电动拖拉机驱动力与传动效率特性试验

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关键词： 电动拖拉机 驱动力 传动效率 试验

摘 要： 对电动拖拉机驱动力特性及传动效率特性进行了试验研究。在对电动拖拉机驱动力和传动效率进行理论分析的基础上，从整车角度出发建立了驱动力产生方程、总的传动效率以及电动机控制器效率的计算方程。采用室内台架模拟试验的方法对6挡小型四轮电动拖拉机进行了试验研究。研究结果表明：驱动力特性是下凹的，更适合车辆动力性的要求；不同挡位的驱动力特性各不相同，适合不同作业工况；工作在不同挡位时的传动效率差别较大，其中工作在Ⅵ挡时高效速度范围最宽，效率大于0.5的速度区域占整个Ⅵ挡速度区域的70.6%，因此工作在该挡时经济性最好；正常工作时，电动机控制器效率较高，对电动拖拉机总的传动效率影响不大。 An experimental study on characteristics of driving force and transmission efficiency of electric tractor was carried out. Based on the theoretical analysis about characteristics of driving force and transmission efficiency of electric tractor, the generation equation of driving force, the calculation equation of transmission efficiency and motor controller efficiency were built up considering the whole tractor. The experimental study was carried out by using the method of indoor simulation experiment. The experimental results showed that the characteristic curves of driving force are down concave, and are more suitable for dynamic performance of the tractor; the characteristic curve of driving force of different shifts is suitable for different working conditions; the transmission efficiency of electric tractor have greater difference when the electric tractor working on different shifts, and the electric tractor has the best economy when it is working on the Ⅵ shift because the wide range of efficient velocity; the motor controller has little effect on transmission efficiency of electric tractor for its high efficiency.

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