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# Results On Primary Seeding And New Varieties Of Cereal Crops Intended For Cultivation In Arrigous Lands

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**Annotation:** In the article, 1,000 of each variety were selected for the first year to study the generations in a trial nursery in order to organize the primary seeding of the new varieties of grain crops intended for planting in dry lands, including barley "Adir", durum wheat "Yakut-2014", and soft wheat "Istiqlol-6" on a scientific basis. As a result of researching the spikes characteristic of the variety, 617 generations of barley "Adir", 500 of durum wheat "Yakut-2014" and 500 of soft wheat "Istiqlol-6" were selected.

In the second year, 500 offspring of each variety were planted separately on plots of 5 m2 in the nursery of the second year, and as a result of the primary seeding, 102 kg of "Adir" barley, 240 kg of hard wheat "Yakut-2014", 240 kg of soft wheat "Istiqlol-6" were produced. 465 kg of seed grain was collected.

"Adir" barley variety in the first year breeding field

1050 kg, 750 kg of hard wheat variety "Yakut-2014", 2660 kg of soft wheat variety "Istiqlol-6", 2660 kg of high-generation seed grain, as well as information on the results of research on planting time, planting rate, maintenance of these varieties on dry land.

**Keywords:** Dryland, primary seed, selection, progeny, barley, durum wheat, soft wheat, first year progeny trial nursery, second year progeny trial nursery, first year propagation field.

**Introduction.** 2018 of the President of the Republic of Uzbekistan

In the decision of April 27 PD-3683 "On measures to fundamentally improve the seed production system in the Republic of Uzbekistan", the cultivation, preparation, processing, storage and sale of seeds of agricultural and other crops, as well as the control of varieties and seeds to ensure food safety, at the same time, the issues of organizing the activities of elite seed farms and scientific-research institutions engaged in primary seed breeding and testing of new promising varieties are shown.

Also, 2019 of the President of the Republic of Uzbekistan. The decision PD-733 dated September 5 "On measures to further improve the activity of the seed development center under the Ministry of Agriculture" defines the main task of growing highly reproductive (original, elite) seeds in elite seed farms. Based on these tasks, barley "Adir", durum wheat "Yakut-2014", soft wheat "Istiql- Organization of primary seed production of 6» varieties is one of the urgent issues in ensuring food safety. The main issue of seed breeding is the faster introduction of intensive type varieties into the production of

high-yielding 1st class seeds (Gulyaev G.V., Belyakov I.I., 1984). It has already been shown that the quality of seeds can be improved during the breeding process of new varieties (Gulyaev G.V., 1962; Yakubtsiner M.M., 1963). Proper seeding will increase yield by at least 20%. The faster the variety renewal process is carried out, the more effective the result will be (G.V. Gulyaev, 1992).

Seed production is a special branch of agricultural production, which deals with increasing the productivity of crops and introducing new varieties into production, as well as breeding high-quality productive seeds of these varieties (Urazaliev R.A. 1993). A. Amanov, H. Boriev and others (2004) stated that seed breeding as a science deals with issues such as breeding fertile seed, ensuring its purity (purity of the variety), preserving the genetic, economic and biological characteristics of the variety, and improving the quality of the seed by all measures. According to D.T. Abdukarimov (2010), in the first-year joint trial (selection) nursery, generations consisting of seeds of plants selected individually from plantations with high productivity and typicality of the variety are planted.

According to G'.Q. Kurbanov (1972), in the cultivation of highly reproductive seeds, it is important to continuously select singles, regularly remove foreign varieties and select disease-resistant spikes.

Academician R. A. Orazaliev (1993), who studied the seed production of developed countries, concluded that as a result of the change of varieties and the introduction of seed production, agricultural production has increased by more than 40% in recent years.

S.Egamberdiev (1989) and Q.E.Eshmirzaev, S.Egamberdiev (1992) and others have developed recommendations on the directions and measures to be carried out on the scientific basis of the initial seeding of grain crops in the conditions of Uzbekistan.

Creation of varieties resistant to drought and heat of local climatic conditions and establishment of their initial seeding is one of the important factors of increasing productivity (S. Egamberdiev, 2008).

At the next stage of the primary seeding system, the productive ridges with a yield index higher than 5.0% of the standard are transferred. Ridges with average and low indicators are removed (Kuleshov K.R., 1975).

In the change of varieties, it is necessary to focus on the faster introduction of the seeds of new regionalized promising varieties into production (Volkova E.A., Tyukov V.V., 1974).

During the selection of primary ears, attention is paid to the typicality of the variety, grain weight, resistance to grain shedding (Zelensky M.A., Dvornik V.Ya., 1974).

Selection of the elite plant in cereal crop selection and seed breeding practice is carried out based on visual assessment of other characteristics such as productive stem, typicality, dormancy resistance, whether or not it is affected by diseases (Nikitenko G.D., Gorkov V.P., 1976) .

The mass of grain in the spike and the number of productive stalks per unit area are the factors that determine the amount of yield. Also, in breeding and seed production, the analysis of the mass of a spike of a plant allows to save 30 percent of working time and to update all the materials obtained according to the productivity indicator (Borisenko V,A, et al., 1984).

The formation of the most productive seed in the middle part of the spike has been scientifically proven (Dichter P.A., 1987).

As a result of individual selection for many years, it is possible to preserve the homogeneity of morphological characteristics in primary seedbeds, even in elite and first-generation seeds (Dmitriev V.E., 1983).

If the seed production is carried out correctly on the basis of high agrotechnics and if it is planted and propagated in the most favorable ecological conditions, it has been determined that the yield obtained from seeds does not decrease even in the VII and VIII generations (N.I. Vavilov, 1966).

**Research object and method.** The field of Lalmikor, located in the central experimental

farm of the Lalmikor Agricultural Research Institute, is the object of research.

Agrotechnical activities such as preparation of experimental plots for planting, planting, feeding, recommendation "High yield from grain crops" (Tashkent-1995), carrying out initial seeding of grain crops "Methodological manual on selection and initial seeding of grain crops" (Gallaorol-2004), the first and in the second year, selection of offspring in test nurseries, isolation of non-specific plants was carried out on the basis of the manual "Testing criteria for differentiation and stability of grain crops". In crop care, weed control measures were carried out by hand, chemical herbicide spraying and weeding between the rows.

The original seeds (OU) of new varieties of barley "Adir", hard wheat "Yakut-2014", soft wheat "Istiqlol-6" for planting in dry areas by variety originators and intended for further reproduction, study of the primary link of seed production in the first year of the seed trial nursery for each variety, 1000 spikes specific to the variety were selected and each variety was planted separately in 1 row in the second ten days of November and the first ten days of December 2020.

500 offspring of each of the varieties of barley "Adir", durum wheat "Yakut-2014", soft wheat "Istiqlal-6" in the nursery of the second year of testing each of them separately for plots of 5 m2, special small-sized SKS-8-10 seed drill were planted and phenological observations were made according to the phases of development.

The following tasks were performed to achieve the expected goal of the project;

- selection of spikes from the best 1000 first-year generations typical of the variety from high-yielding and clean plantations for the trial nursery;

- selection of high-yielding, disease-free, variety-specific offspring from the offspring planted in the nursery of the first-year offspring trial;

- 500 best offspring are selected from the first-year offspring trial nursery for the second-year offspring trial nursery, uncharacteristic offspring are discarded, and the best offspring are combined and transferred to the first-year breeding area;

- 100% yield of varieties in the first year breeding area;

- original seeds (OU) of barley "Adir", hard wheat "Yakut-2014", soft wheat "Istiqlol-6" varieties and breeding areas will be established.

**Research results.** In the experiments, the full germination period of the studied varieties was observed on January 14-19 for the barley variety "Adir", on March 1 for the hard wheat variety "Yakut-2014", and on February 15-18 for the soft wheat variety "Istiqlol-6". The winter resistance of barley variety "Adir" is around 5-7 points (medium, high), the flowering period is on February 5-9, the full spike period is on May 10-14, and the full ripening phase was observed in June. Durum wheat variety "Yakut-2014" had a winter hardiness of 3-5 points (medium, high), the period of heading was March 23-25, the period of full earing was observed on May 19, and the full ripening phase was observed on June 27. Winter hardiness of "Istiqlol-6" variety of soft wheat is 5 points (high), the period of flowering is on March 16, the period of full earing is on May 13-15, and the full ripening phase is on June 20-22.

In the first field observation of the varieties studied in the conducted research, the characteristics of the varieties, general development, resistance to diseases, high productivity of the generations, morphological characteristics, biological characteristics, economic characteristics of all the planted generations were conducted 3 times and were analyzed and evaluated based on the biometric indicators of the plants. In the laboratory observations, such characteristics as grain shape, spike length, number of spikes, grain number, grain weight per spike, and grain weight of 1000 pieces were determined.

In the research, 617 offspring from the "Adir" variety of barley, 500 from the "Yakut-2014" variety of hard wheat, and 500 from the "Istiqlol-6" variety of soft wheat were selected from the 1000 offspring studied

in the first-year breeding nursery. The remaining generations were invalidated.

Progenies that passed the test were harvested by hand and each generation was individually bundled, hand-picked, cleaned and transferred to the second-year generation trial nursery.

422 of the "Adir" barley variety, 450 of the hard wheat "Yakut-2014" variety, 450 of the soft wheat "Istiqlol-6" among the 500 offspring of each variety studied in the nursery of the second year's breeding trial, which were found to be fertile in terms of valuable economic traits and biological characteristics. 465 generations were selected from the variety. In the second year, 78 generations of barley variety "Adir", 50 varieties of durum wheat "Yakut-2014", and 35 varieties of soft wheat "Istiqlal-6" were rejected in the nursery of the second year.

422 generations of the selected barley variety "Adir", 450 generations of hard wheat "Yakut-2014", 465 generations of soft wheat "Istiqlal-6" were collected separately in small bags, sorted, cleaned, and the quality of the seed was evaluated. indicators were combined by laboratory analysis, ensuring the uniformity of seed fertility.

In the second year, 102 kg of barley "Adir" variety, 240 kg of hard wheat "Yakut-2014" variety, and 465 kg of soft wheat "Istiqlol-6" variety were collected from the nursery of the second year and prepared for planting in the breeding area of the first year.

"Adir" barley variety in the first year breeding field

9.0 hectares, 3.0 hectares of hard wheat variety "Yakut-2014" and 7.0 hectares of soft wheat variety "Istiklal-6" were planted. In the first year, in the breeding area, interspecies and interspecies cleaning from foreign varieties was carried out twice, and these varieties were brought to 100% variety purity. Also, non-typical and diseased plants were discarded. In the first year, the seed grain grown in the breeding area was harvested separately by crop types using the "Klass" combine harvester.

"Adir" barley variety in the first year breeding field

1050 kg, 750 kg of hard wheat variety "Yakut-2014" and 2660 kg of soft wheat variety "Istiqlol-6" were collected.

Barley's **«Adir» -** K-55080 (Syria) x Lalmicor hybrid combination was created by selection method, and in hybridization, drought and heat resistant K-55080 (Syria) as mother plant, high yielding, drought tolerant, soil-climate adapted local Lalmicor as parent plant. barley variety was used.

Botanical description. Type variety - Nutans (Nutans). Biological way of life is two-season (duvarak) Lalmikor variety 1-2 days early. The ear is two-rowed, the color of the ear is yellow, it is medium in size, it is scaly, the axil is long, the axil is parallel to the ear, the ear is hairless, densely arranged, the number of ears in the ear is 24-26, the color of the grain is yellow, the grain is very large.

The weight of 1000 grains is 46.5-62.8 g, the volume weight of grains is 650-685 g/l.

**Agrobiological description.** The height of the plant is 49.8-62.0 cm, the stem is strong, resistance to lodging is 7 points, it is resistant to cold, drought, with helminthsporiosis.

5-10 percent, 5 percent with rhynchosporosis disease, up to 5 percent with powdery mildew disease, grain yield is 13.0-26.2 t/ha in dry areas.

**(Table 1)**.

**Table 1. Valuable characteristics and properties of barley "Adir" variety (Gallaorol, 2006-2008)**

| Indicators | Measure | Lalmikor | | | Average | Adir | | | Average | Difference |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2006 | 2007 | 2008 | | 2006 | 2007 | 2008 | | |
| Productivity | ц/га | 11,7 | 23,4 | 17,5 | **17,5** | 13,0 | 26,2 | 19,6 | **19,6** | **2,1** |
| The nature of the grain | г/л | 640 | 672 | 656 | **656** | 650 | 685 | 667 | **668** | **12,0** |
| 1000 grain weight | г | 55,2 | 58,4 | 47,3 | **53,4** | 61,2 | 62,8 | 46,5 | **55,5** | **2,1** |
| Protein | % | 14,1 | 14,2 | 14,1 | **14,1** | 15,3 | 16,3 | 16,3 | **15,9** | **1,8** |
| Ripening day | кун | 171 | 170 | 173 | **171,3** | 170 | 169 | 172 | **170,3** | **-1,0** |
| Plant height | см | 55,6 | 73,6 | 49,4 | **59,6** | 57 | 62 | 49,8 | **56,3** | **-3,3** |
| Incidence rate of helmintosporiasis | % | 20 | 20 | 10 | - | 10 | 10 | 5 | - | - |
| Incidence rate of rhynchosporiasis | % | 0 | 5 | 10 | - | 0 | 5 | 5 | - | - |
| Incidence of powdery mildew | % | 5 | 5 | 10 | - | 0 | 5 | 5 | - | - |

**Planting period**. In autumn, it is the second to third ten days of October, in spring it is the third ten days of February, and the first ten days of March.

**Planting rate**. 3.5 million seeds per hectare in autumn and 3.0 million seeds in spring.

**Feeding.** Before planting, 40 kg/ha in hilly regions and 50 kg/ha in mountainous regions should be given phosphorus fertilizer under the plow at the expense of a net active substance per hectare. The optimal period of spring feeding with nitrogen fertilizer is at the end of February, the first ten days of March in mountainous regions, at the rate of 40 kg/ha, in mountainous regions, in April-May, it is fed with mineral fertilizers at the rate of 50 kg/ha.

**"Adir" variety** – Since 2015, agricultural crops have been included in the State Register for growing in dry areas of Jizzakh, Kashkadarya, and Samarkand regions.

Durum wheat **"Yakut-2014" variety** - [Marvarid x Waha (Syria)] x Leukurum-3 hybrid combination was created by the method of individual selection. the high-quality Waha (Syria) variety and the local Leukurum-3 variety as a cold, heat-resistant, high-yielding variety were used. The variety was created by a complex cross-breeding method, and great attention was paid to the selection of durum wheat in the hybrid generations on the characteristics of resistance to cold, drought, heat and rust diseases.

**Botanical description.** Type variety - Leucurum (Leucurum). Biological way of life is 2-3 days early from Leukurum-3 variety.

The spike is white, cylindrical, medium-sized, with a shaft, the shaft is parallel to the spike and is 1.5-2.0 times longer than the spike, the spike is hairless, densely located, the number of spikes in the spike is 18-20, the grain is amber-colored, oval, the grain pit is moderately concave. .

The grain is shiny, the weight of 1000 grains is 39.0-40.4 g, the volume weight of grains is 770-780 g/l.

**Abiological description.** The height of the plant is 78.6-109.2 cm, the stem has a firm lodging resistance of 7 points, it is resistant to cold, drought, yellow and brown rust diseases, the yield is 13.4-21.4 t/ha (Table 2).

**Table 2. Valuable characteristics and characteristics of durum wheat "Yakut-2014" variety (Gallaorol, 2015-2017)**

| Indicators | Unit of measure | Leucorum -3 | | | Ўртача | Ruby -2014 | | | Average | The difference (±) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2015 | 2016 | 2017 | | 2015 | 2016 | 2017 | | |
| Productivity | ц/га | 9,1 | 11,5 | 17,1 | **12,5** | 13,4 | 15,5 | 21,4 | **16,8** | **4,3** |
| The nature of the grain | г/л | 780 | 756 | 780 | 772 | 775 | 770 | 780 | **775** | **3,0** |
| Grain luster | % | 90,0 | 89,0 | 89,5 | **89,5** | 92,1 | 91,4 | 91,6 | **91,7** | **2,2** |
| 1000 grain weight | г | 38,4 | 36,0 | 38,6 | **37,7** | 40,4 | 39,0 | 40,2 | **39,9** | **2,2** |
| Protein | % | 14,5 | 14,2 | 14,7 | **14,5** | 16,1 | 15,3 | 15,6 | **15,6** | **1,2** |
| Gluten | % | 28,7 | 29,3 | 30,0 | **29,3** | 31,4 | 30,7 | 31,5 | **31,2** | **1,9** |
| Ripening day | кун | 208 | 207 | 209 | **208** | 206 | 205 | 207 | **206** | **-2,0** |
| Plant height | см | 76,2 | 104 | 99,8 | **93,3** | 78,6 | 109,2 | 100,4 | **96,1** | **2,7** |
| Yellow rust incidence rate | % | 0 | 25 | 0 | - | 0 | 10 | 0 | - | - |
| Brown rust incidence rate | % | 0 | 10 | 0 | - | 0 | 0 | 0 | - | - |

Planting period. In autumn, it is the second to third ten days of October, in spring it is the third ten days of February, and the first ten days of March.

Planting rate. 3.5 million seeds per hectare in autumn and 3.0 million seeds in spring.

Nutrition. Before planting, 40 kg/ha in hilly regions and 50 kg/ha in mountainous regions should be given phosphorus fertilizer under the plow at the expense of a net active substance per hectare. The optimal period of spring feeding with nitrogen fertilizer is at the end of February, the first ten days of March in mountainous regions, at the rate of 40 kg/ha, in mountainous regions, in April-May, at the rate of 50 kg/ha.

The Yaqut-2014 variety has been included in the State Register of Agricultural Crops from 2020 for planting in dry land in Samarkand, Jizzakh, Tashkent, Kashkadarya and Surkhandarya regions in autumn and in spring in Samarkand and Jizzakh regions.

Soft wheat variety "Istiqlol-6" was created by individual selection from the hybrid of Surhak-5688 x Uz001249 (Turkey) at Lalmikor Agricultural Research Institute.

**Botanical description**. A variety of Erythrospermum (Erythrospermum). Lifestyle semi-autumn. Mediate. The spike is axillary, white, hairless, cylindrical in shape, medium length (9-11 cm), dense, branched axils, long, coarse, scattered, vein lines are visible on the cuticle, sharp tooth, flat shoulder, red grain, ovoid grain groove is not deep, 1000 grain weight It is 38-44 g.

Grain volume weight is 772 g/l, grain gloss is high, protein content is 15.2-15.5%, gluten content is 32-34.0%. Technological indicator of flour and bread closing is 4.5 points, belongs to the expensive variety.

Agrobiological description. Highly resistant to yellow and brown rust diseases, powdery mildew and severe mildew. Resistant to cold and drought. Andoza Tezpishar variety 2-3 days late, grain quality. The growth period of the plant is 240-244 days, its height is 95-123 cm, it does not go dormant even in the years of excessive irrigation. Productivity is 13.2-23.8 tons/ha (Table 3).

**Valuable characteristics and properties of soft wheat "Istiqlal-6" variety (Gallaorol, 2009-2011)**

| Indicators | Unit of measure | Quick | Average | Istiqlol-6 | Average | ... difference |
|---|---|---|---|---|---|---|

| | | 2009 | 2010 | 2011 | | 2009 | 2010 | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Productivity | ц/га | 7,1 | 11,5 | 11,9 | **10,2** | 20,0 | 23,8 | 13,2 | **19,0** | **8,8** |
| The nature of the grain | г/л | 740 | 739 | 728 | **728** | 780 | 760 | 778 | **772,6** | **44,6** |
| Grain luster | % | 80 | 79 | 81 | **80** | 84 | 80 | 82 | **82** | **2,0** |
| 1000 grain weight | г | 40 | 38 | 34 | **37,3** | 44 | 42 | 38 | **41,3** | **4,0** |
| Protein | % | 14,4 | 14,2 | 14,8 | **14,5** | 15,3 | 15,0 | 15,5 | **15,2** | **0,7** |
| Gluten | % | 27 | 28,2 | 28 | **27,7** | 32 | 33,7 | 34 | **33,2** | **1,2** |
| Ripening day | кун | 239 | 238 | 240 | **239** | 240 | 240 | 244 | **241** | **2,0** |
| Plant height | см | 108 | 115 | 80 | **101** | 110 | 123 | 95 | **109** | **8,0** |
| Yellow rust incidence rate | % | 50 | 30 | 0 | | 0 | 0 | 0 | | |
| Brown rust incidence rate | % | 25 | 25 | 0 | | 0 | 0 | 0 | | |

Planting period. In autumn, the second ten days of October are considered acceptable.

Planting rate. per hectare for plain and hilly regions

2.5 million units, and 3.0 million for mountainous and mountainous regions. at the expense of one germinating seed.

Nutrition. Before planting, 40 kg of pure phosphorous fertilizers should be applied per hectare in hilly regions and 45 kg in mountainous regions. Spring nitrogen feeding is given at the rate of 45-50 kg/ha at the end of February and the first ten days of March in the mountainous region. In mountainous and mountainous regions, the optimal period of feeding is April-May, the rate of fertilizer is 50 kg/ha.

"Istiqlol-6" variety - for autumn planting in dry areas in Jizzakh, Samarkand, Kashkadarya regions of the Republic

Since 2017, agricultural crops have been included in the State Register.

Summary. Primary seeding of new varieties of drought-resistant, high-yielding agricultural crops intended for planting in dry lands was organized on a scientific basis.

In the first year, 1,000 offspring of each variety were planted and studied in the nursery for testing generations, and 617 offspring were selected from the "Adir" barley variety, 500 from the hard wheat "Yakut-2014" variety, and 500 from the soft wheat "Istiqlol-6" variety.

In the second year, 500 offspring of each variety were planted and studied in the breeding nursery, and 102 kg of barley "Adir" variety, 240 kg of hard wheat "Yakut-2014" variety, and 465 kg of soft wheat "Istiqlol-6" variety were collected. prepared for planting in the field.

"Adir" barley variety in the first year breeding field

1050 kg, 750 kg of hard wheat variety "Yakut-2014", 2660 kg of soft wheat variety "Istiqlol-6", high-generation seed grain was collected and prepared for growing seeds for the second year in the future.

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