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Theoretical Predstavlenы perevertuvannya justification stems hemp and constructions of technological process perevertuvacha tapes dlynnostebelnыh cultures.

Stlantsev Trust, of technological process, collection hemp perevertuvach tapes.

The theoretical justification perevertuvannya hemp stalks, design and manufacturing process perevertuvacha tapes dovhostebelnyh cultures.

Stlantseva Trust, process, assembly cannabis perevertuvach tapes.

UDC 631.36

BACKGROUND OF Logging and straw for energy needs

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The system of procurement and supply of biomass for biofuels centralized boilers. Graphic determined depending straw tyukuvannya cost of annual harvesting and size bales.

Biomass, storage, supply, straw, combined heat and power.

Problem. In terms of limiting imports of natural gas in Ukraine formed favorable conditions for the production and use of biofuels. On October 1, 2014 came into force Cabinet of Ministers of Ukraine dated 07.09.14 was. №293 «On stimulating the substitution of natural gas in the heat," which provides for compensation from the state

Budget difference between the tariff for heat production rate and the production of thermal energy for households to heat generating plants (excluding thermal power stations, power plants and nuclear power plants) using any fuels and energy (excluding natural gas). This creates the economic basis for the transfer of municipal energy on biofuels.

Analysis of recent research. Today in Ukraine there are already a number of boiler plants that generate heat by direct combustion of biofuels while mainly used: wood biomass, sunflower husks and straw in a holistic, crushed and pressed form. Particularly rapid heat-generating equipment was updated in forestry enterprises, enterprises in the industry in 1387 working on biofuel boilers with a total capacity of 246 MW, over 1000 boilers converted from coal and fuel oil for solid biofuels. In rural areas, 40 are used boilers and heating equipment at 40 straw bales. Over 70 Boilers sunflower husk [1]. Along with that in our country there are no complete solutions using biofuels for district heating in the area of municipal energy. Biofuels differs from traditional fuels (gas, oil and coal), lower density and calorific value (Fig. 1), the formation of seasonal biomass systems for storage, preparation and supply of boilers larger and more expensive, excessive moisture content, thermochemical properties and chemical composition solid biofuels varies and depends on the type of biological material (oxygen content of alkali metals, chlorine, etc.). Therefore, biofuel combustion system, including the power subsystem, furnaces, gas cleaning and ash removal, developed specifically for certain raw materials to ensure effective combustion allowable emissions and reliable operation of equipment [2-6]. These factors make it difficult to implement bioenergy projects in municipal energy, particularly through high demands for heat stability and power of the population.

Side crop production - straw cereals and canola is one of the greatest economic potential for energy production in Ukraine, experts estimate that 2013 is 4.54 million tons EF. Although today the fate of its use is 1% of the economically viable [7]. This is primarily due to the complexity of systems development enerhokonversiyi because of the relatively low power consumption of straw (Fig. 1), which defines the significant costs of harvesting, transport and storage.

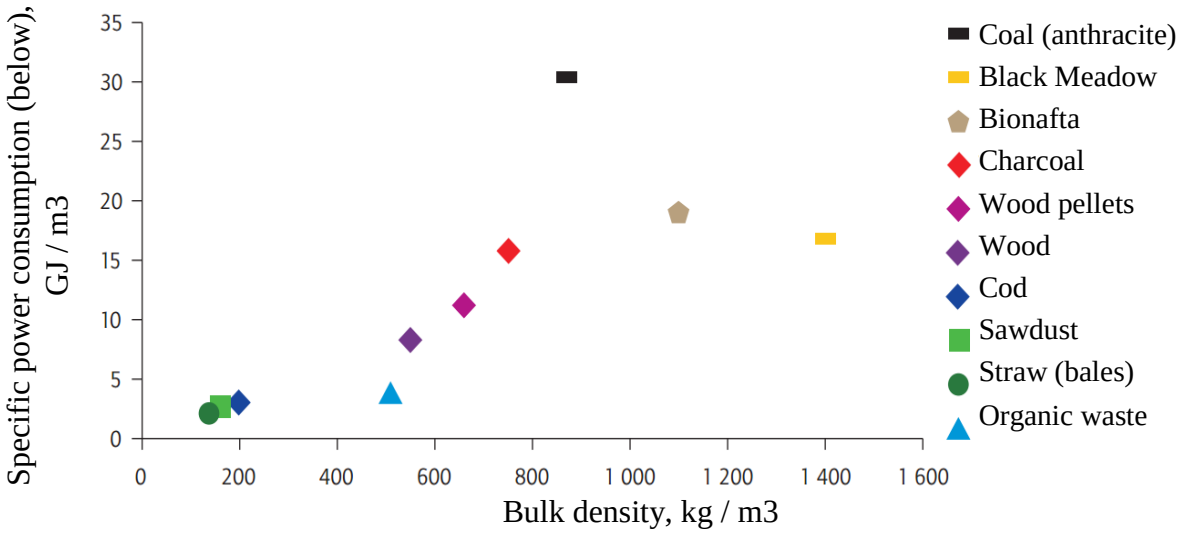

Fig. 1. Comparison of bulk density and specific energy consumption of different types of biomass [2].

The purpose of research. Justification systems procurement and supply of straw in enerhokonversiyi biomass for district heating and hot water.

Results. For procurement and supply of straw should be used four groups of equipment:

I. MTA for selection and briquetting straw bales in;

II. equipment for loading and transportation of straw bales to a local warehouse;

III. equipment for transport to a central warehouse and the operational structure of boiler;

IV. Commercial equipment for central warehouse and operational structure boiler.

You must choose the minimum number of means. The choice of technology and equipment is carried out in two stages: the first selected technology procurement and logistics straw; the second selected equipment.

Analysis of technologies and equipment appropriate to the method using multi-objective evaluation process systems. For the main indicators for evaluation can take the following criteria:

– productivity per unit of normal time, t / h .;
– direct operating costs per unit mass of straw UAH. / t;
– fuel consumption per unit of production, kg / t;
– labor costs per unit of man-hours. / vol.

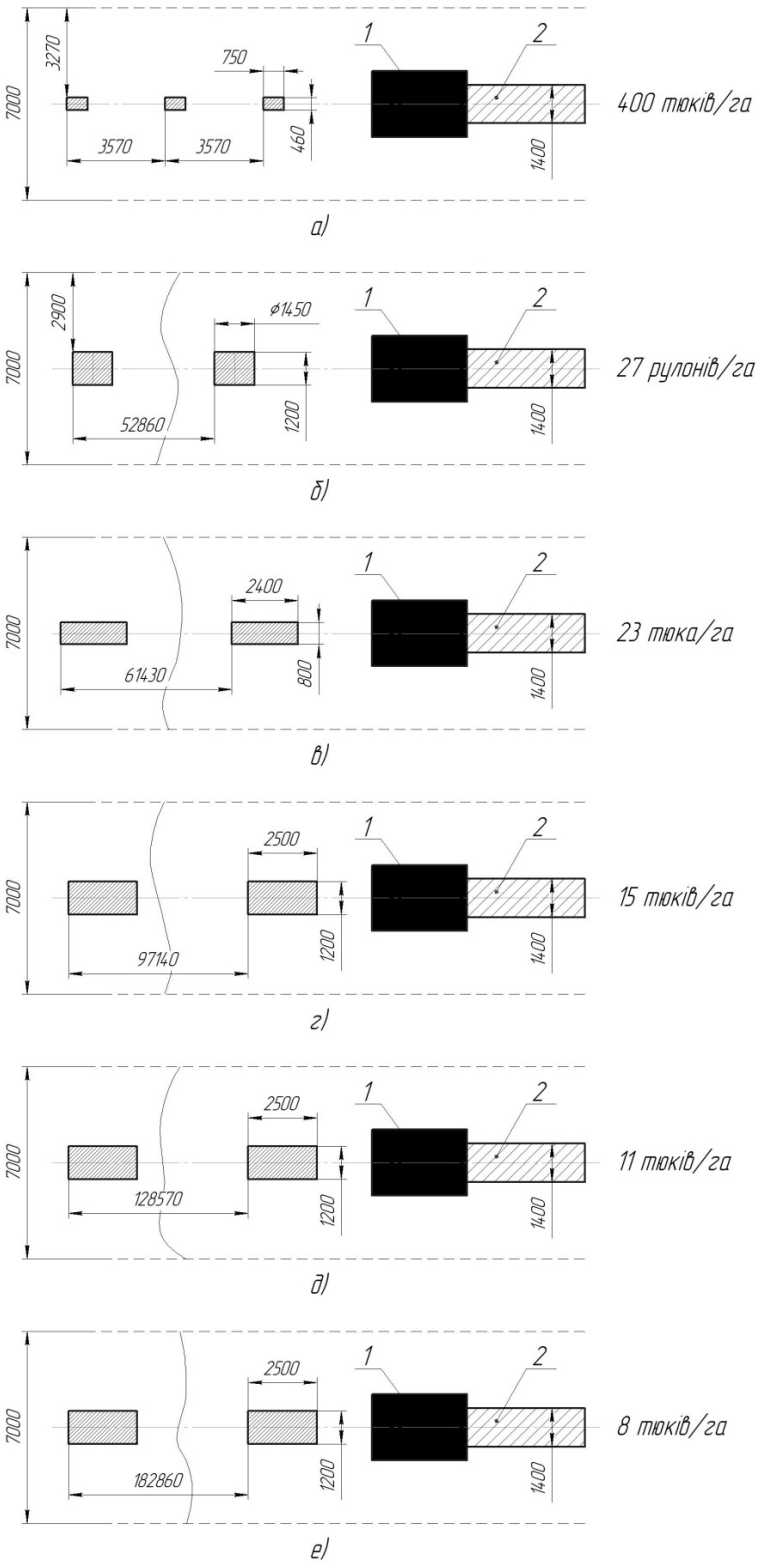

Fig. 2. Placing bales (rolls) in the field: a - small bales 12.5 kg (460x400h750 mm); b - rolls of 185 kg (diameter 1450 mm, width 1200 mm); a - average bales 215 kg (800x700h2400 mm); d - average 340 kg bales (1200x700h2500 mm); d - large bales of 450 kg (1200x900h2500 mm); e - large bales of 640 kg (1200x1300h2500 mm); notation: 1 - tractor + baler; 2 - straw swath.

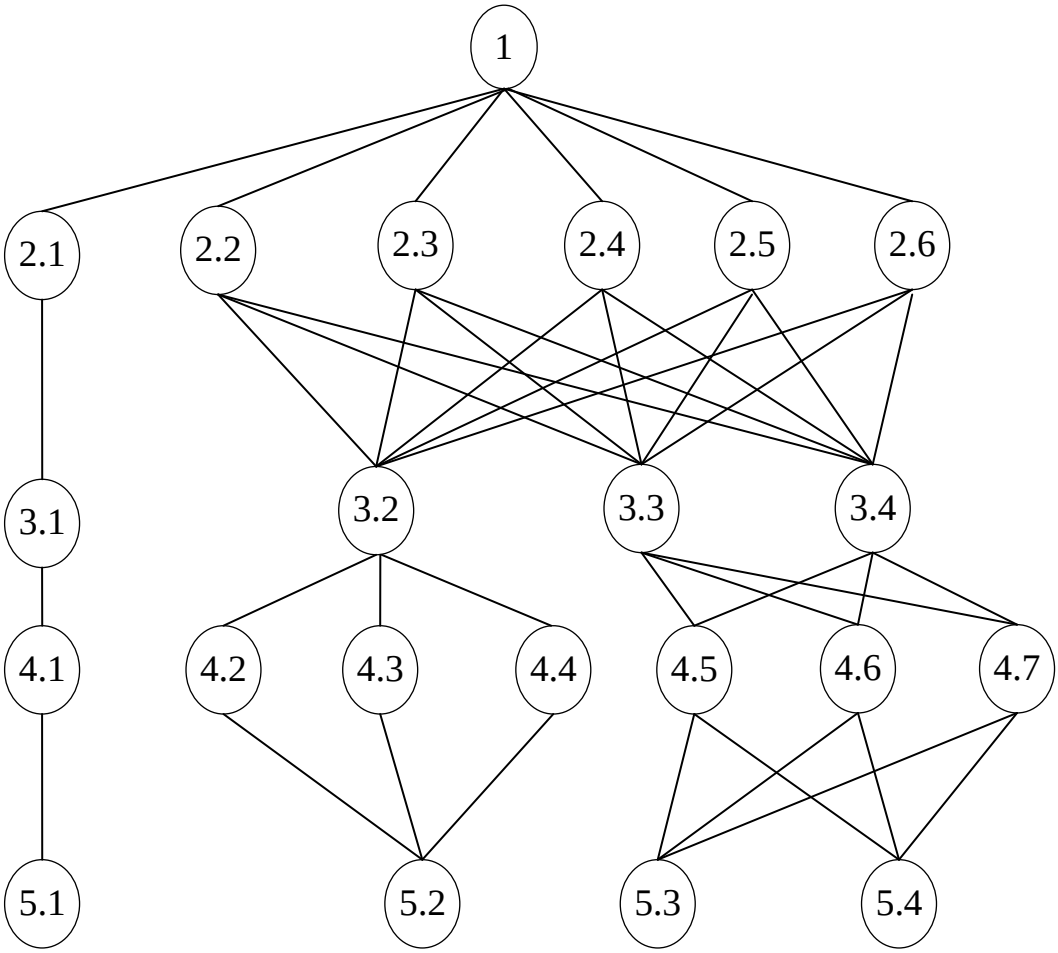

Fig. 3. Count technology procurement and supply of straw bales on the local composition: 1.1 - Combine shapes straw swath; 2.1 - straw bale pressed into the small; 2.2 - pressed straw roll; 2.3 - straw bale pressed in medium 1; 2.4 - straw bale pressed in the middle 2; 2.5 - straw bale pressed into a large one; 2.6 - straw bale pressed in a big 2; 3.1 - straw bale guiding served in the trailer; 3.2 - selected bale trailer with hidrozahvatom; 3.3 - bale trailer loaded with Loader; 3.4 - bale trailer loaded with telescopic handlers; 4.1 - bales are transported in a trailer on 4 tons; 4.2 - bales are transported in tipper trailer 8 t; 4.3 - bales are transported in tipper trailer 12 tons; 4.4 - bales are transported in tipper trailer 16 tons; 4.5 - bales are transported in a trailer 8 t; 4.6 - bales are transported in a trailer at 12 tons; 4.7 - bales are transported in a trailer at 16 tons; 5.1 - bales are unloaded by hand; 5.2 - trailer combination with sleep; 5.3 - bale is unloaded from the trailer Loader; 5.4 - bale trailer is unloaded from a telescopic loader.

Classification technology procurement and logistics to hold the straw of different types of bales at the following options:

1) small bales (dimensions: 460x400h750 mm, density 90-100 kg / m3, weight 12.5 kg);

2) cylindrical bales (rolls) (dimensions: diameter 1450 mm, width 1200 mm, density 80-140 kg / m3, the average weight of 185 kg roll);

3) Middle bales 1 (dimensions: 800x700h2400 mm, density 140-165 kg / m3, weight 215 kg);

4) Middle bales 2 (dimensions: 1200x700h2500 mm, density of 160-180 kg / m3, weight 340 kg);

5) 1 large bales (dimensions: 1200x900h2500 mm, density 160-180 kg / m3, weight 450 kg);

6) 2 large bales (dimensions: 1200x1300h2500 mm, density 160-180 kg / m3, weight 640 kg).

In order to determine the distance between the drawn layout bales bales (rolls) in the Fig. 2. The number of bales in the use of modern productive balers reduced to 8 bales / ha. To analyze the technology procurement and supply of straw composition can be used graph theory. Fig. 3 shows a graph technology procurement and delivery of straw on a local warehouse.

From Fig. 3 you can choose to harvesting and delivering straw to a local warehouse. For each option is necessary to define performance criteria for each technological operation and general criteria.

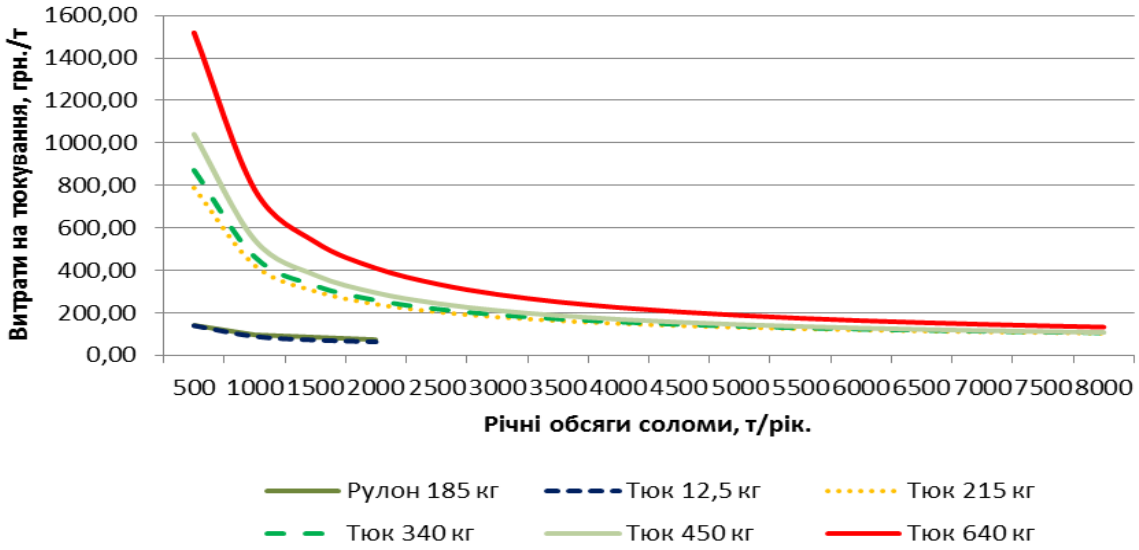

Fig. 4. Graph of costs tyukuvannya straw of annual harvesting and size of the bale.

Fig. 4 shows the results of determination of costs tyukuvannya straw from which it follows that for annual harvesting volume of 3380 tonnes should be used balers large-sized bales 1,2h0,9 m. Transportation Bale expedient to carry trucks, but one should take into account their characteristics to move across the field.

Minimum list of techniques for harvesting and supply of straw for centralized boiler includes:

1) machine-tractor unit tractor with baler bulky bales 1,2h0,9 m;
2) telescopic handlers;
3) forklift;
4) truck with downloading 30 large-sized.

Design capacity of the complex machinery of technological operations ranging from 6.9 to 8 t / h.

Conclusions

The use of biomass by-products and agricultural waste, such as straw cereals, Ukraine has a huge energy potential, which is now hardly used.

For the energy use of biomass in municipal power system requires reliable system of procurement and distribution of biofuels, which will provide timely and smoothly boiler solid biofuels. Significant investment in fixed assets determine the high costs of harvesting, collection, transportation and storage of bales of straw at low volumes.

Minimum list of techniques for harvesting and transportation of straw for centralized boiler includes machine-tractor unit tractor with baler bulky bales 1,2h0,9 m; telescopic handlers; forklift; truck with downloading 30 large-sized.

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Obosnovana System Logging and delivery solomы required to implement byotoplyvom tsentralyzovannыh kotelnыh. Opredelenы hrafycheskye dependence sebestoymosty tyukovanyya solomы annum from obъemov and razmerov tyukov.

Byomassa, harvesting, delivery, straw, teploэnerhetyka.

System of straw harvesting and supply for centralized biofuel boiler is based. Curves of straw bale cost on the annual volume and bales size are determined.

Biomass, harvesting, heat-power engineering, straw, supply.

UDC 521.4

EXPERIMENTAL STUDY OF CONCRETE compressed-bent elements PERERIZUPRY ROUND OF transverse forces

OO Davydenko, MA

The results of experimental studies of reinforced concrete columns with round cross-section at the bend of the previous compression without prior reduction, revealed an increase in carrying capacity of columns with the previous compression to 43.7%.

Concrete-section power element.

Problem. In recent years, reinforced concrete elements of circular cross section have been used widely for columns frame buildings, items, frames, operated in earthquake zones, bored piles retaining walls, anti buildings. However, research strength of compressed-bent concrete elements of circular cross section under the action of transverse forces are practically absent, and the calculation of inclined sections in the transverse force, in accordance with the rules for performing bending elements, excluding the impact of longitudinal compressive force.

Analysis of recent research. Research on the columns of rectangular cross section [1, 2] have shown that the addition of longitudinal compressive strength of eccentricity relative to the geometric axis of the column aimed towards bending or cross in the opposite