13. *Pukovodstvo* to obtain from biogas to Using /: Ydentyfykatsyonnыy project number (FKZ / YNP): 22,005,108 / German Studies Centre byomassы Torgauer Straße 116- 04 347 Leipzig [5th completely rev. ed.] Hyultsov ,: yzdano Agency for vozobnovlyaemyh Resources (FNR) FechagenturNachwachsendeRohstoffee. V. 2010. - 214 p.
14. *Systems* toydalennya, processing, preparation, and use of manure VNTP-APC 09.06. Official. publication. - K .: Ministry of Agrarian Policy of Ukraine, 2006. - 100 p.
15. *Background* book on hymyzatsyy agricultural households, / [ed. *In the.M. Borisov*.] - 2nd ed., Rev. and add. - Moscow: Kolos, 1980. - 560 p.
16. *Technology* processing of biological waste into biogas plants with rotating reactor / [*Dolub GA, Sydorchuk OV Kuharets SM, et al.*]; eds. Dr. Sc. Science professor. *D.A. Dove*. - K .: Publishing House NUBiP Ukraine, 2014. - 106 p.
17. *Tyvo PF* Effective Using bespodstylochnoho manure / *P.F. Tyvo, SG Drobot.* - Minsk: Uradzhay, 1988. - 116 p.

Powered principle Control Remove manure at animal putem Content Changed dozy podstylky.

Navoznaya ace, Large rohatыy cattle, svyny, manure, humidity, podstylka.

The management principle of animals manure removal by changing of dose litter is given.

Aqua manure, cattle, pigs, manure, humidity, litter.

UDC
631.354.2

METODYKA CALCULATION OF GRAIN LOSS probably SMEs harvester Don-1500B

OA Demko, PhD
student *

Andnalitychno determined the probable value of mechanical losses depending on their areas for straw and reshitnym condition.

Zehrnozbyralni combayny, Sectionloscha, Section'Yezometrychni sensors, probability, numerical value estimate.

AnaLiz recent research. Most publications [1-6] ascertained only numeric values for mechanical losses threshing-separating device combine harvesters. The fact neither constitutes nor analyzed the system itself

*** Supervisor - PhD VA Dubrovin**

thlektronnoho control over design decisions placing sensors. The instructions, manuals are not given the estimated value of losses depending on grain yield, solomystosti, Agrobiological state of the meat supply. Using relative values of probable losses based on subjective evaluation of productivity in the area of the field, which is expected to yield from collecting leads to significant errors combine in choosing operating speeds for high performance LC.

Metand research. Andnalitychno investigated numerical values mechanical losses of grain depending on the design decisions placing sensors on the straw and reshitnym condition.

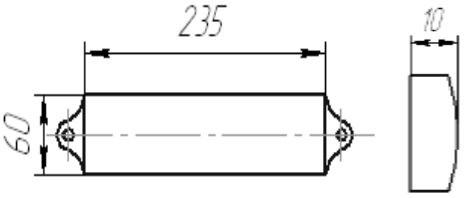
Rezultaty research. Describemo information provided for combayneriv the instruction manual s.183, 184, 286. Power Putt, Ufa-2 sensors and losses DPZP-1 designed for rapid reporting of losses on changes in the intensity of shakers and cleaning for the purpose of maintaining a given level of losses. Sensors losses BQ1 ... BQ2 designed to convert energy falling grains into electrical signals BQ1 ... BQ4 mounted at the end of the two middle keys straw and BQ5 and BQ6 - polovonabyvacha under tray. Ufa-2 mounted on the left sidewall of the rear thresher counter driven and designed to amplify electrical signals coming from the sensors BQ1 ... BQ6 and formation of pulses, providing work unit display Putt. [1]. Learn how to work with the device SYYP.

In the pre-adjusted (according to the terms and condition of the collection of harvested crops) processor is determined by trial races at station 50 ... 100 m skimmed field maximum velocity combayna in which the loss of grain for threshing instrument does not exceed the standards. During test rides on the block Putt switch must be in the "tuning". After determining the optimal speed of the assembly proceed to the field, which conducted the trial raceand and, after one or two minutes after the cleaning, put the toggle switch on the front panel Putt to "work". This should be lighted icons of both channels are in the middle of the green sector.

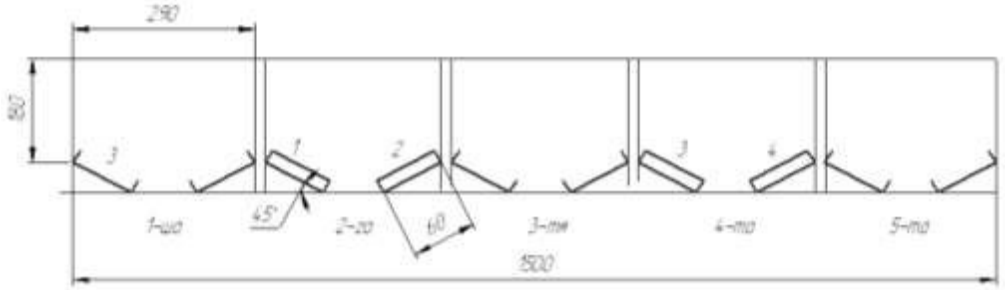
Further speed combine maintain such that glowed green lampyv sector. Lighting icons "Povыshetion of the loss "and the emergence of a sound signal (at constant operating conditions) indicates a significant increase in the level of losses violation optimal threshing process. If the collection steadily glowing lights in the lower sector, need to clean surfaces sensitivity sensors and corresponding channels Separating channel and separating surface above them. When conditions change

pickstion, transition to other onle another culture or repeat adjustment Putt. According to the procedure described previously.

Elektronna control system relative values of mechanical losses of grain by threshing-separating device combines Don 1500,Don-1500B has structural features (Fig. 1).



and) Sensor size



to) Sensors shakers

c) as sensors for reshitnym

Ric. 1. Layout of sensors on the keys straw and reshitnym condition.

Fourand piezoelectric transducers located on the 2nd and 4th keys, two longitudinal sensors at an angle of 45o, (Q1 i Q2) - the second key, (Q3 i Q4) - on four keys, (Q5 i Q6) - cross to the direction of movement reshitnym condition. The signals from the piezoelectric transducers in straw through the device Ufa enter into a separate unit Putt visual information, and performance loss for reshitnym come as a parallel visual information block. According to the instruction manual combines maximum allowable relative loss in volume up 1.5%. This means that the relative loss may be within 0.75%. That is, the loss of sieve shakers and should be equivalent. From applied research it is known that the drum after the straw is so 17% of the grain

weight increase, and through reshitnyy condition is 100% grain. Layout of piezoelectric transducers combine a priori expected to hit grains to control the law of equal probability. Tilted left and right united testimony of two sensors in one information signal. To check possible values falling grains sensors were made corresponding calculations applied.

Of Methodologiesand calculating the likely loss of grain for SMEs combines Don-1500.

1. Calcexpense of area harvested combine reaper width of 6 m for 1 sec.

(V_k= 5 km / h) = 1.39 m / s:

$$S = VK \bullet Lk = 1{,}39 \bullet 6 = 8.34 \text{ m2.} \quad (1)$$

2. Calchuyemo coverage threshing instrument combine for 1 sec .:

$$S = Vk \bullet Lm = 1{,}39 \bullet 1{,}5 = 2{,}085 \text{ m2 / sec.} \quad (2)$$

3. In theidnoshennya area harvested with a combine harvester head to the area coveredher threshing instrument for 1 sec .:

$$\Delta S = \frac{S_ж}{S_м} = \frac{8.34}{2.085} = 4. \quad (3)$$

4. EIDNacha square straw bottoms along the length of the sensors:

$$Sc = Lm \bullet Ld = 1{,}5 \bullet 0{,}235 = 0{,}3525 \text{ m2.} \quad (4)$$

5. Ploscha sensors for perimeter straw:

$$Sp = Lq \bullet lq \bullet n \bullet \cos 450 = 0{,}235 \bullet 0{,}06 \bullet 4 \bullet 0{,}707 = 0{,}03948 \text{m2.} \quad (5)$$

6. In theidnosne area sensor value in relation to the area Sectionat the perimeter sensors shakers:

$$K = \frac{S}{S} = \frac{0{,}03948}{0{,}3525} = 0.112 \approx 11{,}2\%. \quad (6)$$

7. EIDnachyty area around the perimeter sensors on a sieve:

$$S_p = Lqla \bullet LM \bullet \cos 450 = 0{,}06 \bullet 1{,}5 \bullet 0{,}707 = 0{,}063 \text{ m2.} \quad (7)$$

8. EIDnachymo area sensors for sieve:

$$S_q = La \bullet lq \bullet \cos 450 \bullet n = 0{,}235 \bullet \cos 45 \bullet 2 = 0.01974 \text{ m2.} \quad (8)$$

9. In theidnosne from-identification Sectionloschi sensorto Sectionabout modratio to perimeterin sensors for sieve:

$$\Delta S = \frac{S_д}{Sp} = \frac{0{,}01974}{0{,}063} = 0.3133 \approx 3133\%. \quad (9)$$

10. Summarilyand the area around the perimeter sensors and sieve shakers for:

$$S_Σ = S_c + Sp = 0{,}3525 + 0{,}063 = 0{,}4155 \text{ m2.} \quad (10)$$

11. Summarilyand the area under the shakers and sensors for reshitnym

state:

$$S_{\Sigma g} = S_c + Sp = 0{,}03948 + 0{,}1974 = 0{,}05922 \text{ m2}. \quad (11)$$

12. In theidnoshennya value acreage sensors harvester

$$\Delta S = \frac{S\Sigma g}{S\Sigma} = \frac{0{,}05922}{0{,}4155} = 0.1425 \approx 14.25\%. \quad (12)$$

13. Number of pulse width on thresher (1.5 m) in length 1 m at yield U = 4 t / ha with losses of 1.5% = 90 kg / ha:

(337i= 1.5 m2).

14. ANDmovirna number of pulses that occur in the perimeter area of sensors:

15 - 337i;
.4155- X; (13)
x = 93rd.

15. Number of pulses grain crops that fix sensors straw:

$$\Sigma i_{with} = 0{,}112 \bullet 93 = 10.4 \approx 11_{and}. \quad (14)$$

16. Number andLPAlsivfromzeredistrict, uabout fiksuyut datchykandfromand

sieve:

$$\Sigma i_p = 0{,}3133 \bullet 93 = 29th. \quad (15)$$

17. Summarilyand the number of pulses:

$$\Sigma_{i} = \Sigma i_{with} + \Sigma ir = 11 + 29 = 40th.$$

(16)EID-identification resign itself to looseningt from taking intoaccount the fizychnyh characteristics piznyh cultures through the mass of a thousand grains (hereinafter - MTZ) is given in Table. 1. Pidrahunok dopustimulated modrelatively toMayt Sectionabout weight fromand threshing instrument based on yield are shown in Table. 2.

1. Weightsand thousands of grains (MTZ) different cultures.

In theEid Culture	MTFrom	min-max	FromEren kg (average)	FromEren per gram (average)
Wheat	47	40-55	21.280	21.3
Barley	47	40 - 55	21.281	21.3
Rye	35	30 - 40	28.570	28.8
Oat	37	30 - 45	27.027	27.03
PIP	25	23 - 27	40,000	40
Kukurudza	325	200 - 450	3.080	3.1
Peas	325	300 - 700	2,000	2
PAPS	4.5	3.5 - 5.5	222.220	222.2
Sunflower	45	30 - 60	22.220	22.2

2. Pidrahunok loss and weight Sectionnumber of grains per threshing instrument based on productivity.

Bidnosni loss moDr. yield, %	Yield t / ha						
	3.5	4.0	4.5	5.0	5.5	6.0	
	In thespending in						
0.5	17.5	20	22.5	25	27.5	30	60
1.0	35.0	40	45	50	55	90	120
1.5	52.0	60	67.5	75	82.5	150	180
2.0	70.0	80	90	100	110		
2.5	87.5	100	112.5	125	137.5		
3.0	105	120	135	150	165		

ANDmovirna number of pulses from the falling grains sensors for shakers and reshitnym state depends on the yield given in the Table. 3.

3. ANDmovirna number of pulses from the falling grains sensors for shakers and reshitnym condition.

Yield, t / ha	1% extra. tospending, kg / ha	1% 1 m2 gg. (1hr = 25 grains)	Ss straw area, m2 0.03948	Area for SP sieve, m2 0,063	The total the number of pulses and Σi
2.0	20	50	6.12	15.6	21.7
2.5	25	65.5	7.7	19.7	27.4
3.0	30	75	9.2	23.4	32.6
3.5	35	87.5	10.7	27.1	37.8
4.0	40	100	12.2	30.4	42.6
4.5	45	112.5	13.8	34.1	47.9
5.0	50	125	15.3	37.8	53.1
5.5	55	137.5	16.8	41.2	58.0
6.0	60	1560	18.3	44.6	63.9
6.5	65	162.5	19.8	48.0	67.8
7.0	70	175	21.3	51.4	74.7
7.5	75	187.5	22.8	54.8	77.6
8.0	80	200	24.5	58.2	82.7
9.0	90	225	27.5	64.0	91.5
9.5	95	237.5	29.0	67.4	96.4
10	100	250	30.5	70.8	101.3

Toslidzhennya device Putt -TS with the prefix e PRV control and registration of crop losses to determine that the device begins to record from 1-2 pulses (beans) lower value "on" to 25 pulses (beans) upper "to" transition to the red icon . If guide the choice of lower value icon is relative.

Lossesand the square of the collected amount to 0.0384% of the field, and if the upper guide "to" go red, the losses amount to 1.5% of the crop hlibostoyu. If you follow the advice on the choice of manual labor rate in zahintsi combine the light icon is in the middle (12-13 pulses), the mechanical threshing instrument losses amount to an average of 15 potential and actual harvested crop.

In theidnosne value of the number of pulses that are perceived by the sensors and shakers reshitnym as:

$$\Delta_i = \Sigma i_p / \Sigma is = 29/11 = 2.64.$$

According to the calculations it follows that as sensors for reshitnym may be perceived as 2.64 times the pulses from the falling grains

orm sensors for shakers. Practical research shows that the number of pulses per reshitnym as to the amount of pulse sensors straw on the average value is a ratio of 0.8: 1.0. Increasing the number of pulses per reshitnym as more than 0.8 may be due to the influence of Agrobiological state through weediness, high humidity hlibostoyu. Otherwise, increasing the loss is the result of an incorrect adjustment of the technological gap on the top sieve and thus regulate the flow of grain from straw on sieves. Analytical determination through the area of sensors and shakers reshitnym condition allows us to estimate the loss not only in respect of the use of the concept of "level" of losses and possible numerical values of pulses from the falling grains.

Conclusion. Will offertion method for estimating the likely loss of hurrayaccount the areas of sensors and shakers reshitnomu condition.

References

1. *Kombaynы* zernouborochnые samohodnые TOH1500B and DON-1200B. Tehnicheskoe Description and Instructions for ekspluatatsyy. Aktsyonernoe Society "Rostselmash". - Rostov-on-Don, 2004. - 412 p.
2. *Fromanhyev AA* Increase proyzvodytelnosty zernouorochnыh combine / *And.A. Zanhyev* // Technique in the agricultural sector. - 2003. - №5. - P. 13-17.
3. *Struzhkyn NI* Increase effektyvnosty Using zernouborochnыh combine / *NI Struzhkyn* // Technique in the agricultural sector. - 2008. - №2. - C. 39-41.
4. *Shapovalov VI* Oh prhnozah development zernouborochnoy technics / *In the.Y. Shapovalov* // Technique in the agricultural sector. - 2005. - №4. - P. 28-30.
5. *Erohyn GN* Vlyyanye of technological rehulyrovok to the loss of grain for molotarkoy Harvester Don-1500 / *D.N. Erohyn, AS Reshetov* // MЭSH. - 2003. - №6. - P. 18-19.
6. *Erohyn GN* Vlyyanye of automatic control system for effektyvnost Using Harvester Don-1500 / *D.N. Erohyn, VV Kopovskyy* // Technique in agricultural sector. - 2009. - №4. - P. 29-30.

Andnalytychesky opredelenы veroyatnые mechanical rubbed value in dependence on the Square from s and shakers for reshitnym state.

Zehrnouborochnые kombaynы, the Square, pezometrycheskye sensors, probability, chyslovые value, comments.

Analytically determined the likely values of mechanical losses depending on their areas for the straw walker and restim state.

Combine harvesters, area, piezometric sensors, probability, numerical values, assessment.