

PLANT CUTTING, GATHERING, CONVEYING PROCESSES AND EQUIPMENT

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Plant cutting, gathering, conveying are the most significant clean up processes among combines. They are performed by seed harvesters. Combines have main goals – to clean up and collect a lot of seeds. Seed harvesters are the first combine equipment.

The grain header is made of a platform with a frontal reciprocating-knife cutter bar; two lateral dividers of the plants; cross-mounted, equidistant crop-lifting devices; a reel with slates and metal or plastic tines; and an intake auger. When the combine moves, the reel rotates and its bars with fingers enter vertically among the plants, enters on the platform and collects them in center by the intake auger. Then the gathered material is pushed by the drum into the combine feeder-house.

The reel is the first active component of the header. It is composed of reel levers, driving and nondriving end shafts, a central pipe, an eccentric, end shield, end cranks and power transmission components (mechanical or hydraulic). Its main function is to divide plants into bunches. The cutting rod works in two phases: idling phase and weakened plant stems phase. The drum should be optimized.

Auger should gather the cut material and direct it to a retractable-finger drum, and then through the feeder house into the combine. The harvester auger sucks in all the cut plants. The transverse auger is made of two sections with the retractable-finger drum. The spirals have opposite wrapping corners, collecting and conveying materials from the sides to the center of the reaper.

The combine harvesters have row crop corn headers for harvesting from 6 to 24 rows at the same time. The rollers with knives and cross blades cut off the stalks while being pulled down. Such the stalk roller with knives is made of a shaft, helical spirals, radial multi-blades and four longitudinal knives [1].

The ear detachment process begins when the lower end of the ear comes into contact with the. At this stage the stem and the bell are subjected to a tensile force created by the rolls of the stem. The peduncle of the spike breaks and the deck is then moved back by chains to the transverse screw. The peduncle of the spike breaks and the deck is then moved back by chains to the transverse screw. The assembling chains and stack rolls of each row aggregate are set in motion through the reduction gear of an ordinary unit. The speed of the screw must be matched with the speed of the machine [2].

References

1. Miu P. Combine Harvesters Theory, Modeling, and Design. 2015. 482 p.
2. Myer K. handbook of farm, dairy and food machinery engineering. 2013. 760p.

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