

## Analytical material

№ \_\_\_\_\_

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### Space monitoring data on crop production

**Data sources:** JSC "National Company "Kazakhstan Garysh Sapary", subordinated to the Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan (hereinafter – MDDIAI).

**Legal basis for obtaining data:** In accordance with paragraphs 19-2 of Article 12 of the Law of the Republic of Kazakhstan "On State Statistics", the competence of the Bureau of National Statistics of the ASPR of the Republic of Kazakhstan (hereinafter – the Bureau) includes receiving and using data on a gratuitous basis from the relevant authorized state bodies, organizations, formed in the implementation of public orders and public-private partnerships, including data of remote sensing of the Earth, in the implementation of statistical activities;

Within the framework of the Technical Specification between the Bureau and MDDIAI, dated 11 January, 2023, JSC NC "Kazakhstan Garysh Sapary" (hereinafter – JSC KGS) provides the following information: areas of fallow fields, sown areas, pasture lands and forecast values of yields of certain grain crops.

**Information systems used:** Space monitoring of rangelands is displayed on geoservice [pasture.gharysh.kz](http://pasture.gharysh.kz), crop production - on [agro.gharysh.kz](http://agro.gharysh.kz)

### Methodological approaches

Satellite-based estimation of predicted yield and gross yield is based on a regression linear model of grain crops and is based on the combination of meteorological and statistical parameters with satellite and ground measurements. Vegetation indices were used as Earth remote sensing (hereinafter – ERS) data, the first of which is NDVI-Normalized Difference Vegetation Index-an index that shows reliable information about the state of agricultural land, namely the amount of photosynthetically active biomass. Using the results of calculations of this index allows assessing the dynamics of changes in the state of crops, their growth and development rate, vegetation period, as well as the impact of negative phenomena (infestation of plants with pathogens, natural disasters, etc.). The next indicator is the vegetation health index VHI (Vegetation Health Index). The index is based on a combination of two indices VCI (Vegetation Condition Index), which characterizes the oppression of vegetation cover and the temperature regime index TCI (Temperature Condition Index).

Table 1

## Area of steam fields

ha

Name of the region	All categories of households	Including	
		agricultural enterprises	individual entrepreneurs and peasant or private farms
<b>Republic of Kazakhstan</b>	1 703 116.4	1 077 578.8	625 537.6
Abai	10 980.3	4 546.5	6 433.8
Akmola	482 535.2	392 887.3	89 647.9
Aktobe	39 937.2	15 119.8	24 817.4
Almaty	23 504.6	8 984.0	14 520.6
Atyrau	-	-	-
Batys Kazakhstan	30 926.2	6 535.1	24 391.1
Zhambyl	22 921.5	18 940.3	3 981.2
Zhetisu	21 286.3	3 349.8	17 936.5
Karagandy	68 621.1	50 264.8	18 356.3
Kostanai	526 006.1	227 289.1	298 717.0
Kyzylorda	-	-	-
Mangystau	-	-	-
Pavlodar	78 237.2	54 193.0	24 044.2
Soltustik Kazakhstan	336 464.0	270 964.2	65 499.8
Turkistan	49 832.3	18 800.0	31 032.3
Ulytau	2 144.5	137.8	2 006.7
Shygys Kazakhstan	9 719.9	5 567.1	4 152.8

Table 2

## Sown area of agricultural crops (spring crops) with indication of their condition

Name of the region	Sown area, ha	State of agricultural crops				
		very poor	poor	satisfactory	good	excellent
<b>Republic of Kazakhstan</b>	15 318 651.8	1 309 001.6	2 796 008.0	7 319 229.0	2 858 399.9	1 036 013.3
Abai	297 919.5	15 094.3	55 737.9	166 969.9	58 424.7	1 692.7
Akmola	4 432 297.8	267 268.8	384 699.5	2 562 133.3	909 906.9	308 289.3
Aktobe	267 666.5	27 714.1	60 463.5	95 254.3	65 407.6	18 827.0
Almaty	112 188.9	11 680.9	22 353.3	35 471.8	27 116.5	15 566.4
Batys Kazakhstan	272 341.1	20 163.7	41 264.2	123 785.6	41 778.9	45 348.7
Zhambyl	194 023.4	17 943.8	26 264.7	57 535.5	62 240.6	30 038.8
Zhetisu	209 450.8	17 911.4	35 691.9	76 182.0	49 075.8	30 589.7
Karagandy	991 502.2	45 717.0	55 295.0	592 815.5	219 323.6	78 351.1
Kostanai	3 897 605.8	547 157.6	1 127 441.1	1 515 651.9	506 246.7	201 108.5
Kyzylorda	87 504.5	7 946.0	15 572.8	29 522.7	18 934.3	15 528.7
Pavlodar	1 015 466.1	110 625.0	273 910.0	452 970.6	141 281.4	36 679.1
Soltustik Kazakhstan	3 074 843.8	183 117.9	623 268.1	1 391 336.0	663 219.6	213 902.2
Turkistan	222 309.1	13 264.7	33 054.2	86 502.1	54 483.2	35 004.9
Ulytau	20 901.0	1 994.9	5 578.7	11 586.3	1 180.8	560.3
Batys Kazakhstan	222 442.7	21 401.5	35 405.7	121 501.8	39 679.3	4 454.4
Shymkent city	188.6	0.0	7.4	9.7	100.0	71.5

Table 3

## Area of pasture lands by their condition\*

Name of the region	Area of pasture land, ha	Area of pasture lands by condition, ha					
		no vegetation	very poor	poor	satisfactory	good	excellent
<b>Republic of Kazakhstan</b>	80 845 311.8	4 113 778.8	40 564 309.5	25 794 616.3	8 266 877.5	1 709 896.7	395 833.0
Abai	7 614 133.6	408 027.6	3 500 699.5	3 037 805.8	548 183.0	93 787.3	25 630.4
Akmola	4 186 939.3	143 056.6	1 457 327.1	1 868 555.0	580 882.0	113 475.1	23 643.5
Aktobe	11 688 953.1	102 525.7	5 064 680.2	4 314 826.6	1 900 680.1	287 310.9	18 929.6
Almaty	3 385 189.3	153 776.7	2 082 298.6	606 479.8	362 282.1	148 476.1	31 876.0
Atyrau	2 481 171.7	211 056.1	1 568 000.7	656 492.2	39 677.5	5 191.8	753.4
Batys Kazakhstan	6 405 187.3	27 953.0	3 176 876.5	2 785 319.1	366 735.9	44 413.0	3 889.8
Zhambyl	3 435 084.3	259 185.4	2 568 801.7	459 774.2	112 686.7	29 934.2	4 702.1
Zhetisu	3 729 561.4	186 793.9	2 125 930.9	823 557.8	360 048.1	197 565.4	35 665.3
Karagandy	10 072 015.4	520 098.2	4 903 391.6	3 687 504.1	862 695.2	93 775.9	4 550.4

Name of the region	Area of pasture land, ha	Area of pasture lands by condition, ha					
		no vegetation	very poor	poor	satisfactory	good	excellent
Kostanai	4 494 888.7	89 497.7	573 497.2	1 919 275.4	1 494 568.9	288 377.5	129 672.0
Kyzylorda	1 991 243.9	409 849.6	921 127.2	463 926.8	139 525.3	50 467.7	6 347.3
Mangystau	2 353 026.0	373 917.8	1 846 796.1	119 761.3	12 118.9	431.9	-
Pavlodar	4 774 989.0	103 592.7	2 211 358.8	2 012 736.0	385 908.1	53 265.5	8 127.9
Soltustik Kazakhstan	2 115 060.1	127 035.8	734 917.7	858 344.0	319 141.4	62 676.0	12 945.2
Turkistan	3 281 090.0	299 382.5	2 416 024.6	357 720.2	139 816.6	61 196.1	6 950.0
Ulytau	6 154 209.2	433 382.4	4 552 991.2	1 008 176.0	150 322.2	8 938.3	399.1
Shygys Kazakhstan	2 682 569.5	264 647.1	859 589.9	814 362.0	491 605.5	170 614.0	81 751.0
Astana city	-	-	-	-	-	-	-
Almaty city	24.5	-	-	4.9	8.6	11.0	-
Shymkent city	76.9	-	-	39.4	17.0	20.5	-

\*There are no agricultural lands in the category of land fund "Agricultural lands"

Table 4

### Wheat sown area with indication of their condition

Name of the region	Sown area, ha	State of agricultural crops				
		very poor	poor	satisfactory	good	excellent
<b>Republic of Kazakhstan</b>	12 441 034.8	970 767.7	2 396 366.3	6 107 167.6	2 208 143.3	758 589.9
Abai	235 294.4	14 267.9	45 044.6	136 054.9	39 185.7	741.3
Akmola	3 931 045.6	211 293.5	346 557.6	2 264 166.8	822 879.3	286 148.4
Aktobe	203 119.7	23 455.9	49 817.0	77 570.8	35 506.9	16 769.1
Almaty	28 943.5	4 629.0	5 516.8	4 914.4	8 453.7	5 429.6
Batys Kazakhstan	198 433.0	11 703.0	27 854.6	88 978.0	33 289.1	36 608.3
Zhambyl	1 368.5	104.2	132.3	466.9	531.4	133.7
Zhetisu	69 778.0	5 748.6	12 363.5	23 872.7	17 068.4	10 724.8
Karagandy	797 480.9	32 631.0	38 811.6	492 670.3	172 347.5	61 020.5
Kostanai	3 478 287.0	438 911.3	1 105 640.7	1 390 934.4	411 502.6	131 298.0
Kyzylorda	5 645.6	157.0	51.2	183.5	1 566.9	3 687.0
Pavlodar	734 647.2	50 181.4	207 395.0	354 535.5	95 930.1	26 605.2
Soltustik Kazakhstan	2 435 453.6	151 262.5	499 569.6	1 113 620.9	515 570.8	155 429.8
Turkistan	139 841.8	8 984.0	26 037.6	57 590.0	26 232.3	20 997.9
Ulytau	13 887.0	1 339.6	4 557.9	7 069.3	768.9	151.3
Shygys Kazakhstan	167 779.0	16 098.8	27 016.0	94 532.0	27 302.2	2 830.0
Shymkent city	30.0	0.0	0.3	7.2	7.5	15.0

Table 5

### Area sown with barley with indication of their condition

Name of the region	Sown area, ha	State of agricultural crops				
		very poor	poor	satisfactory	good	excellent
<b>Republic of Kazakhstan</b>	2 099 150.5	248 555.9	283 864.3	905 479.9	476 215.0	185 035.4
Abai	26 552.2	26.8	1 322.3	9 448.1	15 755.0	-
Akmola	459 489.6	49 817.5	34 591.0	270 554.8	82 720.1	21 806.2
Aktobe	63 673.9	4 048.0	10 386.1	17 683.6	29 554.4	2 001.8
Almaty	60 286.4	4 294.6	13 841.8	24 136.0	11 773.9	6 240.1
Batys Kazakhstan	71 126.9	7 763.9	12 937.3	33 782.6	8 464.4	8 178.7
Zhambyl	192 654.9	17 839.5	26 132.4	57 068.6	61 709.3	29 905.1
Zhetisu	137 750.8	12 054.5	23 134.8	51 290.6	31 590.8	19 680.1
Karagandy	180 979.9	12 322.5	14 759.1	93 145.0	45 204.4	15 548.9
Kostanai	279 657.3	87 375.3	14 022.2	76 221.1	69 149.8	32 888.9
Kyzylorda	191.8	157.4	-	-	-	34.4
Pavlodar	134 431.8	29 799.6	31 826.6	47 871.9	18 739.1	6 194.6
Soltustik Kazakhstan	402 879.2	17 563.6	90 667.9	176 628.6	79 450.0	38 569.1
Turkistan	39 402.2	1 747.2	2 235.7	20 472.8	12 260.1	2 686.4
Ulytau	6 406.6	188.4	1 020.9	4 517.1	411.9	268.3
Shygys Kazakhstan	43 659.2	3 557.1	6 978.8	22 659.1	9 431.4	1 032.8
Shymkent city	7.8	-	7.4	-	0.4	-

Table 6

## Area sown with oats with indication of their condition

Name of the region	Sown area, ha	State of agricultural crops				
		very poor	poor	satisfactory	good	excellent
<b>Republic of Kazakhstan</b>	208 115.0	33 699.9	21 461.8	94 278.4	29 640.6	29 034.3
Abai	4 146.2	64.8	298.9	1 451.7	1 484.5	846.3
Akmola	41 762.6	6 157.8	3 551.0	27 411.8	4 307.5	334.5
Aktobe	872.8	210.2	260.5	0.0	346.4	55.7
Almaty	432.7	1.2	119.6	35.2	124.9	151.8
Batys Kazakhstan	2 781.1	696.7	472.3	1 024.9	25.3	561.9
Zhetisu	1 126.5	61.9	147.5	513.4	269.3	134.4
Karagandy	13 041.5	763.5	1 724.4	7 000.1	1 771.8	1 781.7
Kostanai	58 083.7	14 381.5	2 981.9	18 851.4	2 154.2	19 714.7
Kyzylorda	4.7	-	-	-	-	4.7
Pavlodar	31 155.1	6 355.9	5 867.7	13 436.2	4 671.4	823.9
Soltustik Kazakhstan	46 735.7	3 421.8	4 967.2	21 847.0	12 465.1	4 034.6
Ulytau	607.5	466.9	0.0	0.0	0.0	140.6
Shygys Kazakhstan	7 364.9	1 117.7	1 070.8	2 706.7	2 020.2	449.5

Table 7

## Rice sown area with indication of their condition

Name of the region	Sown area, ha	State of agricultural crops				
		very poor	poor	satisfactory	good	excellent
<b>Republic of Kazakhstan</b>	88 177.4	8 542.3	16 021.8	32 769.1	19 426.9	11 417.3
Almaty	5 802.2	771.6	344.9	2 390.5	1 900.1	395.1
Jetisu	795.6	46.4	46.1	505.3	147.3	50.5
Kyzylorda	80 691.6	7 631.5	15 521.6	29 207.9	17 358.9	10 971.7
Turkistan	888.0	92.8	109.2	665.4	20.6	-

Table 8

## Forecast value of grain crop yield\*

c/ha

Name of the region	All categories of households	Including		
		agricultural enterprises	individual entrepreneurs and peasant or private farms	households of the population
<b>Republic of Kazakhstan</b>	12.8	12.8	12.8	12.8
Abai	9.2	9.2	9.2	9.2
Akmola	9.6	9.6	9.6	9.6
Aktobe	8.0	8.0	8.0	8.0
Almaty	20.3	20.3	20.3	20.3
Batys Kazakhstan	7.5	7.5	7.5	7.5
Zhambyl	15.4	15.4	15.4	15.4
Zhetisu	18.6	18.6	18.6	18.6
Karagandy	9.5	9.5	9.5	9.5
Kostanai	11.0	11.0	11.0	11.0
Kyzylorda	25.0	25.0	25.0	25.0
Pavlodar	7.8	7.8	7.8	7.8
Soltustik Kazakhstan	14.8	14.8	14.8	14.8
Turkistan	18.3	18.3	18.3	18.3
Ulytau	8.4	8.4	8.4	8.4
Shygys Kazakhstan	9.2	9.2	9.2	9.2

\* The survey is conducted in August during the period of active ripening of grain crops.

## Forecast value of the yield of individual grain crops \*

c / ha

Name of the region	Wheat	Barley	Oats	Rice
<b>Republic of Kazakhstan</b>	10.1	10.5	7.3	35.6
Abai	10.6	12.4	11.7	-
Akmola	10.4	11.7	9.8	-
Aktobe	13.9	13.9	9.5	-
Almaty	12.5	20.1	16.8	31.3
Batys Kazakhstan	9.9	10.0	5.7	-
Zhambyl	13.8	12,6	-	-
Zhetisu	12.2	17.4	13.1	25.8
Karagandy	8.5	6.5	6.1	-
Kostanai	9.9	10.9	7.2	-
Kyzylorda	15.2	5.1	10.3	29.6
Pavlodar	9.9	3.5	5.6	-
Soltustik Kazakhstan	10.6	13,7	8.5	-
Turkistan	14.9	16.7	-	55.8
Ulytau	8.8	10.9	7.6	-
Shygys Kazakhstan	11.2	13.7	12.9	-

\* The survey is conducted in August during the period of active ripening of grain crops.

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