

## Sample of registration

UDC 631.363

EXPERIMENTAL STUDIES  
IMPACT-MIXTURE MIXTURE OF FIXED FEEDS

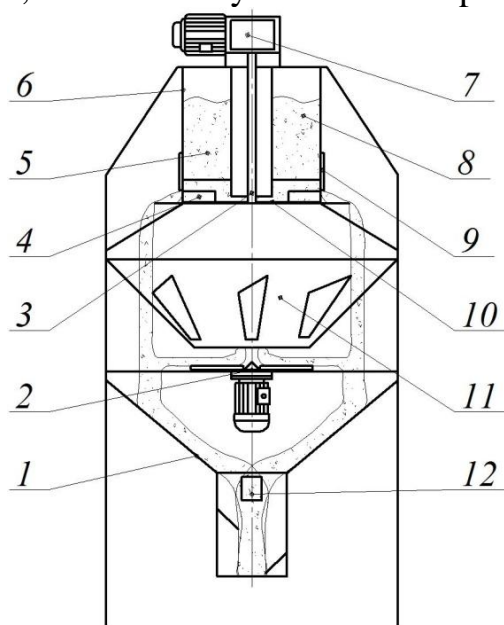
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**Abstract:** A feeder-mixer for loose feeds has been developed, capable of preparing feed mixtures from whole grains and from crushed components directly from the own cereal crops in the holding. Based on the results of experimental studies, the optimum design-regime parameters of the mixer dosing unit were determined.

**Key words:** dosing, mixing, productivity, homogeneity of the mixture.

We made an experimental sample of a feeder-mixer for loose feeds (Figure 1) [1]. To optimize the device, it is necessary to conduct experimental studies.



**Fig. 1 Scheme of a feeder-mixer for loose feeds:**

1 - the second funnel; 2 - spreader; 3 - a power shaft; 4 - scraper; 5 - movable partition; 6 - bunker; 7 - scraper drive motor-reducer; 8 - fixed partition; 9 - cuff; 10 - the disk; 11 - the first funnel; 12 – plates

The program of experimental studies provided for the determination of the dependence of homogeneity of mixing on constructive-regime parameters.

The levels of factor variation were chosen: the productivity  $Q = 0.25, 1.25$  and  $2.25$  kg / s; the proportion of the control component is  $c = 0.1, 0.2$  and  $0.3$ .

Experimental studies were conducted in accordance with generally accepted and private methods [2]. As a control component, barley grains were used, millet was used as a filler.

As an experimental design, an orthogonal central-composition plan of the second order was chosen (table).

Table

**Experimental design matrix**

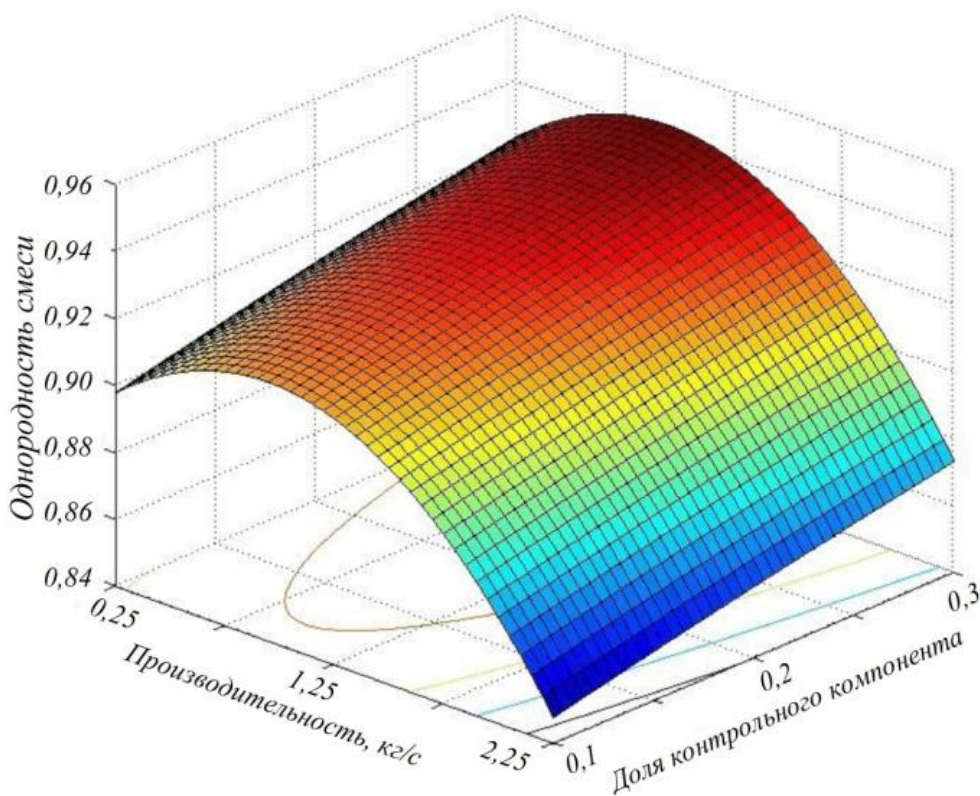
№	Натуральные значения		Кодированные значения						Равно- мерность смеси - вания $v_{см}$
	Производительность $Q, \text{ кг/с}$	Доля контрольного компонента $c$	$x_0$	$x_1$	$x_2$	$x_1x_2$	$x_1' = x_1^2 - \alpha$	$x_2' = x_2^2 - \alpha$	
1	0,25	0,1	1	-1	-1	1	0,333	0,333	$v_{см1}$
2	2,25	0,1	1	1	-1	-1	0,333	0,333	$v_{см2}$
3	0,25	0,3	1	-1	1	-1	0,333	0,333	$v_{см3}$
4	2,25	0,3	1	1	1	1	0,333	0,333	$v_{см4}$
5	0,25	0,2	1	-1	0	0	0,333	-0,667	$v_{см5}$
6	2,25	0,2	1	1	0	0	0,333	-0,667	$v_{см6}$
7	1,25	0,1	1	0	-1	0	-0,667	0,333	$v_{см7}$
8	1,25	0,3	1	0	1	0	-0,667	0,333	$v_{см8}$
9	1,25	0,2	1	0	0	0	-0,667	-0,667	$v_{см9}$

After processing the data and decoding the factors, an expression is obtained that describes the dependence of the homogeneity of mixing on the productivity  $Q$  (kg / s) and the proportion of the control component  $c$  [3]:

(1) where  $Q$  is the productivity, kg / s;

$c$  is the proportion of the control component.

According to the obtained equation, the response surface of the dependence of the homogeneity of mixing on the productivity and the proportion of the control component was constructed (Fig. 2).



**Fig. 2 The homogeneity of mixing kcm from Q and the proportion of the control component with**

Figure 2 shows that the homogeneity of the mixture increases with an increase in productivity from 0.25 to 1 kg / s, a further increase in the latter negatively affects the uniformity of the mixture. With an increase in the proportion of the control component, the homogeneity of the mixture improves.

To obtain a feed mix, corresponding to the zootechnical requirement [4], the rational value of productivity should be within 0.4 ... 1.5 kg / s.

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