

玉米种子脱粒过程高速摄影观察分析 High-speed Photograph Analysis on Threshing Process of Corn Seed

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摘要: 为优化差速式玉米种子脱粒机脱粒系统的有关参数, 进而降低玉米种子在脱粒过程中的损伤, 采用高速摄影方法对单个玉米果穗喂入与脱粒过程进行了观察分析。分析结果表明: 果穗在开始喂入阶段, 籽粒破碎大; 在脱粒起始阶段, 果穗撞击强烈, 越到后段, 撞击越弱; 果穗在正常脱粒情况下, 脱下籽粒多, 籽粒运动轨迹可近似为沿直辊与果穗接触点的切线方向; 而果穗非正常脱粒情况下, 脱下籽粒少, 籽粒运动规律呈杂乱状态, 没有一定飞行方向; 螺旋辊的转速偏大造成果穗的非正常脱粒加大, 果穗的非正常脱粒会影响果穗的脱粒质量和脱粒效率。 In order to optimize parameters of threshing system of seed corn thresher with different speeds threshing parts, and to decrease mechanical damage of corn seed kernel in the course of threshing, the process of feeding and threshing origination of single seed corn ear was analyzed by using high-speed photograph method. The testing results show that damage rate of kernels subjected intense impact is large in the feeding origination of seed corn ear; with threshing, impact changes more and more feeble, and damage rate of kernels becomes smaller and smaller too. Under state of ordinal threshing, large amounts of kernel is threshed and the moving track of threshed kernel follows the tangent direction of contacting dot of straight roller and ear, while under state of out-of-order threshing, the amount of kernel is small and the moving of threshed kernel presents disordering. Furthermore, large rotating speed of spiral roller results in the larger out-of-order threshing of ear, which influences the threshing quality and threshing efficiency of seed corn ear.

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