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WORLD SCIENCE: PROBLEMS, PROSPECTS AND INNOVATIONS



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**FEATURES OF QUALITATIVE INDICATORS OF MILLET SEEDS
IN SORTING IT BY SPECIFIC GRAVITY**

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Abstract. Studies have shown that the growth, development and formation of the productivity of millet rod to some extent depends on the methods of seed stimulation and varietal characteristics. Sorting seeds by specific weight should be carried out in two stages. For the first main sorting, the longitudinal angle of inclination of the working surface of the pneumatic table is 2.00, transverse 0.50, for re-sorting - longitudinal 2.50, transverse 0.50. During both stages of sorting, the air velocity must be such as to ensure uniform coverage of the working surface of the pneumatic table with seeds. The oscillation frequency of the working surface of the pneumatic table is 440 oscillations / minute.

Key words: rod millet, hybrids, seeds, sorting, specific weight.

Introduction. An effective way to increase the intensity of seed germination is sorting by specific weight, which ensures the removal of not only light seeds, but also not fully filled, which in the laboratory can germinate, and in the field does not germinate [1-7].

The quality of seed sorting by specific weight on the pneumatic table depends on its mode of operation, namely: longitudinal and transverse angles of the working surface, air speed, frequency of oscillation of the working surface and the number of seeds fed for sorting [8-12]. Given this, studies were conducted to determine the optimal mode of operation of the pneumatic table, which was the purpose of the work.

The optimal angles of inclination of the working surface of the pneumatic table are established - longitudinal 2.50, transverse 0.50 and air velocity, which provide uniform coverage of its working surface with seeds, and this affects the quality of its sorting. Sorting seeds by such parameters when changing the frequency of oscillations of the working surface of the pneumatic sorting table from 425 to 440 oscillations / minute provided a significant increase in the intensity of its germination compared to the control - without sorting.

The quality of millet seeds depending on the mode sorting by specific weight

Option - sorting mode	Position selection on a pneumatic table	Weight 1000 pcs., g	Germination energy, %	Seed germination, %
Control		0,14	50	50
Tilt angle L = 2,5	1	0,16	83	82
Tilt angle D = 0,5	2	0,14	87	88
Air 1,7	3	0,16	81	79
Frequency of oscillations 425 k/min.	4	0,16	72	73
waste	5	0,15	59	60
Tilt angle L = 2,5	1	0,16	89	89
Tilt angle D = 0,5	2	0,14	81	81
Air 1,7	3	0,14	81	82
Frequency of oscillations 435 k/min.	4	0,14	70	71
waste	5	0,15	58	58

Tilt angle L = 2,5	1	0,16	94	94
Tilt angle D = 0,5	2	0,15	86	86
Air 1,7	3	0,15	80	82
Frequency of oscillations 440 k/min.	4	0,16	61	62
waste	5	0,12	28	28
SSD ₀₅ general				1,8
SSD 05 sorting factor				1,0
SSD 05 position factor				1,3

Thus, if in the control the germination of seeds was 50%, then in the version with a frequency of 425 oscillations / minute, even in the seed fraction, which is sent for re-sorting (position 4) - it was 73%, and the prepared seeds for sowing (position 1- 3) - 79 - 88%. Similar results was obtained for other sorting options.

The highest germination energy and seed germination were obtained from all sampling positions for sorting it with a frequency of oscillations of the working surface of 440 oscillations / minute. Under this sorting regime, seeds fell into the waste, the germination energy and germination of which was the lowest and amounted to about 28%. Under other sorting regimes, seeds with a germination of 70–73% fell into the waste, which indicates poor sorting.

Weight 1000 pcs. in all modes of sorting was higher than in the control, but its natural increase or decrease was not. A direct close correlation was established between the weight of 1000 seeds and germination. The correlation coefficient is 0.57.

When determining the factors that influenced the intensity of seed germination of millet rods, it was founding that the influence of the factor "seed sorting" was 17%. The position of its selection on the pneumatic table had the greatest influence on the quality of seeds - 69%. For all sorting modes, the yield of seeds prepared for sowing ranged from 57.5 (second mode) to 61.5% (first mode). 18.6–20.7% of seeds were sent for re-sorting, and 19.9–21.8% were sent for re-sorting. There was no significant difference in these indicators depending on the sorting modes.

With good quality seeds (raw materials), which were sent for sorting in the intermediate fraction and waste got part of the seeds with good germination, which

can be isolated during re-sorting. However, it is necessary to change the sorting mode of the pneumatic sorting table.

The research established the optimal angles of inclination of the working surface of the pneumatic table for the first main sorting - longitudinal 2.00, transverse 0.50, for re-sorting - longitudinal 2.50, transverse 0.50 and air velocity, which provides uniform coverage of its working surface with seeds, and this affects the quality of its sorting. Sorting the seeds according to such parameters at the oscillation frequency of the working surface of the pneumatic table 440 oscillations / minute provided a significant increase in germination energy and seed germination compared to the control (without sorting).

Thus, if the control of seed germination energy was only 77% and germination - 78%, then for the main sorting of prepared seeds (positions 1-3), these figures were respectively - 81-94% and 83-94%. Sorting of seeds that got into the intermediate fraction and leaving with a slight change in the sorting regime provided the prepared seeds with germination energy of 86-95% and germination of 88-96%

Sorting of seeds, which got into the intermediate fraction and leaving with a slight change in the mode of operation of the pneumatic table provided not only an increase in germination energy and seed germination, but also to obtain additional prepared seeds for sowing.

Thus, if during the main sorting the yield of prepared seeds for sowing was 53.9%, then for re-sorting of seeds, which fell into the intermediate fraction and waste, an additional 24.7% of quality seeds were obtained, which increased the yield of seeds prepared for sowing to 78 , 6%.

That is, when sorting the seeds of switch grass by specific weight, it is advisable to re-sort the seeds after the main, which fell into the intermediate fraction and waste, which will provide an additional amount of prepared quality seeds.

Therefore, when sorting seeds by specific weight, the optimal mode of operation of the pneumatic table for the first main sorting angle of the working surface of the pneumatic table is longitudinal 2.00, transverse 0.50, for re-sorting - longitudinal 2.50, transverse 0.50 and air speed, which provides uniform coverage of

its working surface with seeds. The oscillation frequency of the working surface of the pneumatic table 440 oscillations / minute, which provides an increase in the intensity of germination compared to the control.

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