直播节水效果的研究

### Effect of laser-controlled land leveling and baby rice seedling direct planting on saving water

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作者	单位
任文涛	沈阳农业大学, 沈阳 110161
胡忠飞	沈阳市农机局, 沈阳 110161
崔红光	沈阳农业大学, 沈阳 110161
杨成桐	沈阳市农机局, 沈阳 110161
刘涌	沈阳农业大学, 沈阳 110161
王玉家	沈阳市农机局, 沈阳 110161
张占永	沈阳农业大学, 沈阳 110161
李宝筏	沈阳农业大学, 沈阳 110161

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中文摘要:

我国水资源严重短缺, 农业生态环境急剧恶化。农业是我国的用水大户, 约占全国总用水量的72%; 水稻生产又是农业生产中的用水大户, 在东北地区平均每公顷用水7 500~9 000 m<sup>3</sup>。故此, 研究水稻生产中的节约用水, 保护生态环境和节本增效等问题, 具有重要的经济和社会效益。该文利用自动控制理论, 研究了激光平地机组的结构和工作原理; 通过在辽阳市太子河区景尔屯村进行的20 hm<sup>2</sup>激光平地乳芽直播田间试验, 对激光平地的作业效果和泡田过程中的节水、节地效果进行了试验研究, 在测试泡田用水量的过程中, 利用秒表、乒乓球等设备实时地测试了田块的进水口流量, 实践证明此方法成本低, 操作简单, 测试结果准确可靠。结果表明, 激光平地可节约泡田用水21.578%, 节约土地 0.92%; 乳芽直播可节约泡田用水25.888%。

英文摘要:

In China, the water resource is seriously inadequate, and the ecological environment becomes worse and worse. Agricultural product export is difficult because of poor quality and agricultural chemical residue. Agriculture consumes the largest part of water resources that was about 72 percent of all over the country. In one growing period, rice needs about 7 500 m<sup>3</sup>/hm<sup>2</sup> to 9 000 m<sup>3</sup>/hm<sup>2</sup> of water more than other crops. It is one of the main factors that causes environmental pollution and ecological deterioration. So, it has the important significance for economy and society to study saving water, protecting environment and raising benefit in rice production. Through testing in the field of 20 hm<sup>2</sup> at village of Liaoyang City, the effects of the technology of laser-controlled land leveling on saving water and land in the process of paddy field irrigation were studied by using automatic control theory. The results showed that by using the technology 47.46% water and 0.92% land were saved. To test the runoff of the infall, when the field was irrigated, the stopwatch and table tennis ball were used to measure the rate of water flow. It is proved that this method has the advantage of low experimental expenses, simple operation, precision and credible results.

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主办单位：中国农业工程学会 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：100026 Email: tcsae@tcsae.org

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