Original Article

Current State of Processing of Seed Wheat in the Republic

Khusnirabo B. Ergasheva[1], Shabon J. Yuldasheva[2], Nilufar F. Khuzhakulova[3], Shakhnoza N. Ismatova[4], Zulkhumor Ruziyeva[5]

[1]Associate Professor, Department "Food Technology", Bukhara Engineering-Technological Institute, Bukhara, Uzbekistan.

[2]Bukhara Engineering-Technological Institute, Bukhara, Uzbekistan.

[3]Bukhara Engineering-Technological Institute, Bukhara, Uzbekistan.

[4]Bukhara Engineering-Technological Institute, Bukhara, Uzbekistan.

[5]Bukhara Engineering-Technological Institute, Bukhara, Uzbekistan.

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Abstract

The foundation of obtaining a high yield and quality products from agricultural crops depends on the seed, and therefore the cultivation and processing of seeds, the control of quality indicators of the variety and sowing of the crop are of particular importance for seed production.

After gaining grain independence in the Republic of Uzbekistan, much attention is paid to seed production. Given this, the improvement of seed processing enterprises is one of the urgent tasks, since the cleaned, sorted seed material is considered the key to a good harvest next year.

Based on the results of the analysis of existing technological lines for processing seed wheat grain, on the assumption of the conditions of the Bukhara region, the need to improve the technological scheme for processing seed wheat grain, based on the technological features of localized wheat seeds grown in the conditions of the Bukhara region, has been scientifically substantiated.

Keywords: Seed, Cultivation and Processing of Seeds.

INTRODUCTION

Amongst all activities in agricultural sector of our country aimed at continuous increase of crop yield and sharp increase of production of agricultural products, seed farming is of great importance.

Seed growing is closely associated with the selection. It implements the achievements of selection by introducing new varieties into agricultural production and growing productive seeds in areas under sow. According to most scientists, modern well-organized seed farming allows increasing crop productivity by 20%. This means tens or hundreds of thousands of additional tons of grain and other agricultural products across our country. Therefore, crop yield depends on the level of agricultural methods used, as well as the quality of seeds used for planting and selection of varieties.

In the frame of the agricultural development Program in 2016-2018. More than 41.000 hectares of low-yielding grain areas were reduced across the country. Today, the irrigated grain fields have high productivity, and it is scientifically substantiated that due to the timely and high-quality implementation of agricultural measures it allows obtaining an average yield of 55-60 centners, and 100-110 centners when planting high-reproduction seeds. [1].

Special seeding farms have been established, and the system of production farms and grain products network should be highly efficient. A complex of large inter-farm structures, a seed processing and storage plant, and warehouses are required for the implementation of a special seed production system. In them, the technology of continuous processing of seeds is carried out in a chain-like sequence, no manual labor is required to move the seeds in the work process, they move according to their flow, and high daily and time productivity is ensured. In order to simultaneously processing the seeds of various crops, it is planned to have up to two independent seed cleaning and drying streams at each of the complex points. In this case, it is possible to simultaneously processing two different autumn or spring crops, for example, rye and wheat or barley and oat seeds, and, if necessary, clean and repair aggregates separately. The flow line is completed by measuring and covering the seeds and sealing the mouths of the bags, transferring the seeds to warehouses with the help of mechanisms and storing them in the best warehouses [2-3].

The government of our republic pays great attention to the creation of new varieties suitable for the conditions of each district and region, and allocates the necessary amount of funds for the further development of selection work. The most convenient

way to increase productivity is to introduce the best varieties produced in scientific-experimental institutions into production, to use high-quality seeds for planting them in the breeding of agricultural products. The costs incurred for the creation of new varieties are compensated several times by the additional yield obtained from them. According to the calculated data, on average 1.0-1.5 million UZS is spending for the localized new varieties. If this variety is 2.5 c/ha, it gives an additional harvest, the value of the additional harvest obtained from each 1000 hectares is 25-40 million UZS in one year [1-3].

Table 1. The main branches of the selection and seed growing system and their main tasks

Branches	**Task**	**Executors**
Networks Selection	Creation of new varieties and hybrids of crops, initial reproduction of their seeds.	Breeding experiment and scientific research enterprises.
Seed farming	Breeding of seeds of new varieties at the level of demand while maintaining productivity. Super elite, breeding seeds	Association of scientific research enterprises, various scientific research institutes, rural collective farms and associations of companies that have created a new breed
Variety testing and its introduction.	Comprehensive testing and evaluation of new varieties by the State Variety Testing Commission.	State variety testing commission and its regional branches.
Preparation of varietal seeds	Preparation, storage and sale of fertile seeds in seed farms and preparation organizations.	Grain acceptance networks of the State Fund and the Ministry of Agriculture.

Current breeding, along with properly organized seed farming, is of primary importance in increasing crop productivity and gross output.

With the creation of new varieties that can give a higher yield, it is possible to increase the yield of crops by 2.3-3 times compared to the current average indicator. The intensification of agriculture has put the task of creating varieties of intensive type before selection.

Industrial seed production is carried out in special seed farms. The second stage includes the first and second reproduction crops. Elite seed farms produce the first reproduction. These seeds are delivered to farms. They are planted in breeding plots, and seeds are collected for the second and third reproduction.

One of the main factors of scientific and technical development is the production of high-reproduction seeds of new varieties and hybrids in sufficient quantity, which allows for the implementation of important activities such as variety replacement and variety renewal in a short time. Modern technology of high-quality seed production is being developed for all crops and is being introduced to large areas. That is why special plants for processing, cleaning and storing seeds of most crops are working [4-7].

METHODS

For research, we took wheat grains of “Babur”, “Andijan-4”, “Asr” varieties grown in Bukhara region.

At the same time, the technological scheme of processing of these seed wheat varieties and the processes involved in processing and the effect of these processes on the seed grain were considered. The effect of the equipment parts on the grain, the level of damage after processing, the effect on germination, and the level of purity were studied during the preparation of seed grain (Table 2). At the same time, the level of usefulness of the proposed technological scheme for the prevention of damage levels of seed grains mentioned above was studied [11-12].

The purity of the seed is important for determining its suitability for planting, and therefore the planting rate. The standards for impurities in grain and forage grain are set. The amount of the main seed in the seed material determines the purity of the seed. That is, for analysis, the expression of the weight of the main plant seed contained in the measurement to the ratio of the measurement is understood. Two measurements are taken to check the purity of the seed. The size of the measurement is determined according to the family of the seed. Weigh is divided into main plant seeds and waste. There is no guarantee that seed that has been damaged for any reason would have a good germination rate. Therefore, it is advisable to add the infected seeds of the main plant to the waste. However, it is very laborious to separate infected seeds from the main seed.

All non-genuine seeds of the examined plant are waste: these include those that are separated during sorting and cleaning, and that do not produce good growth.

Seeds with the following defects should be discarded:

1. Small and empty seeds that pass through the sieve of the specified size;

2. Empty (not too swollen, about one-third of the normal seed size), which did not remain in the pod during the analysis;
3. A root or shoot has come out of the seed coat;
4. Rotten;
5. Crushed and jammed;
6. If one-third of the seed is damaged or broken by pests, regardless of the presence or absence of a pod.

Except for the main crop seed in the measurement, all mixtures should be separated for the waste:

1. Regardless of whether weed seeds are damaged or not;
2. Whole or damaged seeds of other cultivated plants;
3. Smut bag, smut lump, various fungi, spores, etc.;
4. Seed pests and worms alive;
5. When it is not possible to determine the parts of different seeds (plant family using available parts);
6. Mud, small stones, wastes of rodents and insects, parts of stems, empty petals, seed pests and dead worms.

There are many wastes strongly affecting the quality of seed material, and it is necessary to dwell on them separately. For example, weed seeds fall to the ground with seed material and cause weeds to multiply. This, in turn, causes a difficult passage of measures to fight against weeds. Controlling weed seeds in seed materials will reduce weed control costs.

In particular, the absence of quarantined (banned) weed seeds in the seed material is strictly controlled.

Therefore, the amount of weed and cultivated plant seeds per 1 kg of seeds is shown in units.

The purity of the seeds must meet the requirements of GOST 651-41. According to the standard, seeds are divided into three types according to their fertility and the amount of waste.

Determining whether the seed is suitable for planting. When determining whether the seed is suitable for planting, its purity and germination are taken into account. Seed suitability for planting is determined by the following formula:

$$X = \frac{A * B}{100}$$

Where: A is seed purity, %;

B is seed volatility in laboratory conditions, %;

X is suitability of seed for planting.

Corrections in determining the actual planting rate are applied to planting wheat and other crops. In order to determine the uniformity of the seed, the seed (grain) is passed through a sieve of a certain size. The less the seed has passed through the holes of the coulter, the higher the uniformity of the seeds.

The moisture content of seeds is very important for their preservation. The moisture content of seeds is determined by determining the moisture content. The moisture content of the seed should not exceed the permissible norm. For example, the moisture content of grain crops should not exceed 14%.

Table 2. Quality indicators of seed grains taken for research

The name of the variety	Mass of 1000 grains, g	Volumetric weight, g\l	Glassiness, %	The level of purity	Volatility	Gluten		Class
						Content	Group	
Bobur	42	790	55	97	91	24	II	3
Andijon-4	41	780	55	98	92	23	II	3
Asr	43	790	55	97	90	24	II	3

The main task is to grow high-quality seed wheat grain from spiked grain crops based on intensive technology in the irrigated lands of the Bukhara region [13].

The main seed grains are delivered from the farms of Romitan, Vobkent, Kogon and Karakol districts of the region. The planting season in the region is usually scheduled from September 15 to October 15. In some periods, planting is extended until November 1.

In recent years, great attention has been paid to the quality of wheat seeds in the Bukhara region. Because high-quality seed grain is the guarantee of a high yield.

In some cases, low-quality wheat grains are also sent for planting, which causes serious difficulties for farmers and farmers [14-15].

RESULTS AND DISCUSSION

We conducted research and analyzed the quality indicators of seed grains prepared in the seed farms of the regional districts.

Table 3. Information about the seed grain allocated to grain fields for the 2018 harvest in the districts of Bukhara region

Districts	Total cultivated grain area	Required seed farming	Including				
			For trade grain by varieties			By varieties for seed grain	
			Total seed demand, t	Including, t		Total seed demand, tn.	Including Bobur elita variety, t.
				Bobur	Asr		
Bukhara	5048.0	1262.0	1095.0	861.0	234.0	167.0	167.0
Vobkent	6772.0	1693.0	1531.2	1280.3	250.8	161.9	161.9
Jondor	5410.0	1352.5	1261.2	764.2	497.0	91.3	91.3
Kogon	4790.0	1197.5	1117.5	1045.0	72.5	80.0	80.0
Karakol	5230.0	1307.5	1257.5	1196.7	60.8	50.0	50.0
Korovulbozor	6635.0	1658.8	1658.8	1269.1	389.7	0	0
Olot	5050.0	1262.5	1187.5	1077.7	109.8	75.0	75.0
Peshku	5050.0	1262.5	1157.5	775.0	382.5	105.0	105.0
Romitan	6230.0	1557.5	1432.5	1432.5	0	125.0	125.0
Shofirkon	6100.0	1525.0	1430.0	1311.7	118.3	95.0	95.0
Gijduvan	4295.0	1073.8	986.3	704.6	281.7	87.5	87.5
Bukhara city	390.0	97.5	97.5	97.5	0	0	0
Total in region:	**61000**	**15250**	**14212.5**	**11815.3**	**2397.2**	**1037.5**	**1037.5**

In the region, mainly "Babur" and "Asr" seed grains were prepared and sent to farms for planting.

The following table lists the enterprises that receive the main seed grains.

Table 4. Enterprises that receive seed grain

Name of district	Places where seed grain is received				
	Romitandon	Vobkentdon	Kogondon	Korakoldon	Buxorodon
Bukhara	507.0	0	0	0	154.5
Vobkent	0	1346.0	0	0	161.9
Jondor	812.5	0	0	0	91.3
Kogon	0	0	788.7	0	80.0
Karakol	0	0	0	1007.5	50.0
Korovulbozor	0	0	1658.8	0	0
Olot	0	0	0	1162.5	75.0
Peshku	1062.5	0	0	0	105.0
Romitan	1432.5	0	0	0	100.0
Shofirkon	0	1325.0	0	0	95.0
Gijduvan	0	986.3	0	0	87.5
Bukhara city	97.5	0	0	0	0
Total in region:	**3912.0**	**3657.3**	**2447.5**	**2170.0**	**1000.0**

The quality indicators of seed wheat grains prepared from the 2018 harvest are presented in the table below.

Table 5. Quality indicators of seed wheat grain prepared in the harvest of 2018

Districts producing seed wheat	Harvest year	Moisture, %	Pollution, %	Grain mixture, % Bulk weight, g/l Germination, %	Bulk weight, g/l Germination, %	Bulk weight, g/l Germination, %
Vobkent district	2004	10,2 / 8,0 – 12,5	3,1 / 2,4 – 3,8	5,9 / 4,6 – 7,2	772 / 763 – 782	92 / 86 – 98
Shafirkon district	2004	10,6 / 8,2 – 13,1	2,8 / 2,1 – 3,6	5,9 / 4,3 – 7,6	773 / 764 – 783	91 / 87 – 96
Gijduvan district	2004	10,8 / 8,1 – 13,6	2,9 / 2,0 – 3,9	5,7 / 4,5 – 6,9	774 / 764 – 785	91 / 85 – 98
Kogon district	2004	9,2 / 8,3 – 10,1	3,1 / 2,5 – 3,7	5,6 / 4,2 – 7,0	773 / 762 – 784	92 / 88 – 97

CONCLUSION

From Table it can be seen that the average moisture content of grain is from 9.2% to 10.8%. The main reason for this distribution of moisture is that the climate is dry during the harvest season and the air temperature is 35-400 °C. Pollutant impurities in the purity of seed wheat grains grown in the region range from 5.6% to 5.9%. In Shafirkon and Vobkent districts, grain mixes are 7.6%; 7.2 was in the range of %. One of the reasons for the increase in cereal mixtures is the abundance of unripe grains in the fields planted with seed wheat. The volumetric weight of the grown wheat grain meets the standard requirements.

One of the main quality indicators of seed wheat grain is grain germination and growth energy. In the region, the germination of seed grain by district was on average 85-92%. One of the main reasons for this is the violation of agrar work laws in the fields where seeds are sown. In every farm, preparations are made in advance for the quality of seed wheat. For this purpose, the best plots for planting seeds are selected. These plots should not be mixed with other crops and weeds, and the highest agrotechnical measures should be used to ensure high yield.

Undamaged seeds had 97% growth energy and 93% germination, with less green mass. The growth energy of the damaged seeds was 93%, the germination rate was 77%, and the green mass was 5.8 g.

In seeds with damaged fruit shell, growth energy was 90%, germination was 65%, green mass was 1.5 g.

The obtained results indicate that any damage has a negative effect on the seed properties of the grain. It is not uncommon for fertility in the field not to exceed 30%. Damaged husks cause the grain.

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