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Analysis of effectiveness of energy generating process in the renewable source system

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Abstract: *Analysis of effectiveness of energy generating process in the renewable source system.* The research stand in a hybrid system for generation of energy from renewable sources was equipped with measuring devices enabling to analyse the heat flow at the important system spots. The analysis of investigation results showed significant disadvantages of the applied control algorithm and enabled to estimate the effects of its modification.

Key words: renewable energy sources, hybrid system, automatic control

Assumptions for description of mass exchange processes in cumulative system of NO_x catalytic reduction in the self-ignition engine exhaust gases

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Abstract: *Assumptions for description of mass exchange processes in cumulative system of NO_x catalytic reduction in the self-ignition engine exhaust gases.* The development of the model of emission control system, consisted of oxidizing catalyst, with processes of NO_x cumulation, desorption and reduction is proposed in the paper. The assumptions for description of mass transport processes in the cumulative system of nitric oxide reduction are presented. A simplified description of NO_x kinetics reduction is proposed.

Key words: self-ignition engine, NO_x reduction, emission control system, cumulative system for NO_x reduction

Influence of inclination angle of horizontal cutting edge of the chain saw link on cutting effects

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Abstract: *Influence of inclination angle of horizontal cutting edge of the chain saw link on cutting effects.* Geometric parameters of chain saw cutting links determine to a great extent the course of wood cutting process. Many of them are independent of the chain saw operator, while the dependent parameter is the inclination angle of horizontal cutting edge. Its value can be changed after every sharpening performed without proper equipment. Therefore, investigations on the effect of the change in this angle on the obtained effects of cutting seem to be advisable.

The investigated saws differed in inclination angle of horizontal cutting edge. The carried out investigations prove that negligence in observing the factory recommendations on inclination angle of horizontal cutting edge (called the angle of saw sharpening in operator's manuals) causes a decrease in the cutting rate.

Key words: chain saw, gouge link, blade geometry, wood cutting

Selected aspects of energy consumption evaluation in poultry processing plants

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Abstract:

Key words: *Selected aspects of energy consumption evaluation in poultry processing plants.*

Results of investigations on energy consumption evaluation in poultry processing plants are presented. The effect of raw material processing structure and other factors on twenty-four hours energy consumption was determined at the level of plant index. There were developed regression models for the poultry processing plant as an energy user.

Key words: poultry processing, energy consumption, indices of specific energy consumption, regression models

Effect of technical and exploitation parameters of root crop combine harvester on quality indices during harvesting of carrot roots

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Abstract: *Effect of technical and exploitation parameters of root crop combine harvester on quality indices during harvesting of carrot roots.* There were investigated the effects of: ground speed of a one-row combine, speed of the separating web, and scraper position in the mechanical separator on damages, losses and contamination of carrot roots during mechanical harvesting. It was found that the web speed affected significantly the losses of unlifted roots and the roots lost on separating web and the transverse conveyor. However, the root losses on mechanical separator depended on its setting and the web speed. The carrot root losses significantly depended on the position of scraper in mechanical separator, while the change in ground speed of the tractor-machine outfit did not affected significantly the change in the values of quality indices.

Key words: carrot, combine harvesting, quality

Changes in soil physical properties in a three-year experiment on sugar beet cultivation

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Abstract: *Changes in soil physical properties in a three-year experiment on sugar beet cultivation.* The paper presents results of 3-year field investigations carried out on sugar beet cultivation. The changes in soil compaction, soil porosity and yield are presented in the period of plant vegetation for particular years of experiment. The investigations were carried out in compact plant field and the plant field with paths left for outfit running.

Key words: sugar beet, passage paths, soil density, soil porosity, yield

Investigations on thickness of chopped maize layer and the mass dynamic pressure force in the forage harvester discharge spout¹

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Abstract: *Investigations on thickness of chopped maize layer and the mass dynamic pressure force in the forage harvester discharge spout.* There is presented the effect of mass flow through the forage harvester during harvesting of maize designed for silage on the selected parameters used in indirect methods for determination of instant machine productivity in real time. It was found that machine throughput affected significantly the force of chopped mass dynamic pressure in the discharge spout and the thickness of material layer fed to the chopping unit, and that the dynamic pressure force depended also on degree of plant mass breaking up.

Key words: plant material chopping, thickness of layer being chopped, chopped mass dynamic pressure force, productivity in real time

Factors affecting the changes in coefficient of spray transverse distribution irregularity

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Abstract: *Factors affecting the changes in coefficient of spray transverse distribution irregularity.* Results of investigations on coefficient of spray transverse distribution irregularity in the slot nozzles are presented depending on pressure in the sprayer system. The effect of disturbances caused by one nozzle of different characteristic mounted on the boom was investigated.

Key words: coefficient of spray transverse distribution irregularity

Influence of technical parameters of forwarder skidding tractor on its working effects

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Abstract: *Influence of technical parameters of forwarder skidding tractor on its working effects.* Various factors affecting selection of tractor model to specified conditions are analyzed in the paper. The tractor loading capacity and its technological equipment were considered. It is pointed out, that the way of assortments preparation for skidding highly affects the economical results to be obtained. The effect of gathered pile size on specific costs was analyzed in details. It is evident from simulation experiments performed, that a tractor of medium loading capacity (about 14 m³) is most suitable under Polish conditions.

Key words: logging, forwarder, productivity, costs, skidding effectiveness

Analysis of effectiveness of all-purpose tractor utilization in skidding of short wood

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Abstract: *Analysis of effectiveness of all-purpose tractor utilization in skidding of short wood.* Effectiveness of application of the outfit consisted of all-purpose tractor Ursus 1014 and a self-loading stake trailer T-179 Jar 8 was evaluated in skidding and wood transport. Basing on the obtained results one can find that in the case of small operating scope, particularly with dispersed tasks, the specific exploitation costs are comparable to exploitation costs of forwarders. Lower prices and possibility of wider utilization of the tractor are additional advantages of the outfit of such type.

Key words: logging, skidding, all-purpose tractor, productivity, costs