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Analysis of the state of the machine and tractor fleet of Northern Kazakhstan

Abstract. The article presents an analysis of the state of the machine and tractor fleet of agricultural enterprises in the North Kazakhstan region and the pace of its renewal for 2015-2021, which showed a positive trend. According to the literature review, the solution to the problem of achieving food security in Kazakhstan is directly related to the level of technical equipment of farmers, the modernization of agricultural machinery, and the formation and development of the agricultural machinery market. Despite the successful implementation of various government programs, there are still many unresolved problems in updating the agriculture infrastructure and developing the agro-industrial complex's material and technical base. The study of the fleet of the main types of agricultural machinery in Northern Kazakhstan made it possible to determine the positive dynamics. For 2015-2021, the machine and tractor fleet of agricultural enterprises in the North Kazakhstan region was updated with 15,517 pieces. Thus, the total number of main types of agricultural machinery for farmers in the North Kazakhstan region at the beginning of 2022 is 155,275 units.

Keywords: agricultural machinery, machine and tractor fleet, North Kazakhstan region, grain production, granaries

DOI: doi.org/10.32523/2616-7263-2022-140-3-89-103

Introduction

According to the Ministry of Agriculture (Figure 1), the sown areas of the main crops (cereals, including legumes and rice, oilseeds, and fodder) were systematically decreasing from 1990 to the beginning of 2000. In subsequent years, the increase in sown areas did not exceed the maximum point (in 1990), and the expansion of areas was replaced by the intensity of their use [1].

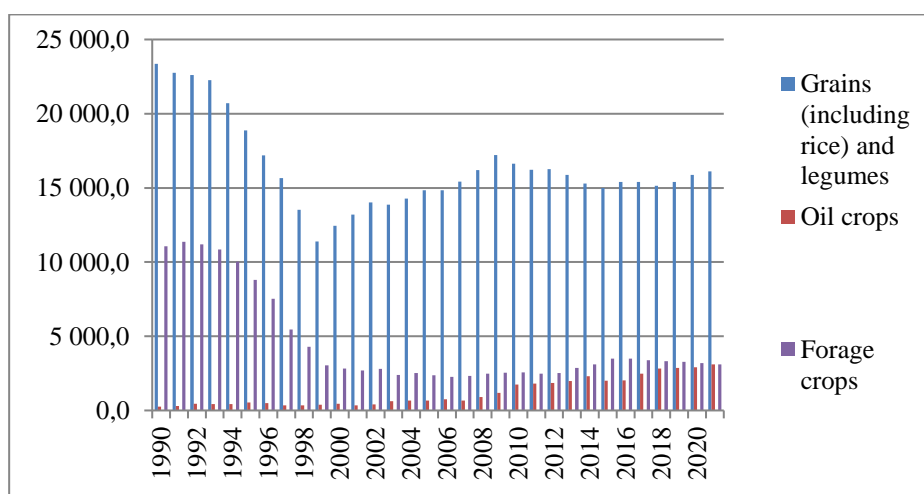


Figure 1. The cultivated area of main agricultural crops
Compiled by the author based on the source [1].

According to local executive authorities, a forecast structure of sown areas for 2022 has been formed. The total sown area will be 23.1 million hectares, which is 105 thousand hectares more than in 2021. The area of fodder crops has significantly increased and amounted to 3.6 million hectares [2]. The increase in sown (planting) areas and the expected increase in the production of the main types of crop production against the background of a decrease in the availability of agricultural machinery contributes to the rise in the load per unit of equipment and creates risks of a reduction in the level of agricultural mechanization [3].

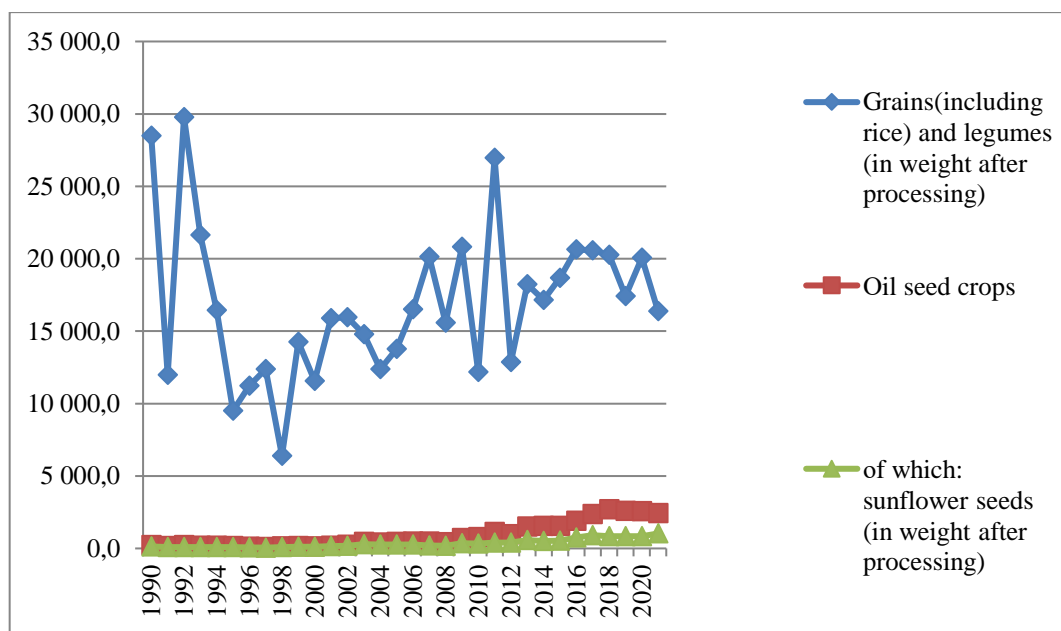


Figure 2. Gross harvest of main agricultural crops for 1990 – 2021

According to the national statistical authorities, the gross harvest of the main agricultural crops for 2021 decreased significantly compared to the same period in 2020. The average yield for Kazakhstan's main types of agricultural produce fell in 2021. Thus, the yield of grain crops amounted to 10.4 c/ha, oilseeds - 8.3 c/ha. At the end of 2021, Kazakhstan continues to grow in agricultural production, which is due to a slight increase in grain production by 1.44% compared to 2020.

Figure 3 shows that a significant proportion of grain-receiving enterprises is concentrated in the North Kazakhstan, Akmola, and Kostanay regions.

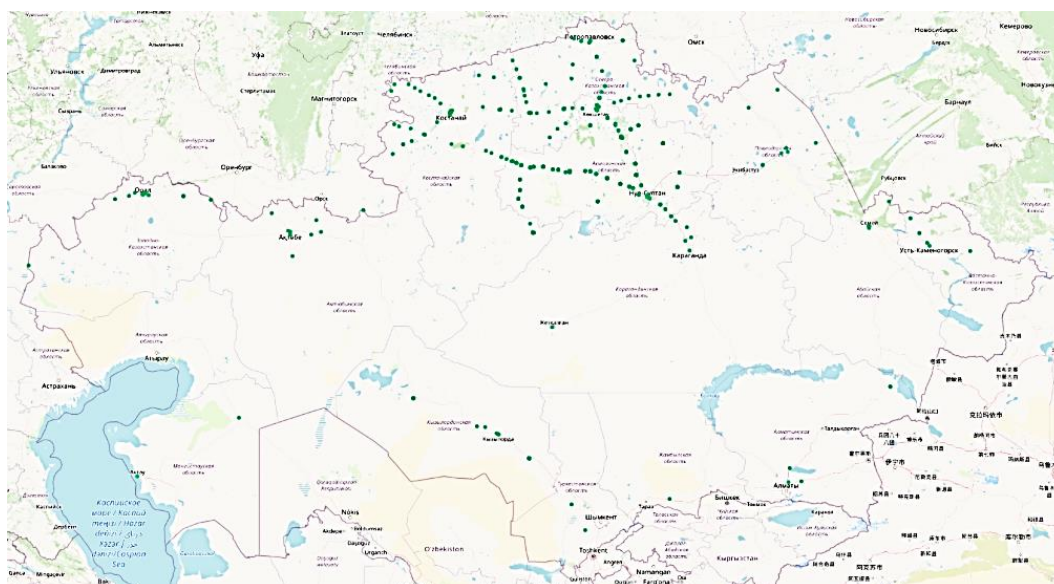


Figure 3. Map of the location of grain-receiving enterprises in Kazakhstan
Compiled by the author based on the source [3].

According to Table 1, Akmola, North-Kazakhstan, and Kostanay regions are leaders in terms of granaries. At the beginning of 2022, the load of granaries in the East Kazakhstan region was 20%, and the current load of the North Kazakhstan, Akmola, Kostanay, and Pavlodar regions took less than a quarter of the total [4].

By the statistical data, Atyrau, Zhambyl, Mangystau, Turkestan regions, Almaty city, and Shymkent city at the beginning of 2022, they did not have granaries. In the North Kazakhstan region, 71 grain-receiving enterprises are registered, of which 47 have an active status, and 24 have a license revoked/returned.

Table 1. Statistics on the workload of granaries

Territory	Total volume of granaries	Current work load, kg.	Free volume
Akmola region	4 456 500 000	599 294 220,00 13%	3 857 205 780,00
North-Kazakhstan region	3 114 900 000	434 557 860,00 13%	2 680 342 140,00
Kostanay region	2 887 300 000	209 736 538,00 7%	2 677 563 462,00
West-Kazakhstan region	602 800 000	16 016 158,00 2%	586 783 842,00
East-Kazakhstan region	495 200 000	103 918 123,00 20%	391 281 877,00
Aktobe region	391 800 000	19 008 512,00 4%	372 791 488,00
Pavlodar region	301 300 000	40 804 207,00 13%	260 495 793,00
Nur-Sultan	243 000 000	18 442 928,00 7%	224 557 072,00
Alma-Ata's region	174 600 000	11 506 927,00 6%	163 093 073,00

Karaganda region	108 500 000	903 546,00 0%	107 596 454,00
Kyzylorda region	40 000 000	0,00	40 000 000,00
In Kazakhstan	12 815 900 000	1 454 189 019,00 11%	11 361 710 981,00

Compiled by the author based on the source [4].

An essential condition for effective agricultural production is the optimal formation and rational use of agriculture's material and technical base. The primary task at present is to carry out the harvesting of the grown crop without losses and create conditions for ensuring high-quality storage. The Ministry is constantly monitoring the preparation of elevators for the acceptance of a new crop. The total grain storage capacity in the country in 2021 was 27.5 million tons, including 12 million tons at grain-receiving enterprises (Table 1) and 15.5 million tons at agricultural producers[3]. It is necessary to consider the volume of storage capacities and the technical equipment of granaries sufficient to store the forecasted crop, taking into account the carry-over residues of past years. The use of elements of the material and technical base of agricultural enterprises and the timely placement of crops in granaries affect the implementation of high-quality technological processes for its safety.

The solution to the problem of achieving food security in Kazakhstan is directly related to the level of technical equipment of farmers, the modernization of agricultural machinery, the formation and development of the agricultural machinery market [3].

The development of agriculture and related industries is one of the priority areas of the state's socio-economic policy [5].

The state has adopted and is implementing several programs affecting the development of the agro-industrial complex and rural regions:

- "Kazakhstan-2050" Strategy;
- Strategic Development Plan of the Republic of Kazakhstan until 2025;
- "Digital Kazakhstan" State program [5].

Despite the successful implementation of priority programs and the achievement of target indicators, there are still many unresolved problems in updating the agriculture infrastructure and developing the agro-industrial complex's material and technical base [5].

Today, both the standard of living and the well-being of the population largely depends on the degree of development of agricultural production; in this regard, it is necessary to identify the most critical problems of the agro-industrial complex and find ways to solve them.

The purpose of the study is to determine the state of the machine and tractor fleet of agricultural enterprises in the North Kazakhstan region and technical support based on the analysis of the fleet of the main types of agricultural machinery.

In the Republic of Kazakhstan, the formation of agribusiness industries has a territorial and regional character. The level of their development depends on many factors: the proximity of deposits and resources; availability of relatively inexpensive energy sources; infrastructure development; provision of labor, material, and other resources necessary for production activities. The level of management in the regions also plays an important role [5].

There are economic disproportions in the country since the extractive segment of the industry plays a dominant role in the financial system of particular regions. At the same time, agriculture, transport, and infrastructure services are experiencing difficulties, and a high degree of monopolization remains. The basis of the economic structure of the regions is their territorial location, agro-climatic conditions associated with natural and climatic zones, asymmetric placement of cities, financial centers, deposits, favorable areas for agriculture, and so on [5].

There is no doubt that for the stable economic development of the regions; it is necessary to create

conditions for ensuring the competitiveness of agricultural products and support the timely sale, processing, and export of products. This, in turn, spurs a set of measures related to creating favorable conditions for long-term business lending and tax administration. Furthermore, it is necessary to support and stimulate industries and economic entities that use innovative technologies that invest in research and technical development [5].

The North Kazakhstan region is divided into 13 districts; the regional center is the city of Petropavlovsk. The area includes five towns, 11 settlements, and 204 rural (village) communities. As of January 1, 2019, the population amounted to 554.5 thousand people or 3% of the republic's total population. The urban population is 251.8 thousand people or 45.4%; the rural population is 302.7 thousand people or 54.6% [7].

The main sectors of the region's economy that have the most significant impact on the volume of GRP (gross regional product) are agriculture, industry, trade, transport and warehousing, and real estate transactions. According to the results of the first half of 2019, the volume of GRP per capita amounted to 706.1 thousand tenge [7].

Kazakh wheat is in great demand. The main markets for North Kazakhstani wheat are the countries of Central Asia (Uzbekistan, Tajikistan, Kyrgyzstan, Afghanistan), which account for 2/3 of wheat exports. This is the closest market and the most convenient for grain supply in terms of overland logistics with transportation mainly by rail. The leading importer of barley is Iran, which accounts for about 90% of barley exports. Oilseeds are exported mainly to European countries such as Poland, Belgium, Germany, Italy, and others. Of the Asian countries, oilseeds are mainly exported to Mongolia, Afghanistan, and Uzbekistan, increasing imports [7]. Consequently, the economic well-being of this region depends on the timely harvesting and preservation of the crop.

Research methodology

In the course of this study, a set of methods of scientific analysis was used: the statistical method, the method of comparison, and forecast. Using the collection of statistical data and the growth dynamics of the main types of equipment, it is possible to identify the main problems of the state of the machine and tractor state of agricultural enterprises in the North Kazakhstan region. The most crucial issue is the unfavorable state of the farming machinery fleet. The depreciation of agricultural machinery in Kazakhstan is about 80%. According to the Ministry of Agriculture of the Republic of Kazakhstan, the average age of more than 70% of combine harvesters and tractors is 13-18 years old, with a normal operating life of 8-10 years. In addition, the presence of a decommissioning of more than 70% of combine harvesters, about 80% of tractors, 75% of harvesters, and 80% of seeders [5].

Results and discussion

Currently, the main focus is on the supply of universal mechanized complexes based on tractor units to agricultural producers, which allows for minimizing agrarian production costs, effectively implementing the entire cycle of agricultural operations, and reducing the payback period of purchased equipment [3].

According to the Ministry of Industry and Infrastructure Development, in 2020, Kazakhstani factories produced 6,272 units of agricultural machinery worth 93 billion tenge. The annual production growth in physical terms amounted to 98.2%; in terms of value, output increased immediately by 2.5 times [6].

According to the Ministry of Industry and Infrastructure Development, the production of tractors in Kazakhstan is carried out by the Kostanay plants Agromash Holding KZ and the Kostanay Tractor Plant (Lovol and Kirovets), the KAIK plant (Belarus and RSM brands) in the Akmola region and SemAZ "(brand "Belarus") in the East Kazakhstan region. Combines are assembled by AgromashHolding KZ

(Essil brand), KAIK (Acros), and Kazrost Engineering Ltd. (VECTOR 410 and ACROS 550) [6].

According to the Ministry of Agriculture of Kazakhstan Republic, in 2021, the agricultural equipment fleet in Kazakhstan amounted to 143 thousand tractors and 37.6 thousand combines; in 2019, farmers purchased about 3.4 thousand units of tractors and 1.2 thousand combines, and in 2020 about 4.8 thousand tractors and 1.2 thousand combines were purchased [6].

The study of the fleet of the main types of agricultural machinery in Northern Kazakhstan made it possible to determine the positive dynamics. As a result, for 2015-2021, the machine and tractor fleet of agricultural enterprises in the North Kazakhstan region was updated with 15517 units (Table 2). Thus, there is a gradual level of development of the technical support of agriculture, supported by the leasing of agricultural machinery. Leasing as a source of financial support for the investment activities of enterprises is one of the most important mechanisms for their technical re-equipment, the introduction of new equipment and technologies, and increasing the level of innovation and financial results of production [5].

Table 2. Dynamics of renewal of the fleet of the main types of agricultural machinery and equipment in the North Kazakhstan region (as of January 2022)

Name of equipment	2015	2016	2017	2018	2019	2020	2021
Tractors of all brands:	211	197	216	256	338	408	531
Wheeled	206	192	214	254	334	400	524
Other	14	8	8	15	14	56	71
Tracked:	5	5	2	2	4	8	7
Other	2	1	0	0	3	8	6
Harvesters	271	253	202	160	199	291	273
Grain harvesters	269	249	195	156	192	281	265
Other	13	4	29	37	19	35	19
Forage harvesters	2	2	6	4	4	10	8
Corn harvesters	0	0	0	0	2	0	0
Potato harvesters	0	1	1	0	1	0	0
Beet harvesters	0	1	0	0	0	0	0
Roll reapers	118	101	77	86	69	90	79
Trucks	64	61	41	24	30	28	20
Tractor trailers	47	43	45	36	34	25	52
Tractor plows	13	12	9	15	21	49	34
Subsurface cultivator	11	18	6	4	12	6	8
Cultivator	38	22	18	15	39	35	33
Hoeing plough	11	5	4	5	1	5	15
Harrows	352	402	254	146	192	132	317
Seeders	157	238	311	270	362	433	444
Seeding complexes	52	38	25	44	61	64	91
Grain loaders	19	16	16	23	31	41	37
Seed protectors	12	16	12	15	8	14	9
Sprayers and pollinators	48	34	32	46	63	77	66
Irrigation machines total	1	0	0	0	0	0	0
Mowers	22	29	24	27	59	52	44
Tractor rake	17	21	17	17	36	20	17
Bale presses	43	41	38	39	84	71	52
Stackers	16	10	9	6	11	16	17

Car weights	1	2	2	1	2	3	4
Mechanized threshing-floor	4	5	3	4	2	0	0

Compiled by the author on the basis of data from the Department of Agriculture and Land Relations of the Akimat of the North Kazakhstan region.

In 2021, the agricultural enterprises of northern Kazakhstan purchased a total of: tractors - 548 units, grain harvesters - 262 units, seeders - 456 units, forage harvesters - 6, tractor trailers - 49, storage hoppers - 4, trucks - 12, baler - 63, loaders - 122, plows - 26, hoeing plough - 1, cultivators - 20, harrows - 231, grain throwers - 27, grain cleaning complexes - 18, grain dryers - 6, seed dressers - 10, others - 325, other agricultural equipment - 72 (Table 3).

Table 3. Acquisition of agricultural machinery by enterprises of the North Kazakhstan region in 2021

Name of equipment	Purchased total	
	Quantity	Amount, million tenge
Tractors of all brands		
wheeled	543	18412,0
including:		
"John Deere"	25	2905,2
"Buhler Versatile"	46	3962,8
"Case 425"	11	1552,6
"XERION "	13	1922,4
"CLAAS"	1	34,1
"Axion"	2	92,6
"New Holland 425"	2	343,0
"Kirovets"	39	1982,8
"Foton" (China)	43	651,4
"Foton-1454" (China)	0	0,0
K-744	19	1008,1
K-700	2	95,9
MTZ-80	11	92,4
MTZ -82	107	927,5
MTZ -892	86	880,1
MTZ -920	14	126,7
MTZ -952,960	37	382,0
MTZ -1221	64	956,7
HTZ -17221	4	125,1
Other	17	370,6
Tracked:	5	500,6
Other	5	500,6
Total	548	18912,6
Combine harvesters		
"JohnDeere"	26	3996,7
"CLAAS"	22	3507,5

"NewHolland"	6	462,7
"Case6066"	2	368,0
"ACROS" RSM -530	57	3292,8
"ACROS" RSM -580	46	3084,5
"Vector"	34	1881,6
KZS-740 "Essil"	21	1040,1
KZS-760 "Essil"	43	2950,4
Other	5	383,0
Total	262	20967,2
"DonMar"	18	147,7
ZhVZ-10.7 (Gomel)	5	41,8
"MacDon"	15	1033,5
ZhVN-6	9	68,8
Other	27	619,8
Total	74	1911,7
"John Deere "	11	1170,1
"Bourgault"	15	1546,4
"Flexi-Coil"	2	193,8
"Amazone"	1	29,5
"Horsch"	19	1763,7
"Amity"	1	74,0
"Kuzbass"	1	66,0
"Agrator-8500"	0	0,0
Other	41	1298,4
Total	91	6141,9
Seeders		
SKP-2.1	203	354,8
"John Deere"	0	1,0
SZS-2.1	183	308,2
Other	70	470,5
Total	456	1134,5
Forage harvesters	6	1275,0
Forage harvester KSK-600	1	63,0
Tractor trailers	49	455,2
storagebunkers	4	82,5
Trucks	12	250,4
Baler	63	439,1
Loaders	122	2703,3
Plows	26	98,3
Hoeing plough	1	7,5
Cultivator	20	361,0
Harrows	231	1303,8
GrainThrowers	27	140,5
Grain-cleaning complexes	18	243,2
Graindryers	6	416,8
Seedprotectors	10	19,7

Other	325	4304,8
Total	2352	61232,1
Other agricultural equipment	72	6222,5
Total for the region	2424	67454,6

Compiled by the author on the basis of data from the Department of Agriculture and Land Relations of the Akimat of the North Kazakhstan region.

Thus, the machine and tractor fleet of agricultural enterprises in the North Kazakhstan region at the beginning of 2022 is: tractors of all brands - 12909, wheeled - 11430, including: Kirovets -2990, T-150 / KhTZ -316, Case -116, Valtra -3, Challenger -23, New Holland -24, Lamborghini -6, CLAAS - 101, John Deere -502, Buhler Versatile -452, MTZ (total) -5192, YuMZ (total) -352, T-40 - 264, T-25 - 132, other wheeled tractors -957; tracked: -1479, including: - DT-75 (75M, 75P) - 766, T-130 - 10 units, T-4 - 622, T-95.4 - 20, T-70 - 8, other tracked tractors -53, combines - 7488; grain harvesters -7365, John Deere -838, CLAAS -339, Challenger -28, New Holland -113, Case 6066 - 67, ACROS RSM-530 - 325 units, "ACROS" RSM-580-192, "Vector" -733, "Niva-Effect" -105, KZS-740, "Essil" -367, KZS-760, "Essil" -459, "Yenisei" -1200 - 2139, "Yenisei" -950 (Ruslan) -181, SK-5 "Niva" -1009, "Don" -1500-184, "SAMPO" -SR 2010 - 54 units, other grain harvesters - 232, forage harvesters -84, corn harvesters - 31, potato harvesters-7, beet harvesters-1. Roller reapers- 4756, trucks - 5800, tractor trailers - 9375, tractor plows - 1956, subsurface cultivator - 1945, cultivator - 2572, hoeing plough- 1239, harrows - 41823, seeders - 15068, seeding complexes - 1388, grain loaders - 1260, dressers seeds-625, sprayers and pollinators -1676, sprinkling machines total-9, mowers - 958, tractor rakes-929, balers-937, stackers-640, truck scales-554, mechanized current-688.

To preserve the quantity and quality of the harvest, the technical equipment of granaries is considered important. The number of large grain-receiving enterprises of the North Kazakhstan region includes: "Bread base No. 2" LLP, "AGRIMER" LLP, "Beskaragai" LLP, "Dostyk elevator" LLP, "Kzyltu flour mill" LLP, "Mamlyut flour mill" LLP, LLP "TALSHIK ASTYK LTD", "Timiryazevsky elevator", LLP "KhPP "TNS-Export", LLP "Elevator Smirnovsky" (Table 4). From the data obtained, it can be seen that grain-receiving enterprises have the necessary equipment for receiving, drying, processing, storing, and shipping grain.

Table 4. Equipment of the most significant large grain enterprises in the North Kazakhstan region

Indicator	LLP "Bread base No. 2"	AGRIMER LLP	LLP "Beskaragai"	LLP "Dostytsky elevator"	LLP "Kzyltu Flour Mill"	LLP "Mamlyut flour mill"	LLP "TALSHIK ASTYK LTD"	"Timiryazevsky elevator"	LLP "HPP "TNS-Export"	LLP "Elevator Smirnovsky"
Location	Rural district Novoishimsky, aul (village) Novoishimskoe, Zerno	Bulaev o, st. Vostochnaya, building.4	Rural district Aman-dyksky, aul (village) Ilyichyevka, Beskaragai	aul district Kazansky, aul (village) Nikolskoe-Burlukskoe,	Kishkenekol rural district, aul (village) Kishkenekol, Elevatornaya	Mamlyutka, st. Skachkova, 37	aul district Talshyksky, aul (village) Talshyk, S.sadvakaso	rural district Timiryazevsky, aul (village) Timiryazev, Lenin	G. Musrepov street, 38G	Smirnovovillage, st. Elevatornaya, 32

	vaya street, 14		street, 24	station St.Yanko, 1	street, 2		va street, 6B	street, 1		
Grain storage capacity (thousand tons)	142,80	160,00	145,00	102,50	202,00	145,40	209,20	158,10	120,00	100,00
Partner of Food Corporation	yes	undefined	undefined	undefined	yes	yes	yes	undefined	undefined	undefined
Trustrating	A (reliable)	X (undefined)	0 (unreliable)	0 (unreliable)	0 (unreliable)	0 (unreliable)	B (acceptable)	0 (unreliable)	0 (unreliable)	X (undefined)
Elevator (thousand tons)	70,40	100,00	33,00	63,50	115,00	118,90	170,00	143,00	120,00	100,00
Warehouse (thousand tons)	72,40	60,00	112,00	39,00	87,00	26,50	39,20	15,10	-	-
Warehouse, incl. intended for storage of seeds (thousand tons)	-	-	-	-	-	3,20	3,00	-	-	-
Grain drying equipment (pcs/ton/h)	6/218	6/238	6/220	5/210	7/266	6/295	4/166	5/324	2/100	2/114
Grain cleaning machines (pcs)	7	6	8	6	8	17	6	6	9	6

Asphalt sites (thousand m ²)	-	-	30,00	15,00	-	3,20	0,50	-	12,50	-
Active ventilation equipment (pcs)	-	20	17	14	-	16	1	-	48	2
Automobiles* (pcs)	2	2	6	2	4	4	2	2	2	1
Carriageways* (pcs)	1	1	2	1	1	1	1	1	2	1
Mobile transport equipment (pcs)	9	24	27	5	9	15	6	3	32	1
Handling equipment (pcs)	13	11	3	4	16	34	8	2	23	2
Installations for remote control of temperature and humidity of grain during storage (set)	1	-	17	2	1	2	1	2	24	2
Equipment for temperature and moisture	1	144	30	2	20	2	30	11	216	-

control of grain during storage (pcs)										
Loading and unloading devices (pcs)	5	4	6	-	10	20	3	9	7	4

Compiled by the author based on the source [4].

Conclusion

The study of the fleet of the main types of agricultural machinery in Northern Kazakhstan made it possible to determine the positive dynamics. For 2015-2021, the machine and tractor fleet of agricultural enterprises in the North Kazakhstan region has been updated with 15,517 pieces of equipment. Thus, the machine and tractor fleet of agricultural enterprises in the North Kazakhstan region at the beginning of 2022 is: tractors of all brands - 12909, wheeled - 11430, other wheeled tractors - 957; tracked: -1479, other tractors -53, harvesters- 7488; grain harvesters - 7365, other grain harvesters - 232, forage harvesters - 84, corn harvesters - 31, potato harvesters - 7, beet harvesters - 1, reapers- 4756, trucks - 5800, tractor trailers - 9375, tractor plows - 1956, subsurface cultivator- 1945, cultivator-2572, hoeing plough-1239, harrows- 41823, seeders-15068, sowing complexes-1388, grain loaders-1260, seed dressers-625, sprayers and pollinators-1676, sprinklers total-9, mowers-958, tractor rakes-929, balers - 937, stackers - 640, truck scales - 554, mechanized current – 688.

It is necessary to create mechanisms for updating the agricultural machinery fleet. In order to provide means of mechanization of agricultural production, it is essential to find solutions to the following problems:

- provide economic and financial support to agricultural enterprises for the purchase of all types of agricultural machinery, for the renewal of the machine and tractor fleet;
- ensure the creation of competitive models of equipment that meet modern operating requirements by stimulating the innovative development of agricultural engineering;
- create favorable financial and organizational conditions for the production and development of exports of agricultural machinery;
- ensure the production of modernized agricultural machinery.

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Анализ состояния машинно-тракторного парка Северного Казахстана

Аннотация. В статье представлены оценка машинно-тракторного парка сельскохозяйственных предприятий Северо-Казахстанской области и темп его обновления за 2015-2021 годы, показавший положительную динамику. Согласно данным литературного обзора решение проблемы достижения продовольственной безопасности в Казахстане напрямую связано с уровнем технической оснащенности аграриев, модернизацией сельхозмашиностроения, становлением и развитием рынка сельскохозяйственной техники. Несмотря на успешную реализацию различных государственных программ, остается много нерешенных проблем в обновлении инфраструктуры сельского хозяйства и развитии материально-технической базы агропромышленного комплекса. Исследование парка основных видов сельскохозяйственной техники в Северном Казахстане позволило определить положительную динамику. За 2015-2021 годы машинно-тракторный парк сельскохозяйственных предприятий в Северо-Казахстанской области был обновлен на 15517 единиц техники. Таким образом, общее количество основных видов сельскохозяйственной техники аграриев в Северо-Казахстанской области на начало 2022 года насчитывает 155275 единиц.

Ключевые слова: сельскохозяйственная техника, машинно-тракторный парк, Северо-Казахстанская область, производство зерна, зернохранилища.

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Солтүстік Қазақстанның машина-трактор паркінің жағдайын талдау

Аңдатпа. Мақалада оң динамиканы көрсеткен Солтүстік Қазақстан облысының ауыл шаруашылығы кәсіпорындарының машина-трактор паркінің жай-күйіне және оны 2015-2021 жылдардағы жаңарту қарқынына талдау берілген. Әдеби шолудың деректеріне сәйкес Қазақстанда азық-түлік қауіпсіздігіне қол жеткізу проблемасын шешу аграрийлердің техникалық жарақтандырылу деңгейімен, ауыл шаруашылығы машиналарын жасауды жаңғыртумен, ауыл шаруашылығы техникасы нарығының қалыптасуымен және дамуымен тікелей байланысты. Түрлі мемлекеттік бағдарламалардың табысты іске асырылуына қарамастан, ауыл шаруашылығы инфрақұрылымын жаңартуда және агроөнеркәсіптік кешеннің материалдық - техникалық базасын дамытуда шешілмеген проблемалар көп. Солтүстік Қазақстандағы ауыл шаруашылығы

техникасының негізгі түрлері паркін зерттеу оң динамиканы анықтауға мүмкіндік берді. 2015-2021 жылдары Солтүстік Қазақстан облысындағы ауыл шаруашылығы кәсіпорындарының машина-трактор паркі 15517 бірлік техникаға жаңартылды. Осылайша, 2022 жылдың басында Солтүстік Қазақстан облысындағы аграрийлердің ауыл шаруашылығы техникасының негізгі түрлерінің жалпы саны 155275 бірлікті құрайды.

Кілт сөздер: ауыл шаруашылығы техникасы, машина-трактор паркі, Солтүстік Қазақстан облысы, астық өндіру, астық сақтау қоймалары

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