

1SZ-460型杠杆式深松机设计与试验 Design and Field Experiment on 1SZ-460 Lever-type Subsoiler

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关键词: 振动深松机 土壤深松 偏心轴 杠杆 牵引阻力

摘要: 深松作业可以打破犁底层,在不翻动土壤的前提下可有效改善土壤的透水、透气性能,为植物根系提供更大的伸展空间。本文针对普通深松机械作业中存在的牵引阻力大、土壤松碎效果差等问题,研制出一种基于杠杆原理的振动式深松机。深松铲形式为窄凿型,能最大限度地保护土壤、减少水分蒸发。样机在30 cm耕深时振动作业与无振动作业的牵引阻力对比试验表明,振动深松作业可有效降低机具牵引阻力,降阻幅度可达13%~18%。Soil deep loosening operation can break the hard-pan without flipping the soil. It can effectively improve the water and air permeability performance of the soil, and provide a broader space to the plant roots. To solve the existing problems, such as insufficient loosening depth, big tillage resistance and the power consumption for general types of deep loosening machines, a new type of the lever vibrating ripper is developed. The ripper is consist of five main parts, the stander, eccentric axis, crisscross connector, deep loosening shovels and wheels for depth control. The crisscross connector makes this machine achieve double vibrations. The power is transmitted effectively and tersely by the gimbal and the lever, which can enlarge the vibration displacement and increase amplitude with the increasing deep tillage. The form of shovels is narrow chisel-type so that it can maximize the protection of the soil and reduce the moisture evaporation. Contrastive experiment of vibrating and non-vibrating subsoiling operation is carried out to analyze the impact of vibration on the traction resistance. The experimental results indicate that the operation traction resistance can be reduced 13%~18%.

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