Predstavlenы Results of research on Reducing Dynamic nahruzok in the drive beater zernouborochnoho combine putem Choice optimal mode of motion on oboyh stages Start. Opredelenы most blahopryyatnыe Laws Changed dvyzhuscheho moment and vnutrenneho momentum in elastic эlemente drive, obespechyvayuschyh absence oscillations in the drive mechanism element beater in the process start.

Broughtd, molotylnыy drum dvyzhuschyy moment inner point optimization.

The results of research on reduction of dynamic loads in threshing drum drive of combine harvester by selecting optimal starting mode in both period of start-up are conducted. The most favorable laws of variation motive moment and internal moment in resilient member of driver, which are ensure lack of oscillation in drive member of mechanism in threshing drum during start-up.

Drive, threshing drum, motive moment, internal moment, optimization.

RESEXPERIMENTAL RESEARCH ULTATY Cleaners heap root vegetables

VV Teslyuk, Doctor of Agricultural Sciences

The article presents experimental results obtained by the number of roots to vidmynalnyh passed through the gap between the roller screw and working branch supplying conveyor cleaner combined heap roots.

Eye heap of roots, root, screw, vidmynalni rollers, diameter, angular velocity.

Resolutionska problem. Dll provide the intensification of the process of separation of free soil and plant impurities from fodder beet root crop and remove residual tops of heads of roots by vidmynannya during mechanical harvesting their inventions at

bulo developed structurally Layouts cleaner combined heap of roots dug [1, 2].

The peculiarity of the process of the proposed purifier heap of roots (Fig. 1) is that both

the process of separation of free soil and free from impurities plant roots, which is due to partial screening of small impurities through the gaps between the rods 3 feeding conveyor 2 and subsequent transport not aboutseeded impurities through H_1 Which is formed between the the gap surface

the workingth branch conveyor screw 3 and 4 and through the gap, which is formed between the surface of the conveyor 3 branches and lower vidmynalnym Rollers 6 is technological operation to remove residues tops of heads of roots by vidmynannya 6 rollers that rotate in opposite directions [3, 4]. Increased technological efficiency of root crop harvesters, which is to further reduce contamination heap Root impurities are relevant national economic problem. The degree of separation residues heads on tops of root crops depends primarily on the amount of roots, which will be held under the screw through the gap H_1 and act as a work area vidmynalnyh rollers.
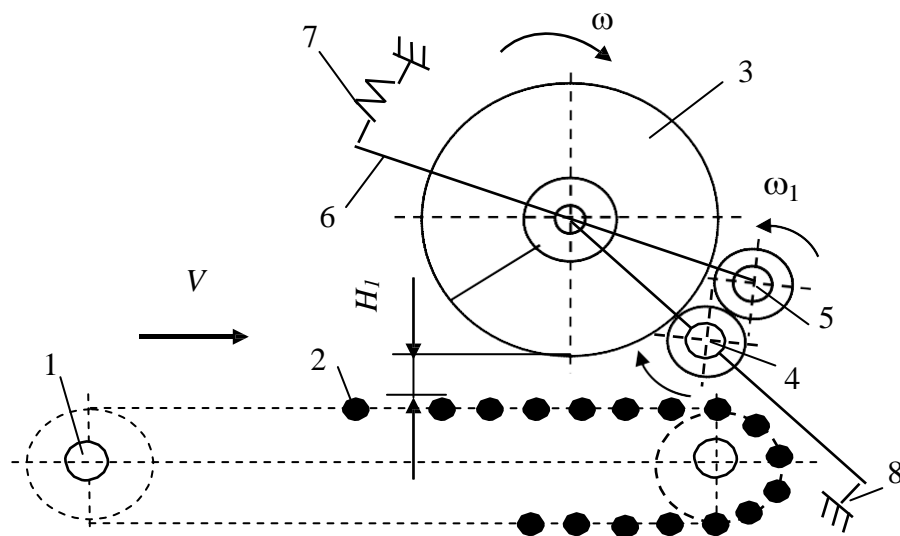
Ric. 1. Construction scheme combined cleaner heap root side view
1 - feeding conveyor; 2 - rod; 3 - screw; 4, 5 - respectively, the upper and lower rollers vidmynalni; 6 - the lever; 7 - spring; 8 - emphasis.

Andstitutionalism results of experimental studies the number of roots passed to vidmynalnyh rollers will optimize rational structural and kinematic

couplemeters of working cleaner, for which the number of values passed to the Root vidmynalnyh rollers as it can while taking into account other indicators of the quality of his work.

AnaLease   FinaInnih   dOSHidzhen.
Aboutled   theoreticalneither   tand eksperymentalni studies [5-8] related tend to establish the nature and laws of contact interaction of roots with working surfaces of the combined cleaner. Analysis of recent publications showed that the number of research questions passed to Root vidmynalnyh rollers during the process of cleaner not covered, ie fundamental research in this area are missing, which made for conducting these pilot studies.

Metand lit.idzhen.   -   aboutpriming   construktyvno-forinematychnyh working parameters of cleaner by analyzing the obtained empirical regularities number of roots passed under screw to vidmynalnyh rollers.

Rezultaty   lit.idzhen.   Effectsness   technological processwork in combination cleaner heap of roots other than separation of free soil and plant impurities significantly depends on the removal of money balances vidmynannya tops of heads fodder beet root crop. The degree of removal of residues directly tops argued

corresponding amount passed Root $K_n^{(i)}$ SectionEid
screw 3

(Ric. 1) through the H_1 to vidmynalnyh rolls 4, 5 combined gap purifier heap.

Dla   abouttransaction   eqsperymentalnyh
tofor Research bulo
made wooden mock samples of root diameter
was d_k = 50; 100; 150; 200 (cm). Pid Chawith
abouttransaction
eksperymentiv was dismantled installation vidmynalni rolls 4, 5 (Fig. 1) was dismantled. Number of mock samples of roots a diameter in the experiment were as follows: diameter 50 and 100 (cm) - 20 pieces with a diameter of 150 and 200 (cm) - 10 pieces, and during the mixed model experiments heap was as follows: 50 cm - 5 pieces ; 100 cm - 7 pieces; 150 cm - 6 pieces; 200 cm - 2 pieces.

PEid mixed conducting experiments quantitative proportionality diameter   koreneploVirgins   modelhi Worochin
EIDprinciples   Basedand   from
urozhaynosti and size-mass characteristics of fodder beet. Moving mock samples of roots to screw 3
fromdiysnyuvalosya transporter 1, speed v even asFirst was 1,2-1,5-1,8 (m / s). The angular velocity screw 15.0 zminyuvaly from 7.0 (Councils/ S), step screw T was 0.5 and 0.7 (m). The value of the radial

byview H_1 between wnekom tand the workingth Gilcoth hearthMCUs Maynsportera set to 0, 0.05; 0.1 (m).

In the first phase of the study parameter optimization, ie forilkosti elapsedAuthority is often $K_n^{(i)}$ to moSIAstional roller Koreneplodiv conDo vidsiyuyuchy experiments to identify the factors that Essentialt does not affect the value $K_n^{(i)}$, While it was found uof the diameter of the screw Dpracticalbut does not introduce significant changes in the number of willThey Root $K_n^{(i)}$ When the height of the coil screw $h$toilsha by diameter model standards of root $d_k$le $D- d \geq d_k$Where d - pipe diameter auger drum. In addition, it was found that Collectionilshennyam number of events auger $K_n^{(i)}$ pro rataabout $z$from-identification frommenshuyetsya. Therefore, further experiments were carried out at D= 0.6 m; h= 0.2 m and z= 1.

Dla EID-identification paclyvu aboutAIN factors Categoriesand forilkist willthem Koreneplodiv $K_n^{(i)}$ to modmynalnyh valtsiv conDo onvnofaktornyy experiment type PFE 24 is 4 factorial experiment on two levels varying factors, while taking input variables: velocity ondative conveyor VThat coded index x_1; step screw TThat coded index x_2;radialnyy clearance between the screw and the workingth Gilcoth ondative H_1, Wormsand conveyor koduvaDo index x_3; angular velocity screw $\square\square$, which$x_4$coded index

Charactersjunction factors and their levels of variation are shown in Table. 1.

1. The characteristicsand factors and their levels of variation.

Kodovane designation factor	Name factor	Eqand factor
x_1	The velocity of the conveyor V, M / s	1,2-1.8
x_2	Krock auger TCity	05-0.7
x_3	FromAzor between screw and H_1City conveyor	0-0,1
x_4	Kutova speed screw ω, Rad / s	70-17.0

Funktsiyu   modhukin   (A couplemeter optimizatsiyi)
                    That is, about   forilkist
willThey Root $K_n^{(i)}$ to vidmynalnyh rollers identified
eksperymentalnym   wlyahom, fromnahodyly   in   youSee
                    maContent full square polynomial model.
        Odds   pivnyannya   rehreCilly, Aisne forvadratnoho
                    onlinoma by rezultatamy   finishingand
                    experimentlnyh Danax   toIZprinciples fromand
the package of applied computer program. Variability

Funktsiyi evaluated standard deviation, coefficient of determination and numerical correlation. The adequacy of the model and the significance of the regression coefficients established by *F*-criterionFisher and iyem *t*-criterioniyem St'yudenta. The results of the analysis aboutkept the final empirical regression equation describing

bydependence of the number passed Root K_n to vidmynalnyh rolls on four factors to change some values concretized diameter of roots:

$$K_n^{(50)} = -57{,}6 + 63{,}5V + 1{,}1H_1 + 10{,}2\omega - 11{,}6V^2 - 0{,}3VH_1 - 0{,}4\omega^2; \qquad (1)$$

$$K_n^{(100)} = -190{,}8 + 174{,}2V + 0{,}9H_1 + 15{,}8\omega - 56{,}3V^2 + V\omega - 0{,}7\omega^2; \qquad (2)$$

$$K_n^{(150)} = -91{,}6 + 100{,}3V + 0{,}5H_1 + 6{,}8\omega - 30{,}4V^2 - 0{,}3\omega^2; \qquad (3)$$

$$K_n^{(200)} = -60{,}4 + 42V + 0{,}1H_1 + 7{,}4\omega - 12{,}2V^2 - 0{,}3\omega^2. \qquad (4)$$

Andstitutionalism regression equations (1-4) shows that step screw T not

Sectionof passage to meanstion forilkosti n

Passedx Koreneplodiv $K^{(i)}$ to

vidmynalnyh rollers for lack of factor TIe the coefficients of regression equations at factor TSectionislya check their significance for *t*-criterioniyem St'yudenta were not significant and ignored them.

According to the regression equation (1-4) built surface and dimensional response surface response section (Fig. 2) Depending changes K

forilkosti passed Root $K_n^{(i)}$ to vidmynalnyh rolls on

wvydkosti motion conveyor V tand angular velocity □ scriw

Factors of variation within 1.2 $\leq V \leq$ 18 (m / s)

$7 \leq \omega \leq$ 15 (rad / s) and the value of the radial $H_1 = 0.05$ m.

clearance

Andstitutionalism graphical dependencies are shown in Fig. 2 shows that mAqsationsfrom-identification forilkist

elapsedAuthority is often koreneplodiv

$K_n^{(i)} = max$ to moSIAstional rollers withandconstituted UAH: dll

koreneploVirgins

diameter d_k = 50 mm - 84%; to d_k = 100 mm - 52%; to d_k = 150 mm - 30%; d_k = 200 mm - 21%.

Justification options combined cleaner should be done with the maximum number of conditions passed

Koreneplodiv $K_n^{(i)}$ konkretyzovanoho diaETRand Sectionid wnekom dabout

vidmynalnyh rolls because of the criterion value $K_n^{(i)}$ straight about

pro ratadepends on the degree of separation residues tops of heads roots, ie the degree of reduction of total impurities heap roots.

K

Change $n^{(i)}$ bydent on the speed of the conveyor V tand

beatening speed screw ⬚⬚ maye following character:

- Root d_k = 50 mm, for an increase v from 1.2 to 1.8 (m / s)

tand the angular velocity of the screw within $7 \leq \omega \leq 13$ (rad / s) amount

willthem $K_n^{(50)}$ monloDNAs tion frombecomes koreneploVirgi (Ric. 2, a) and

ns

maximum value is achieved v=18 m / s and $\omega \geq$ 10rad / s;

$K_n^{(200)}$, %

The angular velocity of the

Wvydkist motion conveyor, V,

ω , Rad / s

VM / s and

$K_n^{(150)}$, %

The angular velocity of the

Wvydkist motion conveyor, V,

ω , Rad / s

V, M / BS

$K_n^{(100)}$, %

The angular velocity of the

Wvydkist motion conveyor, V,

ω , Rad / s

V, M / St

$K_n^{(50)}$, %

/ s

V, M d

ω , Rad

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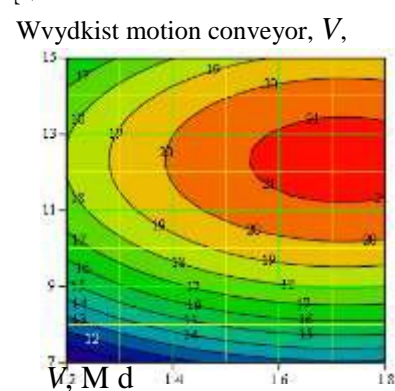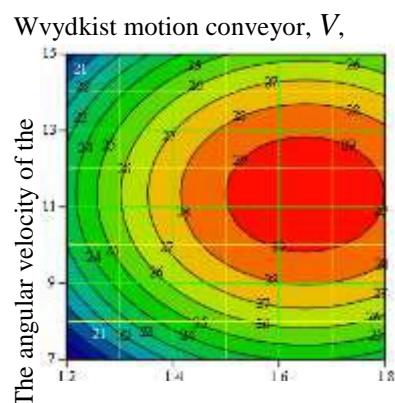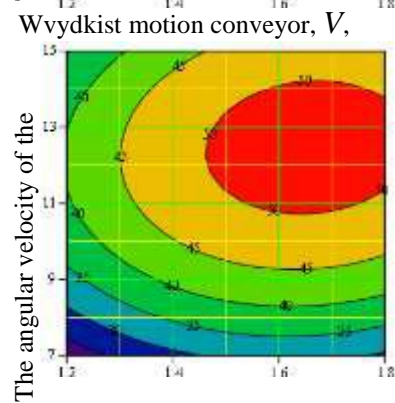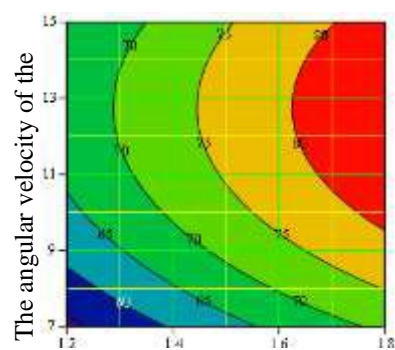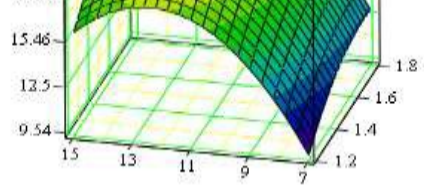
Ric. 2.   Frombutzhnist   forilkosti   elapsedAuthority is
often   koreneplodiv toandd

wvydkosti motion conveyor *v* tand angular velocity screw $\frac{H}{d_k}$ pry
= 0.05 m, a, b, c, d - according to d_k = 0, 05; 0.1; 0.15; 0.2 (m).

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- Root d_k = 100, 150 and 200 (mm): Up to
wvydkosti conveyor movement within 1.2 $\leq V \leq$ 16 (m / s) and
angular
wvydkosti screw within 7 $\leq \omega$ 12 (rad / s) the number of passed
$\leq$
Koreneplodiv $K_n^{(100)}$ $K_n^{(150)}$ $K_n^{(200)}$ to vidmynalnyh rolls monotonously
tion frombecomes (Fig. 2b, c, d), and the maximum value for the
respective concretized fromrequired set diameter
Koreneplodiv tosyahayetsya,
respectively, $V \geq$ 15 m / s and 11 $\leq \omega$ 14rad / s (Fig. 2b); by
boundaries change $\leq$
$V \geq$ 15 m / s and 10 $\leq \omega$ 13rad / s (Fig. 2c); by $V \geq$ 155 m / s
boundaries change $\leq$ and
11 $\leq \omega \leq$ 13rad / s (Fig. 2d) .further velocity increases
Maynsportera V tand angular velocity $\square$ screw the maximum
fromrequired set prizeleads to fromGate $K_n^{(i)}$ -
xarakterin onbehavior
forRoot ilkist passed to vidmynalnyh rollers is significantly reduced.
In the resultand Dhresiynoho
andstitutionalism pivnyan (1-4) Blvd.about
found that the average diameter of the parameter optimization Root
takes the maximum value for the speed of the conveyor V= 1.6 m / s,
step screw T= 0.5 m, radial clearance
H_1= 0.1 m, the angular velocity of the propeller $\square\square = 12{,}0 \text{ rad / s}.$
Conclusion. Stillm ornom, in receivingand pivnyannya
Dhresiyi(1-4)
characterize the change in the number of roots passed under screw to
vidmynalnyh rollers depending on the basic structural and kinematic
parameters of the combined cleaner heap roots and determine their
rational values for which the degree of separation of residues tops of
heads of root crops will take the maximum value.

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In Article pryvedenы poluchennыe Results of research эksperymen- talnыh Quantity proydennыh korneplodov for otzhymalnыm Waltz through the gap Between screw and working vetkoy podayuscheho conveyor kombynyrovannoho cleaner korneplodov heap.

Cleaner heap korneplodov, korneplodы, screw, otzhymalnыe valtsы, diameter, velocity Whatnot treatment.

In paper the got results of experimental researches of amount of passed root crops are driven to extraction rollers through gap between screw and working branch of giving conveyer of combined purifier to lots of root crops.

Purifier to lots of root crops, root crops, screw, extraction rollers, diameter, angulator of appeal.

UDC 531,396, 534.014.4, 534.015.1

DynamicICHNA MODEL OF bunk, suspended on a flexible suspension, while turning taps

VS Loveykin, PhD Y. Chovniuk, Ph.D.
APLymar V., V. Melnichenko, masters

Grounded physical-mechanical model describing possible types of movement bunk, suspended on a flexible suspension, when you turn the tap. To analyze the kinematics and power characteristics of the movement of the method of phase portraits (classical and higher orders). Using the obtained models of cranes for optimum motion control can significantly improve their performance and reliability.

MoDel, movement, cargo, flexible suspension, turn, grapple.