

轮胎压实对机具牵引阻力的影响 Effect of Wheel Traffic on Working Resistance of Agricultural Machinery in Field Operation

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摘要: 研究了华北平原小麦、玉米一年两熟区固定道保护性耕作对机具田间牵引阻力的影响, 对比分析了固定道与非固定道处理下机具田间作业的滚动阻力、开沟器牵引阻力和总牵引阻力。与非固定道保护性耕作时深松、小麦和玉米播种作业相比, 固定道保护性耕作下机组总牵引阻力分别降低14.6%、13.3%和13.3%; 滚动阻力分别降低26.9%、21.9%和19.7%, 平均降低22.9%; 机具牵引阻力分别降低7.5%、7.2%和12.4%, 平均降低8.8%。固定道处理的开沟器牵引阻力平均比非固定道处理降低22.0%。与非固定道相比, 固定道总牵引油耗在3种作业时分别降低17.6%、12.4%和9.1%。试验结果表明, 固定道保护性耕作显著降低机具田间牵引阻力, 减少了机具田间作业油耗。Controlled traffic with conservation tillage (CTCT) can reduce soil compaction, thus to improve operation performance of agricultural machine, by separating wheel track and crop zone. The effect of CTCT on operation resistance force was researched in annual two crops region in Northern China. The rolling resistance, opener resistance and total draft between controlled and non-controlled traffic treatments were analyzed. In subsoiling, wheat and maize planting, compared with non-controlled traffic with conservation tillage, CTCT total draft reduced by 14.6%, 13.3% and 13.3%, rolling resistance reduced by 26.9%, 21.9% and 19.7%, averaging 22.9%, working resistance reduced by 7.5%, 7.2% and 12.4%, averaging 8.8%. Opener resistance reduced 22.0% averagely in controlled traffic treatments than that in non-controlled traffic treatments. As the resistance decreased, fuel consumption in controlled traffic treatment reduced by 17.6%, 12.4% and 9.1% in three operations. Results showed that controlled traffic conservation tillage reduces agricultural machine working resistance and fuel consumption in field operation.

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