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PLANTING OF COLLECTION SAMPLES OF PERENNIAL WHEAT IN MOUNTAINOUS AND FOOTHILL REGIONS

Annotation

Perennial wheat varieties have long become a problem, further improving the condition of eroded and degraded soils, creating the possibility of rational use of land coming without unproductive use. While soft wheat is affected by most diseases, perennial wheat is not affected. Perennial wheat can be planted once and harvested for several years (3-5 years). This saves a huge amount of resources and funds in production. On October 17, 2022, the seeds of 34 collection specimens of perennial wheat were planted in three repellents at the Rainfed agricultural research and Experimental Station. The field experimental area of the perennial wheat collection nursery was 153 m^2. In the first reversible variants, drought resistance is studied, determining how many meters the roots of perennial wheat varieties and specimens have grown. For interspecific breeding of wheat, varieties and lines are selected that are fertile, adapted to climatic conditions, resistant to frost, drought, rust diseases of the variety and specimens that have retained the valuable character and characteristics of the parent forms.

Keywords: Perennial wheat, variety, erosion, degradation, grain, drought, root, yield.

ПОСАДКА КОЛЛЕКЦИОННЫХ ОБРАЗЦОВ МНОГОЛЕТНЕЙ ПШЕНИЦЫ В ГОРНЫХ И ПРЕДГОРНЫХ РЕГИОНАХ

Аннотация

Многолетние сорта пшеницы уже давно стали проблемой, еще больше улучшая состояние эродированных и деградированных почв, создавая возможность рационального использования земель, поступающих без непродуктивного использования. В то время как мягкая пшеница поражается большинством болезней, многолетняя пшеница не поражается. Многолетнюю пшеницу можно посадить один раз и собирать урожай в течение нескольких лет (3-5 лет). 17 октября 2022 года семена 34 коллекционных образцов многолетней пшеницы были посеяны в трех репеллентах на Богарной сельскохозяйственной научно-опытной станции. Полевая опытная площадь питомника по сбору многолетней пшеницы составила 153 $м^2$. В первых обратимых вариантах изучают засухоустойчивость, определяя, на сколько метров выросли корни многолетних сортов и образцов пшеницы. Для межвидовой селекции пшеницы отбираются сорта и линии, которые являются плодородными, адаптированными к климатическим условиям, устойчивыми к заморозкам, засухе, ржавчинным болезням сорта и экземплярам, сохранившим ценный характер и характеристики родительских форм.

Ключевые слова: Многолетняя пшеница, сорт, эрозия, деградация, зерно, засуха, корнеплод, урожайность.

TOG‘ VA TOG‘ OLDI MINTAQALARDA KO‘P YILLIK BUG‘DOY KOLLEKSIYA NAMUNALARINI EKISH

Annotatsiya

Ko‘p yillik bug‘doy navlari uzoq vaqtlardan beri muammoga aylanib ulgurgan eroziyaga va degradatsiyaga uchragan tuproqlarning holatini yanada yaxshilash, unumsiz foydalanmasdan kelayotgan yerlardan oqilona foydalanish imkoniyatini yaratadi. Yumshoq bug‘doy ko‘pgina kasalliklar bilan kasallansa, ko‘p yillik bug‘doy esa kasalliklarga uchramaydi. Ko‘p yillik bug‘doyni bir marta ekib, bir necha yil (3-5 yil) hosil olish mumkin. Bu esa ishlab chiqarishda juda katta resurs va mablag‘larni tejab qoladi. 2022-yil 17-oktabrda Lalmikor dehqonchilik ilmiy-tajriba stansiyasiga ko‘p yillik bug‘doyning 34 ta kolleksiya namunalarining urug‘lari uch qaytariqda bir yuz ikkita delyankaga ekildi. Ko‘p yillik bug‘doy kolleksiya ko‘chatzorining dala tajriba maydoni 153 m^2 ni tashkil etdi. Birinchi qaytariq variantlarida ko‘p yillik bug‘doy nav va namunalarining ildizlari necha metrgacha o‘sganligi aniqlanib, qurg‘oqchilikka chidamliligi o‘rganiladi. Bug‘doyni turlararo chatishtirish uchun ota-ona shakllarining qimmatli belgi va xususiyatlarini o‘zida saqlagan nav va namunalarning serhosil, iqlim sharoitiga moslashgan, sovuqqa, qurg‘oqchilikka, zang kasalliklariga chidamli bo‘lgan nav va liniyalar tanlab olinadi.

Kalit so‘zlar: Ko‘p yillik bug‘doy, nav, eroziya, degradatsiya, don, qurg‘oqchilik, ildiz, hosildorlik.

Introduction. This scientific research work is based on the Decree of the President of the Republic of Uzbekistan dated October 23, 2019 No. DP-5853 “On approval of the strategy of agricultural development of the Republic of Uzbekistan for 2020-2030” [1] and the Republic of Uzbekistan It corresponds to the implementation of the Decree of the President of February 3, 2021 No. DP-6159 “On the further development of the system of knowledge and innovation in agriculture and the provision of modern services” [2].

As a result of regular cultivation of intensive grain crops, the soil system is severely eroded, which is often caused by water in areas with no vegetation cover or plowed steep slopes. Soil treatment also contributes to wind erosion of the soil [5]. This loss of soil is associated with a decrease in the amount of organic matter, a decrease in nutrients, a change and degradation of the structure of the soil and, in some cases, a decrease in yield in relation to non-eroded soils [3].

Through the use of perennial crops, soil processing practices are reduced and the soil cover life is maximized [4]. Therefore, sustainable alternatives must be adopted to integrate agricultural development and Environmental Protection.

Literature review. Ensuring food security at this moment, when the world's population is rapidly growing and the climate is changing dramatically, is one of the global challenges in the world [10]. Annual crops such as corn, rice and wheat serve as the main sources of cereals. Annual crop production has negative environmental impacts as a result of water pollution, soil erosion, reduced carbon accumulation, increased greenhouse gas emissions, and the application of large amounts of fertilizers [13]. Nitrogen loss as a result of annual crop production can be 30-50 times higher than in perennial crops [14]. The introduction of perennial crops that can grow in the fields for several years into crop rotation can increase food safety. Scientists in the world have been paying great attention to this area for many years [7]. Omsk state Agrarian University was one of the important geographical points in testing perennial germpolasm in many places [11].

It is environmentally beneficial for perennial crops to reduce soil erosion, protect water resources, minimize nutrient washouts, and keep carbon in the soil at high levels [12]. Growing perennial crops reduces the costs of seed and fertilizer (as crops can be planted once and harvested over a long period of time), as well as reducing the costs of weed control and tillage. Perennial crops can be used not only for the production of food and nutrients, but also for fuel and other non-food biomass [9]. The main strategies used in the development of new perennial cereal crops are pollination of wild perennial species i.e. interspecific hybridization of annual crops with perennials. The interspecific hybridization method is preferable due to the reduction in the time it takes to create (obtain) new perennial cereal crops [15].

In the 1930s, Russian academic N. V. Sitsin was the first in the world to prove the idea of creating perennial wheat through his scientific work [8]. Currently, his scientific work continues in the main Botanical Garden of the Russian Academy of Sciences (Moscow). V. P. According to Upelniek and colleagues (2012), the cultivation of perennial cereal crops makes it possible to obtain food and nutrients in a more efficient way, as well as reduce the costs of their production and improve the state of the environment.

The choice of perennial wheat is aimed at growing new high-yielding varieties, combining useful and important biological properties in one plant. An important role is played by the solution of the problem of combining a complex of valuable and useful biological properties in one plant. However, this is difficult to achieve because wild perennial green grass with negative agrotechnical properties is used when creating perennial wheat varieties [6].

The grain of perennial wheat is small, the weight of 1000 grains is 16-18 grams, and the grain yield is 18-20 s/Ha. Overcoming these shortcomings of perennial wheat, the creation of new varieties is the most fundamental issue. Today there is extensive selection work in this direction.

Research object. An international collection of 34 perennial cereal crops, of which two lines of perennial barley from the Swedish Agricultural University, the rest were perennial wheat: five lines based on Agropyron (Thinopyrum) elongatum, fourteen lines based on Agropyron (Thinopyrum) intermedium, seven lines based on Agropyron (Thinopyrum) ponticum, and two lines based on Agropyron (Thinopyrum) junceiforme. Two samples were taken from Bezostaya1 as the standard variety for comparing yield and biometric indicators compared to one-year autumn soft wheat, as well as two samples from Thinopyrum intermedium (intermediate wheat grass)to compare resistance to frost, drought, rust diseases and life expectancy compared to perennial wheat. Material for the study was cited from the Land Research Institute of the U.S.A of Kansas through the International Scientific Center for corn and Wheat Improvement (CIMMYT).

Research method. The placement, calculation and analysis of the experiment was carried out according to the Vir (former All-Union Research Institute of Plant Sciences) method (1984), the placement and analysis of field experiments was carried out using the GenStat 13 program.

Description of the place where the study will take place. Field experimental research on the study, evaluation and selection of collection samples of perennial wheat is carried out at the Rainfed Agricultural Research Station of the Rainfed Agricultural Research Institute. This experimental site is located in the Bakhmal District of Jizzakh region and the coordinates of the experimental site are 39.41 degrees north latitude and 68.07 degrees east longitude (39°41'44"N, 68°07'46"E).

The Bakhmal district is located in the Sangzor valley, surrounded on both sides by the mountains of Chumqor and Morguzar, which are considered a continuation of the Turkestan mountain range. A large part of the district is occupied by the Turkestan mountain range, mountain slopes and mountain ridges.

The climate of the velvet area is Continental, with dry and hot summers and not so cold winters. The average perennial air temperature is 12.8°C. The average January temperature is -3.7°C, and the absolute minimum temperature drops to -14.8°C [16].

The warmest month is July with an average monthly temperature of 27°C, 15°C in the mountainous part. The absolute maximum temperature is 42°C. Since the district consists of hills and mountains, it is much cooler during the summer months compared to other areas. The average annual relative humidity of the air is 46%. While the average annual rainfall of the region is 300-700 mm, it reaches 600-700 mm on the slopes of the mountains facing the Western air masses, 250-354 mm on its reverse parts and in the Berk bottlenecks. In the territory of the country, most of the precipitation falls in the spring (41-48%) and winter months (34-43%), and less in the summer months (2-5%).

The duration of frost-free days is 188 days. The snow cover formation time is November 25th. The melting of the snow cover falls on March 16 [16].

Research results and discussion. The field experimental area of the perennial wheat collection nursery is 153 m^2 and the experimental area is 35.1 m tall and 4.35 m wide. The seeds of 34 collection specimens of perennial wheat were planted in the field experimental area in one hundred and two varieties on three returns on October 17, 2022. In the experimental field, 16 corridors were left between the varieties, 0.6 m wide.

In the first return, each variety from one to Seventeen has an area of 1.28 m^2, giving delyanka a height of 1.5 m and a width of 0.85 m.

Each of the eighteen to one hundred and two varieties has an area of 1.05 m^2, giving delyanka a height of 1.5 m and a width of 0.7 m.

The first return was one row (line) in each variety, in which 21 seeds were sown to a depth of 5 cm. The intermediate distance of the main seeds was 20 cm, leaving 2 cm of space from the two sides of each main seed, and 2 additional seeds were

sown. In the spring season, after the perennial wheat sprouts and leaves the winter, the first return left 7 main seeds in each variety.

Each variant of the second and third reverses had three rows (lines), in which 125 seeds were sown to a depth of 5 cm. The range of the plant row is 15 cm, in these rows each plant is planted 3.6 cm between them.

Table 1.

Initial material nursery data

Number			Variety square, m^2	
Number of varieties, pcs	The number of grains in one variety, pcs	The number of rows in one variety, pcs	One variety	Total varieties
17	21	1	1,28	21,76
17	21	1	1,05	17,85
68	125	3	1,05	71,4

In the first reversible varieties, drought resistance is studied, determining how many meters the roots of perennial wheat varieties and specimens have grown. For interspecific breeding of wheat, varieties and lines are selected that are fertile, adapted to climatic conditions, resistant to frost, drought, rust diseases of the variety and specimens that have retained the valuable character and characteristics of the parent forms.

Conclusion.

1. In the first reversible variants, it is determined how many meters the roots of perennial wheat varieties and specimens have grown, and drought-resistant specimens are selected.

2. Perennial wheat varieties and specimens selected based on the results of phenological observation and biometric analysis in the second and third returns are interbreed with local annual soft wheat varieties.

3. Hybrid seeds are obtained, which contain the best signs and characteristics of the parent.

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