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DETERMINATION OF GERMINATION OF RYE SEEDS UNDER LABORATORY CONDITIONS

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Abstract:

In this article, in the laboratory of "Plant Physiology and Biochemistry" of the Southern Research Institute of Agriculture, the laboratory germination of seeds, as well as the germination energy, the number and length of seeds of winter rye varieties, were determined and analyzed.

Keywords: Winter rye, variety, seed germination,seed germination energy,number of roots,root length,masses of 1000 seeds,sowing time, seeding rate, fertilizer rate, «Ns Savo», «Вахшская 116».

Autumn rye is the second bread crop after wheat in several countries. Rye bread is high in calories, nutritious, tasty, full of valuable, irreplaceable amino acids, proteins, carbohydrates, mineral elements, unsaturated fatty acids, biologically active substances, as well as A, C, E. andThere are B vitamins.Despite the fact that the amount of protein in rye grain is somewhat less than that of wheat, it is more complete from a biological point of view in terms of amino acid content in protein [1; 2].

One of the main factors in obtaining a high and quality harvest from zhadvar is the use of quality seeds for planting and harvesting the seeds in the field.

The higher the seed growth energy, laboratory germination, and growth strength, the higher the seed germination in field conditions. The laboratory fertility of autumn rye seeds is classified into 3 classes. in this case, the laboratory fertility of I, II and III - class seeds should be 95, 92, 90%. Only seeds of class I and II are recommended for sowing [4].

In our research, laboratory experiments were conducted in the "Plant Physiology and Biochemistry" laboratory of SRIA in this, autumn rye seeds (2.0; 2.2; 2.5; 2.8 mm) were sorted and studied in laboratory conditions by calculating the mass of 1000 grains, germination energy and fertility (100 plants).

In the laboratory of plant physiology and biochemistry, the germination of rye grain was determined on the basis of the international standard GOST 12038-84, in the sorting machine (Sortimat) of grain size (2.0; 2.2; 2.5; 2.8 mm), the mass of 1000 grains was measured on an electronic scale (GOST 29329-92) and determination of grain laboratory fertilityand in the thermostat according to GOST 28498-90 at 20°C, the energy of seed germination was determined in 3 days, and the germination of seeds in 7 days.

in the laboratory of plant physiology and biochemistry, seeds of autumn rye varieties are sieved 2.0; 2.2; 2.5; When 1,000 seeds were sorted into 2.8 mm seeds, the mass of 1000 seeds was determined 23.6 respectively; 28.1; 35.2; 39.6 g, and the mass of 1000 seeds of the same size of the variety "Vakhshskaya 116" is proportionally 23.0; 27.8; 33.8; was 36.4 g (Table 1).

Table 1
Fertilization and seed quality indicators of rye cultivars in laboratory conditions, (2020).

Sieve sizes, (mm)	Mass of 1000 grains, (g)	Germination energy, (%)	Laboratory fertility, (%)	Calleoptile length, (cm)	Number of roots, (units)	Root length, (cm)
«Ns Savo»						
2,0	23,6	90	94	4,6	4,6	9,5
2,2	28,1	92	95	4,7	4,8	9,9
2,5	35,2	93	96	4,9	5,2	10,4
2,8	39,6	96	98	5,1	5,6	10,8
"Vakhshskaya 116"						
2,0	23,0	88	92	4,2	4,4	9,4
2,2	27,8	90	93	4,6	4,6	9,6
2,5	33,8	92	95	4,8	4,9	9,8

2,8	36,4	93	96	5,0	5,0	10,0

In the conducted experiments, the germination energy of the seeds of autumn rye varieties was determined 3 days after sowing in laboratory conditions. In this case, it was found that the energy of germination increased proportionally to the size of the seeds (2.0; 2.2; 2.5; 2.8 mm). among them, the germination energy of the 2.8 mm seeds of the autumn rye variety "Ns Savo" was the highest 96%, while the relatively small 2.0; Germination energy of 2.2 and 2.5 mm seeds is 90; 6 compared to 2.8 mm seeds, accounting for 92 and 93%; 4 and 3% lesswas found to be.when these comparisons were made in another variety of autumn rye "Vakhshskaya 116", the above laws were repeated, in which the energy of germination was 93% in 2.8 mm seeds, 2.0; Relative germination energy in seeds 2.2 and 2.5 mm in size is 5; 3 andIt was noted that it was 1% more.

In laboratory experiments, 7 days after sowing seeds in a thermostat, the germination of seeds in laboratory conditions was determined. in this case, the laboratory fertility of the seeds of the variety "Ns Savo" of autumn rye was the highest 98% in the size of the seeds of 2.8 mm, and 2.0 was the low fertility compared to this indicator; 4 compared to 2.2 and 2.5 mm seeds; 3 and 2% higher. also, if the laboratory germination of "Vakhshskaya 116" variety of autumn rye was 96% at the size of seeds of 2.8 mm, then it is 2.0; 4 compared to 2.2 and 2.5 mm seeds; 3 and 1% higher. It was found in the experiment that the lowest indicators of seed germination energy and laboratory germination among autumn rye varieties were 88 and 92% in 2.0 mm seeds of Vakhshskaya 116 variety.

According to the results of experiments conducted in laboratory conditions, the number of roots, caleoptile and root length were studied in 100 examples of autumn rye plants. accordingly, 2.0 of the "Ns Savo" variety; 2.2; 2.5; In seeds measuring 2.8 mm, the length of the caleoptile is 4.6; 4.7; 4.9; If it was 5.1 cm, the length of the caleoptile in seeds of the same size of "Vakhshskaya 116" variety is proportionally 4.2; 4.6; 4.8; It was noted that it was 5.0 cm.

In experiments carried out in the laboratory, the number and length of roots were taken into account in the seeds of rye varieties germinated in a thermostat. in this case, the highest results in the autumn rye variety "Ns Savo" were 5.2 and 5.6 roots in 2.5 and 2.8 mm seeds, and the root length was 10.4 and 10.8 cm. the low indicator was 4.6 roots in 2.0 mm seeds and 9.5 cm in length. also, in the experiment, it was found that the number of roots was 4.9 and 5.0, and the length of the roots was 9.8 and 10.0 cm in seeds of 2.5 and 2.8 mm size of autumn rye variety "Vakhshskaya 116", the lowest indicator and the number of roots in 2.0 mm seeds is 4.4, and the root length is 9.4 cmwas determined.according to the results of the analysis, the number and length of roots in seeds of all sizes of autumn rye variety "Ns Savo" is 0.2 compared to the variety "Vakhshskaya 116"; 0.2; 0.3; 0.6 pieces and 0.1; 0.3; 0.6; It turned out to be 0.8 cm long.

CONCLUSION, SUGGESTIONS AND RECOMMENDATIONS. to conclude from the experiments, rye variety "Ns Savo" is 2.2; 2.5; It was determined experimentally that 2.8 mm seeds are classified as class I (95, 96, 98%, respectively) and 2.0 mm are class II (94%)According to the experiment, the germination of 2.5 and 2.8 mm seeds of the Vakhshskaya 116 variety in laboratory conditions (95 and 96 %) belong to the I class, and the 2.0 and 2.2 mm seeds (92 and 93 %) belong to the II class. was determined.

Autumn rye "Ns Savo" and "Vakhshskaya 116" varieties (2.0; 2.2; 2.5; 2.8 mm) are not recommended to be planted for seeds. Very small (2.0 mm) seeds are not recommended for sowing. , relatively large seeds (2.2, 2.5, 2.8 mm) are intended to be planted as seedsresults.

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