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Comparative investigations on cutting of various plant materials in the cutter with flywheel chopping unit

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Abstract: *Comparative investigations on cutting of various plant materials in the cutter with flywheel chopping unit.* Investigations were carried out on cutting of green forage harvested from the swath in the shooting and coming-into-ear phases, straw and standing maize with the use of forage harvester with flywheel chopping unit. It was found that a real chaff length and the coefficient of its unevenness depend on the species and condition of the plant being harvested. During harvesting of succulent plants and application of 10 knives ($l_t = 8.8$ mm) one can obtain at least 80% of chaff within the class of length 0 – 30 mm.

Key words: cutting of plant material, flywheel chopping unit

Compaction of harvested material as a significant parameter characterizing the work of rolling baler

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Abstract: *Compaction of harvested material as a significant parameter characterizing the work of rolling baler.* An attempt was undertaken towards explanation of the effect of green fodder moisture content, ground speed of the baler and the length of plants on the level of average compaction of material in the bale. The field investigations were carried out on the constant-chamber rolling baler equipped with cutting unit. The investigations were executed in an uniformly formed material roll of constant mass per 1 running meter, independently of moisture content. To prove the statistically significant effect of analyzed factors on the bale compaction a variance analysis was carried out. There were also developed the empirical

models of compaction degree related to moist and dry mass connected with characteristic physical parameters of the material and exploitation parameters of tractor-baler outfit.

Key words: rolling baler, cylindrical bales, green fodder, compaction, length of cut

Investigations on cereal seed resistance to mechanical damage

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Abstract: *Investigations on cereal seed resistance to mechanical damage.* The resistance of rye, triticale and wheat grain to mechanical damage was investigated. The carried out investigations and analyses proved that the resistance of investigated seeds was highly influenced by water content and seed size; the velocity of crushing had minor effect. The highest resistance to damage showed the wheat seeds, the least resistance the seeds of triticale.

Key words: cereal seeds, water content, seed strength

Changes in soil physical-mechanical properties in the period of sugar beet vegetation under various cultivation systems

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Abstract: *Changes in soil physical-mechanical properties in the period of sugar beet vegetation under various cultivation systems.* The paper presents results of field investigations carried out on sugar beet cultivation on the plots subjected to impact of wheels under various agricultural outfit running. The changes in soil compaction and porosity under various cultivation systems are presented together with their effect on the yield. The investigations were carried out in compact plant field, the plant field with traditional technology passages, and the plant field with paths left for outfit running.

Key words: sugar beet, technology, density, soil compaction, soil porosity, yield

Effect of auger pitch in the auger-finger conveyor on the work of harvesting and threshing units in the grain combine harvester

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Abstract: *Effect of auger pitch in the auger-finger conveyor on the work of harvesting and threshing units in the grain combine harvester.* There is presented the effect of auger pitch in the auger-finger conveyor on uniformity of cereal mass feeding to threshing unit, power requirement and combine's work quality.

Key words: grain combine harvester, auger-finger conveyor, threshing energy consumption, threshing quality

Effect of reel slat number on uniformity of cereal mass feeding to the threshing unit and on threshing quality

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Abstract: *Effect of reel slat number on uniformity of cereal mass feeding to the threshing unit and on threshing quality.* The paper explains experimentally the effect of reel slat number on uniformity of cereal mass feeding to the threshing unit, quality of combine's work and power requirement. An increase in reel slat number advantageously affects uniformity of cereal mass feeding to the threshing unit and on the grain throughput of the concave, however the grain losses caused by harvesting unit of the combine increase. Thus, mounting in the reels more slats than 6 is not advisable.

Key words: grain combine harvester, reel, harvesting unit, threshing unit, energy inputs, losses

Effect of liquid and air pressure on droplet size obtained in the pneumatic spraying nozzle

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Abstract: *Effect of liquid and air pressure on droplet size obtained in the pneumatic spraying nozzle.* The pneumatic spraying nozzle with internal mixing of two agents: liquid and air was investigated. The effect of air and liquid pressure level on the obtained droplet size was analyzed. The mean diameter was taken as the size of obtained droplets. The carried out investigations proved that the droplet size decreases along with an increase in air pressure at constant liquid pressure. The liquid droplet size decreased also with an increase in liquid pressure at constant air pressure.

Key words: pneumatic spraying nozzle, droplet size