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ROLE OF HEAT TREATMENT OF SEEDЫ OF FIBER FLAX IN THE INCREASE OF ITS FIRMNESS TO FUSARIOSIS

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The results of study of influence of thermal selection of seeds of flax on staggered of plants by fusariosis are generalized. It is well-proven that heat treatment of seeds of flax negatively influences on a laboratory and field germination, but considerably promotes the degree of survival due to a selection of potential viable plants. This conformity to law must be taken into account in the fiber flax breeding on immunity to illnesses.

The problem of fusariousis of fiber flax is considered one of the most important through special harmfulness of illness that is expressed not only in the quantitative losses of harvest but also in the considerable worsening of quality of products.

In home practice works of research of heat treatment of seed of flax on the increase of firmness to illnesses are known [1].

Quality of seed within the limits of certain variety is characterized by different quality and because of that by the different enough inherited ability [2].

A thermal selection of seed of separate variety at its immersion in hot water can be weak (seated apart to 30% of weak viable seed), middle (40-50) and hard (more than 50%). Seed that survived a high temperature and did not lose germination is more viable and development of its descendants will pass on a high degree in comparing to theinitial mayerial.

The second stage of selection is braking of the first phase of development of plantlets of seed. The overheated seed in soil on the first vegetation year germinate slowly, seedlings are rarefied and appear on a 3-7 days later. In soil also there is additional differentiation of plantlets: weak under act of thermo factor stronger yield to influence of saprophyte and semiparasitogenic microorganisms what the additional sifting out of the infected plantlets are due to.

The third stage is sifting out the least viable plants in a period after a seedling. Not adjusted to the unfavorable terms of vegetation period of plant quicker perish under act of high and subzero temperatures, staggered by illnesses and other factors of environment. As a result of such multi-stage selection there are the most adjusted plants that have high viability and productivity.

The aim of our researches conducted during 2009-2011 was a study of influence of selection of thermoresistant seed of fiber flax on the increase of firmness to fusariousis. For this purpose for 100 seeds of stable to illness

varieties I 7 and Aojagi, districted Hlinum and Hlobus, and also receptive Svetoch and Tomskiy 16 were placed in gauze sacs and warmed up on water bath at temperatures 50°C during 50 minutes. After warming up determined laboratory germination of seed of these varieties, and also difference between the indexes of likeness of seed to warming up and then. The repeated of experience is fourfold. For control took likeness of seed in the distilled water.

Table *– Influence of heat treatment on laboratory germination of seed of varieties, different by the degree of firmness to fusariosis (middle in 2009-2011).*

Variety	Laboratory germination, %				
	before warming up, %	C_v	after warming up, %	C_v	decline of germination, %
stable					
Aojagi	83,8±1,2	1,83	27,1±0,4	6,23	56,7
I 7	90,1±0,9		29,0±0,3		61,1
middle	86,7±1,1		28,0±0,4		58,7
average stable					
Hlinum	94,5±0,8	3,72	26,3±0,4	9,84	68,2
Hlobus	96,0±1,0		24,9±0,2		71,1
middle	95,3±0,9		25,6±0,3		69,7
receptive					
Tomskiy 16	93,4±0,9	8,21	14,9±0,2	17,4	78,5
Svetoch	93,1±0,8		15,9±0,1		77,2
middle	93,2±0,8		15,4±0,2		77,8

From data of table it is evidently, that laboratory germination of warmed up to 50°C of seed of stable to illness of variety I 7 went down on 61,1% to 29,0±0,3, and receptive Svetoch - on 77,2% to 15,9±0,1%. Difference in germination of seed between varieties was 16,1%. This fact specifies, that stable variety I 7 appeared more thermoresistant in comparing to the receptive variety Svetoch.

In middle for years research of seed of receptive to fusariosis varieties brought down germination after heat treatment on 77,8% from 93,2±0,8 to 15,4±0,2, and stable – on 58,7% from 86,7±1,1 to 28,0±0,4, that specifies on higher thermoresistance of seed of stable varieties.

Influence of warming up on germination of seeds in average stable to fusariosis varieties Hlobus and Hlinum was intermediate between the results of research at stableand receptive varieties.

Average decrease of seeds germination of Hlinum and Hlobus varieties was 69.7%, that is less than in susceptible Tomskiiy16 and Svetoch, but more than in stable varieties I 7 and Aojagi.

The coefficient of variation in seed germination to Fusarium-resistant varieties of flax after heat treatment was 6,23, the average stable – 9,84, and in susceptible – 17,4. So, Fusarium resistant varieties of seeds after the heat treatment had a stable performance compared with germination of medium susceptible and receptive, and allocated by more thermoresistance.

Seeds that withstand the high temperatures and has not lost germination are more viable compared to the initial material. Heat treatment of seeds promotes the death of little viable seed, reducing its field germination, increasing infestation of plants by fusariosis, reducing the number of plants before harvesting, but at the same time increase the degree of survival of plants (the ratio of the harvested plants to germinated), that is more efficient selection of potentially viable plants which accrue in subsequent generations of breeding for desirable properties of flax.

Thus, when the heat treatment is death had viable seeds reduced its field germination, increased prevalence by fusariosis, less preserved plants to harvestingt, but at the same time there is a selection of potentially viable plants that in the following generations will accumulate positive signs of resistance to the pathogen of Fusarium .

This pattern must be considered in the selection of flax on immunity to diseases.

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