«Modeling the throughput capacity of threshing-separating apparatus of grain harvester’s combines»

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The generalizing technical and operational indicator of the threshing device is considered as throughput. Implementation of harvesting technology is a condition of stability and quality of threshing bread mass. Harvesting is characterized by certain quality indicators: technological standards (capacity); and permissible deviations from it (technological admission to standards); the accuracy of the developed requirements or the level of coincidence of the quality indicators obtained in real production with the permissible ones.

Qualitative indicators of work of combine harvesters Slavutich KZC-9F and Slavutich KZC-9M at correct regulation of working bodies and conditions are defined by ISO 22611. Uniformity of supply of bread mass in the threshing machine depends on presence and influence of a considerable number of factors and factors: unevenness of density of plants, height and humidity of bread, use of width of capture of a reaper, unevenness of height of mowing, unevenness of giving by an auger of a reaper and floating inclined transport degree of weeding.
Table. Summary data on improving the efficiency of use Slavutich combines

| The name of the meter readings | 07.08.2020. Data of research |
|-------------------------------|-------------------------------|
|                               | «from» | average values | average values | «to» |
| Work time, (seconds)          | 612     | 540             | 468             | 432 |
| Shredder time, (hours)        | 0.17    | 0.15            | 0.13            | 0.12 |
| Area, (ha)                    | 0.739   | 0.750           | 0.745           | 0.733 |
| Shredder area                 | 0.739   | 0.750           | 0.745           | 0.733 |
| Road section, (km)            | 1.058   | 1.082           | 1.013           | 1.180 |
| Mass of harvest, (tons)       | 3.56    | 4.70            | 4.65            | 4.00 |
| Humidity, (%)                 | 13.9    | 14.5            | 14.2            | 13.3 |
| Fuel consumption, (liters)    | 9.01    | 10.01           | 10.01           | 9.01 |
| Fuel consumption on the road, average values, (ha/hours) | 4.43 | 5.00 | 5.59 | 6.28 |
| (tons/hours)                  | 21.38   | 31.35           | 34.85           | 34.05 |
| (tons/ha)                     | 4.83    | 6.27            | 6.24            | 5.42 |
| (liters/hour)                 | 54.00   | 60.00           | 67.50           | 77.14 |
| (liters/ha)                   | 12.190  | 12.00           | 12.079          | 12.280 |
| (liters/tons)                 | 2.529   | 1.914           | 1.937           | 2.265 |
| Working speed, (km/hours)     | 6.282   | 7.2113          | 7.792           | 9.833 |
Conclusions
Results, implementation

• The calculation of the actual capacity of the threshing machine – combine harvester and, accordingly, productivity must objectively take into account the agrobiological state of the grain mass, grain moisture, straw moisture, weediness of the bread mass due to correction factors.

• It is also necessary to use the design factors inherent in the electronic device for monitoring crop losses for the accuracy of the use of the relative BLI in determining the mechanical losses of the thresher by the definition of "from – to". By increasing the allowable losses to the upper value "to" the capacity of the thresher can be increased up to 40% while saving fuel due to more efficient use of engine power. That is, a qualified manager of the relative readings of the loss sensor can increase the productivity of the combine to 40% and reduce fuel consumption by 10% due to the optimal engine load.

• The specified method of calculation of throughput of threshing – the device taking into account an agrobiological condition of bread weight and taking into account use of losses of grain on indicators of BLI is resulted.
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