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Е.Ж. Сембиев, М.В. Шабалина

СОЛТҮСТІК ТЯНЬ-ШАННЫҢ ТАУЛЫ ОРМАНҒА ЖАНАМА ФАКТОРЛАРЫ

Мақалада орман алқаптары аймақтарға жанама факторлардың билігі қаралады. Негізгі іс шара, бұл орман типологиясына қатысушыларды бақылау, бәсекеге қабілеттік заңын көтеру. Негізгі мақсат - бұл Солтүстік Тянь-Шанның ормандау эко жүйесін келтіре отырып сактау.
Кілт сөздер: өскін, орман төсеніші, зерттеу, Шренк Шыршасы, алқаағаш, өздігінен өсіп –өну.

E.Z. Sembiyev, M.V. Shabalina

INFLUENCE OF ADDITIONAL FACTORS TO MOUNTAIN FORESTS
OF THE NORTHERN TINE SHAN

This article is about issues impact of indirect factors to form a forest environment. Main activities to preserve the stability plantings are - compliance with relevant forest types, maintaining the laws of competition and natural selection. The aim of this work was preservation and reproduction of forest ecosystem of Northern Tien Shan.
Key words: young growth, litter, undergrowth, examination, Schrenk spruce plantings, self-renewal.

UDC 633.111(574)

G. Suleymanova [1], Y. Dutbayev[1], A. Kuresbek [1], N. Sultanova[2], R. Zhapayev[3], A. Morgounov[4]

[1]*Kazakh national agrarian university, Kazakhstan, Almaty,* edutbaev@mail.ru
[2]*Kazakh scientific-research institute of Plan protection and Quarantine,* nadira.sultanova@mail.ru
[3]*CIMMYT, Kazakhstan,* r.zhapayev@cgiar.org
[4]*CIMMYT, Turkey,* a.morgounov@cgiar.org

BREEDING AND IMMUNOLOGICAL STUDYING OF HEXAPLOID SYNTHETIC WHEAT IN SOUTHEASTERN KAZAKHSTAN

Annotation
In Southeastern Kazakhstan in 2014 were done breeding researches of hexaploid synthetic lines (49 lines) of wheat from Japan and CIMMYT. Results showed that lines of Japanese hexaploid synthetic wheat had good potential of resistance to diseases on natural inflectional

phone. By agronomic indexes 5 lines can be used as winter wheat in plant breeding in southeastern Kazakhstan. Other 44 lines of synthetic wheat we plane try as spring wheat in Northern regions of Kazakhstan.

Key words: breeding, evaluation, synthetic wheat, line, cultivar, diseases.

Introduction

World losses of wheat from harmfulness agents[1], in present days is a 34%, including from diseases– 12%. Spreading and development of wheat diseases mostly of weather conditions, plant growing technology and cultivars features.

FAO predicts that in 2050 world population will increase to 9 billion . [1] In order to satisfy the needs of the world's population by 2030 is necessary to mutilate her potential yield by 30-40%. For this purpose it is necessary to increase the potential at the annual 1.6-1.8 % including 1 % due to breeding and genetic methods. Achieving the latter goal can be in attracting the genetic resources of wild relatives . Napralenii important in improving the capacity of this culture laid in increasing resistance to abiotic (drought , zharostoykkost , salinity , soil kistotnost) and biotic stresses (pests and diseases) . Therefore, actual is a constant yield improvements by increasing its genetic potential [2].

Currently distant hybridization remains the most effective method of introduction of foreign genetic variability in the wheat genome. Synthetic diploids , including the genomes of different species of grasses , can greatly facilitate the transfer of the properties of the genetic material of wild species to cultivated plants . They also opened up the possibility of recombination between genomes isolated at the diploid level [2].

Recent studies show that the elimination or substitution of certain chromosomes in the nuclear genome of wheat with foreign material is non-random nature and , although the mechanism is not known, they occur in early generations of interspecific hybrids and diploids during meiosis [14]. Therefore, success in addressing distant hybridization of incompatibility genomes parent species, essentially depends on our knowledge of the specific features of meiosis hybrids F1.

At present time, as a result of scientific research the following organizations : CIMMYT - Mexico, ICARDA, Syria , Division vivo studies Astral, IPK- Germany, Japan, Kyoto University, USDA-ARS was derived synthetic hexaploid wheat. This line were wheat by crossing tetraploid and diploid Triticum turgidum wild grass *Aegilops tausc*hi to improve the performance of wheat. These hybrids are resistant to biotic and abiotic (drought, high temperature, salinity, lack of moisture) and biotic stresses (rusts, septaria, viral diseases, rot shoots, yellow leaf spot, spotted gelmintosporioznym, nematodes, powdery mildew, fusarium head blight) [2].

Synthetic hexaploid wheat has considerable potential yields in different soil and climate, especially drought conditions worldwide. Research focuses on the identification of useful genes. However, the transfer of useful genes into elite wheat is limited. This information may open the way for important resources. Studies to obtain a synthetic wheat directed research aimed at AB tetraploid genomes of *T. turgidum ssp. Carthilicum, T. turgidum ssp.diccocum, T. turgidum ssp. diccoicum* and determining loci in germplasm *A. Tauschi.* Available molecular studies have allowed researchers to conduct detailed analyzes of genome sequencing and develop an effective strategy for improving the synthetic wheat. Thus, the synthetic wheat line heksaploid well adapted worldwide. However, studies need to be broad study of phenotypes of wheat.

In the literature there are data on the stability of hybrid lines produced by direct *crossing A. tauschi* and tetraploid wheat to the Hessian fly, dwarf smut, stem and leaf rust, septoraa and helminthosporium leaf spots, cereal cyst nematode and root, fusarium head blight [2-13].

Directly transfer genes of these two species can produce homological regombinations and could lead to production of genetically synthetic wheat8-9]. During hybridization of *Triticum monococcum* and *Aegilops spp.* condacts increasing death of young hybrid plants F1 and their sterility, decreases number of successful recombinations between diploid and polyploidy wheat. All it named as a secondary genofund [`8].

Therefore, for wheat breeding must be done searching and selection of parents forms, which have resistance to diseases. According the goal of world population by 2030 need to increase potential productivity up to 30-40%. Realization the last goal is possible in the case of utilization of genetic recourses of wild relatives of wheat. Priority direction of improvement of this crop could be increasing of resistance to abiotic drought, high temperature, salinity, lack of moisture) and biotic stresses (pests and diseases). That's why the most actual way to improve yield of wheat could be an improvement of it genetic potential. Synthetic amphidiploids, which include genes of different cereals could make easier transfer important features of genetic material from wild species to cultivars.

Matherial and Methods

Since 2014 we started breeding and immunological studying of hexaploid synthetic wheat of Kioto university of Japan and CIMMYT (49 lines) on trials of Kazakh scientific research institute of of farming and plant growing by standard methods of plant breeding, plant growing and plant pathology. In autumn of 2013 was been received and sowed nursery of hexaploid synthetic wheat 13JAP-SYNT. Seed of each line were sowed on one 1 meter row.

During wheat vegetation were done phenological observation, immunological evaluation of material to Leaf rust, Stripe rust, Stem rust and to Leaf spots. Were done done evaluation of plant wintering, and mathematical analusis [2, 13].

Results

Hexaploid synthetic wheat has high potential of yield in different soil-climatic conditions, especially, in dry areas all over the world. Direction of this researches are identification of useful genes. But, transfer of useful genes to elite wheat is limited. This information could open way to new resources. Future studies will be in direction of developing synthetic wheat of AB tetraploid genomes of *T. turgidum* ssp. *Carthilicum, T. turgidum* ssp.diccocum, *T. turgidum* ssp.diccoicum and determining of locuses in germoplasma of *A. tauschi*. This molecular researches can conduct detail analysis of segueing of genome and to develop effective strategy for improvement of synthetic wheat.

In present days, developed lines of hexaploid synthetic wheat quite well were adapted all over the world. But in present days phenotipes of wheat need to be studied in conditions of Southern, Nothern, Southeastern and Eastern Kazakhstan. In this case the studies in direction of developing of resistant to diseases varieties very perspective.

Weather conditions in 2013-2014 agricultural year in Almaty oblast was like during many years conditions and were middle favorable for diseases development. Winter period was snowy. Amount of rainfall in December, January, February and in april was up to 15-50 in comparative with normal. Winter crops had good snowfall, which was very useful. The weather condition of March of 2014 was normal.

Discussion

During wheat heading were done crosses of 10 lines of hexaploid wheat (№№ 4, 7, 10, 13, 15, 17, 22, 26) with 5 commercial cultivars of winter wheat (Zhetisu, Farabi, Azharly, Naz and Steklovidnaya).

During milk ripening stage local cultivars Zhetisu, Farabi and Azharly were injured by Stripe Rust up to 10-20%, by Leaf Rust – up to 5-10% and by Leaf spot blotches – up to 10-20%. Lines of synthetic wheat were injured by Stripe Rust up to 1-10%, by Leaf Rust – up to 1-5% and by Leaf spot blotches – up to 5-10%. Rust diseases were absent on 41 of 50 lines of synthetic wheat Rust diseases were absent. Evaluated lines of synthetic wheat showed good resistance to diseases. As the result of structural analysis we have selected 5 lines of synthetic wheat (LANGDON/AE 454, LANGDON/IG 47259, LANGDON/KU-2078, LANGDON/KU-2109, LANGDON/PI 499262), which had good productivity indexes – plant height, weight of

1000 grain, were more in comparative with standarts – up to 15,9 gramm, and productivity of row – up to 83,9 gramm.

Conclusion

Results of investigations showed that lines of Japanese hexaploid synthetic wheat has good potential of resistance to diseases on natural inflectional phone. By agronomic indexes 5 lines can be used as winter wheat in plant breeding in southeastern Kazakhstan. Other 44 lines of synthetic wheat we plane try as spring wheat in Northern regions of Kazakhstan.

Table 1 – Structural analysis of nursery of 14SYNT-JAPAN
(Kazakh scientific-research institute of Farming and Plant growing, Almalybak, 2014).

№№	Line, variety	Number of plants on 1 row meter	Weight of plants before harvesting, gr.	Number of grain in 1 spike	Height of 10 spikes, sm	Weight of 10 spikes, gr.	Number of ears	Number of grain in 10 spikes	Weight of grain, gramm			+ of weight of 1000 grain in comparative with local check, gram			+ of weight of grain weight/row in comparative with local check, gram		
									From one ear	1000 kernels	From 1 weight/row	Zhetisu	Azharly	Farabi	Zhetisu	Azharly	Farabi
1	BEZOSTAYA	11	245,0	73	8,1	18,4	15,0	414	1,9	40,3	39,6	-10,5	+1,2	-2,7	-77,2	-22,1	-28,6
2	LANGDON/AE 454	11	251,0	79	8,5	23,7	17,0	386	2,5	42,2	99,8	-7,4	+3,2	-0,8	-17,0	+38,1	+31,6
30	LANGDON/IG 47259	12	320,0	111	12,0	18,0	17,0	363	1,8	34,7	133,0	-16,1	-4,9	-8,3	+16,2	+71,3	+64,8
33	LANGDON/KU-2078	8	125,0	77	12,0	25,5	15,0	167	1,3	55,0	34,1	+4,2	+15,9	+12,0	-82,7	-27,6	-34,1
41	LANGDON/KU-2109	18	400,0	107	13	25,6	9,5	85	1,0	40,0	70,7	-10,8	+0,9	-3,0	-46,1	+71,0	+9,0
48	LANGDON/PI 499262	22	340,0	127	8,5	20,9	16,0	304	2,1	39,6	145,2	-11,2	+0,5	-3,4	+28,4	+83,5	+83,5
	Zhetisu	12	300,0	60	7,5	29,6	15,0	441	3,3	50,8	116,8	-	-	-	-	-	-
	Azharly	11	200,0	53	9,5	19,8	18,0	353	1,4	39,1	61,7	-	-	-	-	-	-
	Farabi	8	160,0	60	8	24,6	15,0	120	2,0	43,0	68,2	-	-	-	-	-	-

Table 2 – Phenological observation of 14SYNT-JAPAN and evaluation to diseases (Kazakh scientific-research institute of Farming and Plant growing, Almalybak, 2014).

№№	Линия, сорт	5 spike weight, gr	1 spike weight, gr	Length of middle leaf, cm	Wide of middle leaf, cm	Square of leaf, S	Height of plants, sm	Affecting by diseases, %				Coloring of plants
								Rusts			Leaf spots	
								stripe	leaf	stem		
1	BEZOSTAYA	13,0	2,06	15,8	1,31	72,35	67,0	0	0	0	0	normal
2	LANGDON/AE 454	14,0	2,80	16,4	1,88	107,9	86,6	0	0	0	5-10%	
30	LANGDON/IG 47259	10,4	2,08	15,5	1,26	68,30	92,0	0	0	0	5-10%	normal
33	LANGDON/KU-2078	10,5	2,10	15,5	1,08	58,6	100,0	0	0	0	5-10%	normal
41	LANGDON/KU-2109	10,6	2,12	15,8	0,89	49,20	97,3	5-10%	0	0	1-5%	red
48	LANGDON/PI 499262	10,6	2,12	17,6	1,15	70,80	86,0	0	0	0	1-5%	red
	Zhetisu	-	-	-	-	-	-	10-20	5-10	0	10-20	normal
	Azharly	-	-	-	-	-	-	5-15	5-10	0	10-20	normal
	Farabi	-	-	-	-	-	-	5-15	5-10	0	10-20	normal

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Сулейманова Г., Дутбаев Е., Күресбек А., Султанова Н., Жапаев Р., Моргунов А.

ОҢТҮСТІК-ШЫҒЫС ҚАЗАҚСТАН ЖАҒДАЙЫНДА ГЕКСАПЛОЙДТЫ СИНТЕТИКАЛЫҚ БИДАЙҒА СЕЛЛЕКЦИЯЛЫҚ ЖӘНЕ ИММУНОЛОГИЯЛЫҚ ЗЕРТТЕУ

Оңтүстік-шығыс Қазақстан жағдайында 2014 жылы Жапония мен СИММИТ шығарған 49 желісі гексаплойдты синтетикалық бидайға селлекциялық зерттеулер жүргізілді. Жүргізілген зерттеулер көрсеткендей, осы желілердегі табиғи инфекциялық фонда бидай ауруларының жоғары төзімділігін көрсетті. Оңтүстік-шығыс аймағында агрономиялық сипаттама бойынша күздік бидайдың 5 желісі селлекцияда қолдануға болады. Солтүстік Қазақстан аймағында жаздық бидайдың қалған 44 желі түрлерін жүргіземіз.

Сулейманова Г., Дутбаев Е., Куресбек А., Султанова Н., Жапаев Р., Моргунов А.

СЕЛЕКЦИОННОЕ И ИММУНОЛОГИЧЕСКОЕ ИЗУЧЕНИЕ ГЕКСАПЛОЙДНОЙ СИНТЕТИЧЕСКОЙ ПШЕНИЦЫ В ЮГО-ВОСТОЧНОМ КАЗАХСТАНЕ

В Юго-восточном Казахстане в 2014 году проводилось селекционное изучение гексаплойдной синтетической пшеницы (49 линий) селекции Киотского университета Японии и СИММИТ. Результаты исследований показали, что эти линий имеют высокий потенциал устойчивости к болезням на естественном инфекционном фоне. По агрономическим характеристике 5 линий могут быть использованы в селекции озимой пшеницы на юго-востоке Казахстана. Другие 44 линий мы планируем испытать как яровые формы в Северном регионе Казахстана.

UDC 631.31

N.Sh. Suleimenova[1], D.S. Petkova[2], D.H. Marinova[2], I.I. Ivanova[2]

[1]Kazakh National Agrarian University, Almaty, Kazakhstan
[2] Institute of Agriculture and Seed Science “Obraztsovchiflik”, Ruse

INVESTIGATIONS WITH ALFALFA IN IASS ”OBTRAZTSOV CHIFLIK” – ROUSSE

Abstract

Alfalfa is prevalently allogamous species of genus Medicago, family Fabaceae. It is spread all over the world and grown on over 30 million hectares. Scientific experiments with this crop has started in the Agricultural Experimental Station “Obraztsovchiflik” in 1905.

During the period 1991-1994 18 accessionswith n = 16 of 10 speciesof Scientific Research Institution in Kazakhstan (KazNAUKazNII and Agriculture) were tested.

At the Institute a large number of Bulgarian and foreign trifoliolate and multifoliolate varieties and germplasm were studied. An evaluation of the most important traits were made and correlations and interrelationsbetween them were determined. Seven varieties were created at the Institute in the last 20 years. Six of them – Nadezhda 2, Prista 2, Prista 3, Prista 4, Roli and Prisra 5 are trifoliate. The greatest achievement of the Bulgarian alfalfa breeding was Mnogolistna 1 variety - the only Bulgarian multifoliolate variety (5-7 leafletsper leaf).

Key words: alfalfa, foreign trifoliolate and multifoliolate varieties, germplasm.

Alfalfa is prevalently allogamous species of genus Medicago, family Fabaceae. As a cultivated crop, Medicagosativa (common or blue alfalfa) autotetraploid with 2n = 4x = 32 is mainly grown in our country. The most important characteristic of alfalfa as cross-pollinating plant is its high degree of heterozygosity and any action which reduces it, stronglydecreases the vitality of the individuals and the population as a whole.

The perennial nature, high yield capability and adaptability of alfalfa allowit to beusedfor newpurposes, such as biofuel, phyto-recovery of soil and water, andevenincludingin the menuof the people.

The alfalfa is spread all over the world and grown on over 30 million hectares, and that circumstance requiresbreeding and developing varieties possessing different characteristics [1]. Evaluation of the European alfalfa germplasm for agronomic and physiological traits was conducted in Spain [2], the Czech and Slovak Republics [3], Italy [4], Bulgaria [5].

The investigations with alfalfa started in the early eighteenth century. In Bulgaria alfalfa was imported for cultivation in 1890 in Rousse farm “Obraztsovchiflik”and its