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JRC MARS Bulletin – Global outlook
Russia, September 2022

European Commission

JRC MARS Bulletin - Global outlook

Crop monitoring European neighbourhood Russia

September 2022

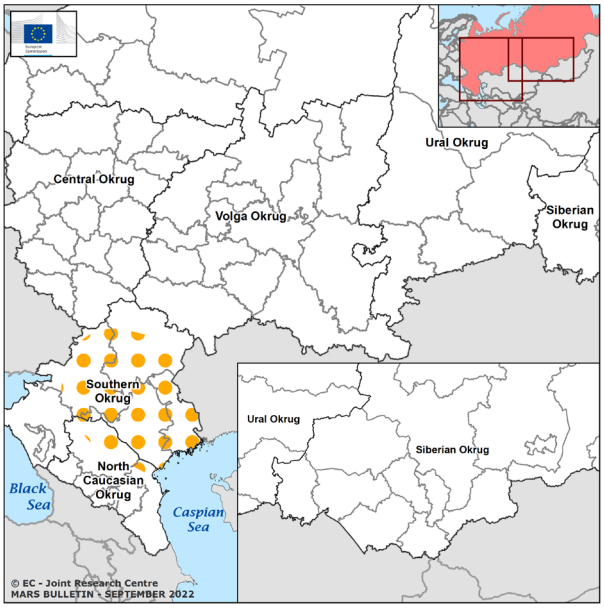
Exceptionally high grain production expected

Favourable weather conditions since the start to the season have led to a high yield and production outlook for winter and spring cereals in most parts of Russia. The persistent rain deficit during summer, followed by a heatwave in August is expected to have negatively affected the grain maize yield potential in south-western parts of European Russia.

Winter crops entered summer in very good condition in most parts of Russia, thanks to mild temperatures during winter and wetter and cooler-than-usual conditions during spring. In June, warmer temperatures and adequate soil moisture conditions provided a boost to crop growth. Hot temperatures in south-western parts, slightly negatively affected yield formation.

Most spring cereals producing regions also benefited from adequate soil moisture conditions and from the absence of thermal stress throughout the summer. However, grain maize in the main producing Southern okrug and the North Caucasian okrug suffered from a persistent rain deficit accompanied by a heatwave in August, which negatively affected the yield potential. Overall, we expect a record high grain production in crop season 2021-2022.

AREAS OF CONCERN - CROP IMPACTS
Based on data from 01 June 2022 until 20 September 2022



Summer crops impacted

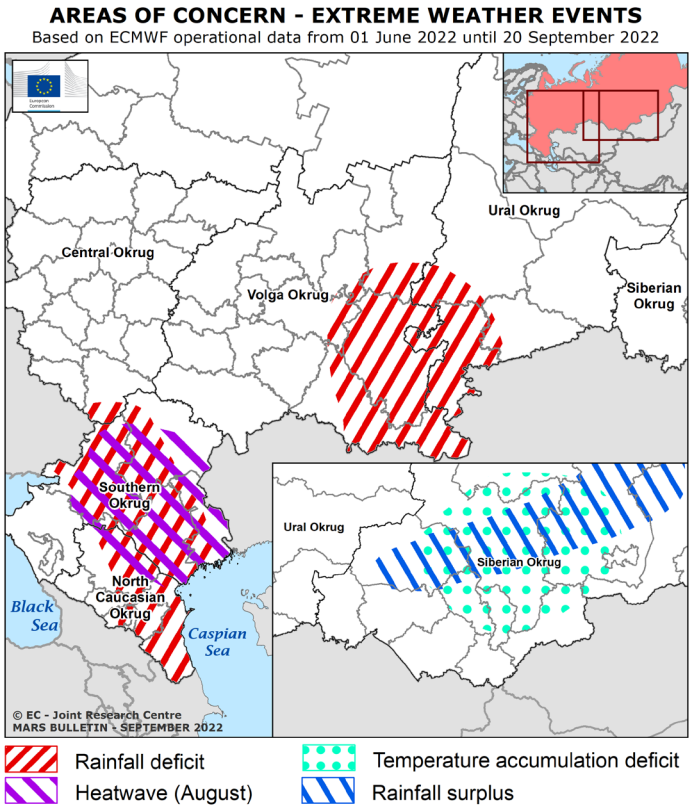
Yield forecasts for Russia - September 2022 Bulletin

Country	Crop	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
		Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	Total wheat	28 049	28 178	**29 048**	+ 4	+ 3	2.84	2.71	**3.27**	+ 15	+ 21	79 680	76 249	**94 996**	+ 19	+ 25
	Winter wheat	15 694	15 500	**16 920**	+ 8	+ 9	3.66	3.47	**4.15**	+ 13	+ 20	57 455	53 718	**70 200**	+ 22	+ 31
	Spring wheat	12 355	12 678	**12 128**	– 2	– 4	1.80	1.78	**2.04**	+ 14	+ 15	22 226	22 531	**24 796**	+ 12	+ 10
	Total barley	8 309	8 131	**7 992**	– 4	– 2	2.39	2.26	**2.71**	+ 14	+ 20	19 833	18 411	**21 666**	+ 9	+ 18
	Winter barley	612	741	**670**	+ 10	– 10	3.83	3.89	**4.30**	+ 12	+ 11	2 341	2 880	**2 882**	+ 23	+ 0
	Spring barley	7 697	7 390	**7 322**	– 5	– 1	2.27	2.10	**2.57**	+ 13	+ 22	17 491	15 531	**18 785**	+ 7	+ 21
	Grain maize	2 724	2 966	**2 996**	+ 10	+ 1	5.14	5.24	**5.48**	+ 7	+ 5	13 998	15 537	**16 416**	+ 17	+ 6

Joint Research Centre

Meteorological overview

After a colder-than-usual spring in most parts of European Russia, temperatures increased in June and dropped in July, before increasing again in August, when a heatwave occurred in the south-western parts. The same parts of the country, and also the east of the Volga okrug were affected by a rain deficit during the summer. In Asian Russia, the period of review was marked by a rain deficit in the south of the Ural okrug and a rain surplus in parts of the Siberian okrug, where a temperature accumulation deficit also prevailed.



European Russia

June

- Drier-than-usual conditions prevailed in most parts. Rainfall was 50% to 80% below the LTA in south-western regions (i.e. the Southern okrug and the North Caucasian okrug), and up to 50% below the LTA in most of the agricultural areas of the Central okrug and the Volga okrug.
- Above-average precipitation (up to +30% compared with LTA) was observed in the eastern half of the Volga okrug.
- Temperatures were up to 2 °C above the LTA in the Central okrug, in the Southern okrug, and in the North Caucasian okrug.
- The western half of the Volga okrug experienced near seasonal temperatures, while the eastern half experienced a negative thermal anomaly (-1 °C to -2 °C compared with LTA)..

July

Seasonal to slightly above-average precipitation prevailed in the Central okrug, the North Caucasian okrug and in the western half of the Southern okrug.

- Abundant rainfall, locally exceeding twice the LTA was recorded in the eastern half of the Southern okrug and in the western half of the Volga okrug.

- The eastern part of the Volga okrug experienced drier-than-usual conditions, with rainfall mostly 30% to 50% below the LTA.
- Slightly below-average temperatures prevailed along the Ukrainian borders in the Central okrug, and in the south-western parts of European Russia.
- Temperatures were also slightly colder than usual in the southern parts of the Volga okrug, while 1 °C to 2 °C above-average temperatures prevailed in the northern parts.

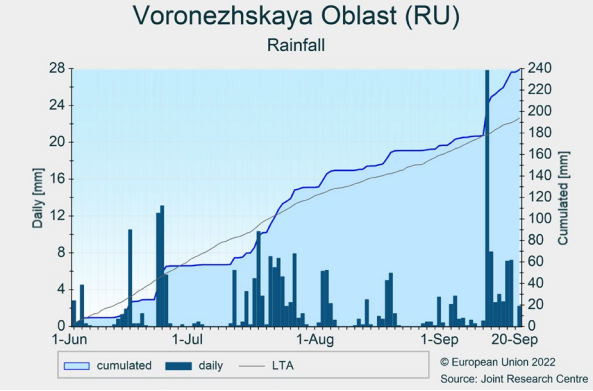
August

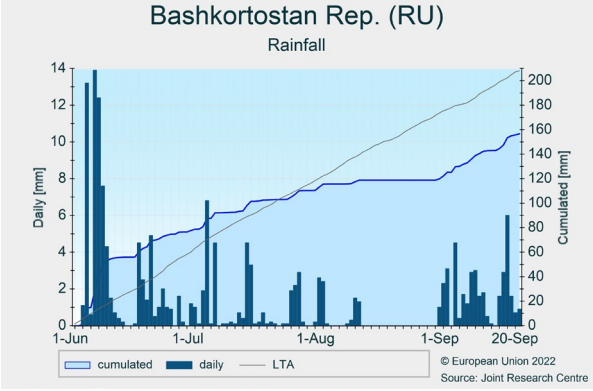
Significantly drier-than-usual conditions prevailed in most parts of European Russia.

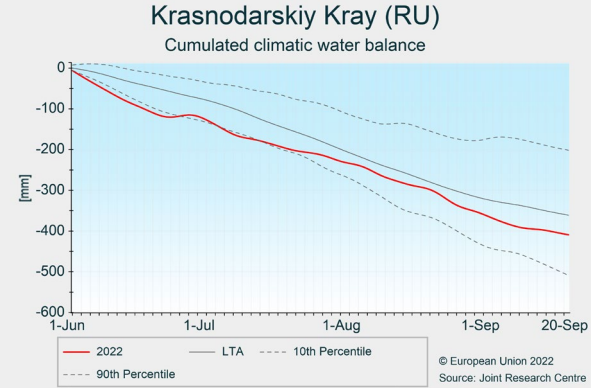
- Rainfall was scarce (more than 80% below the LTA) in the Volga okrug and in the eastern half of the Southern okrug, while it was 50% to 80% below the LTA in the northern half of the Central okrug and in the North Caucasian okrug.
- Less distinct below-average precipitation (up to 50% below the LTA) was registered in the southern parts of the Central okrug and in the central parts of the Southern okrug.
- The oblast of *Krasnodarskiy* and parts of the oblast of *Rostovskaya* were the only locations to receive above-average rainfall (up to 50% above the LTA).
- Significantly (2 °C to 4 °C) warmer-than-usual temperatures were observed in most crop producing regions. The most distinct anomalies were observed in the northern parts of the Southern okrug (e.g. *Volgogradskaya*), where daily maximum temperatures reached around 32 °C throughout the month.

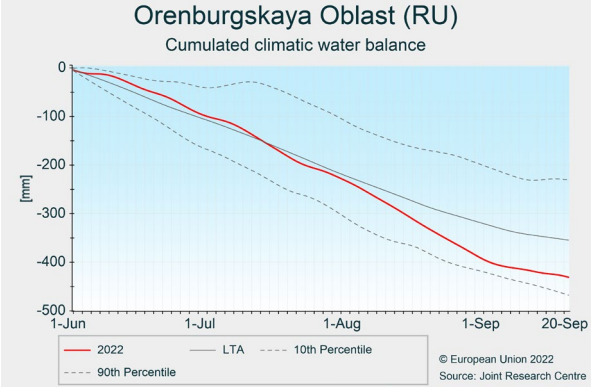
September (1-20)

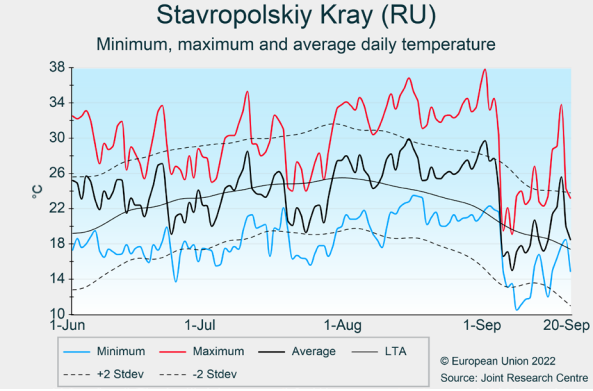
- Significantly drier-than-usual conditions continued during the first dekad of September; most markedly in the Central okrug, in the North Caucasian okrug and in the western parts of the Southern okrug. Above-average rainfall prevailed only in the east of the Volga okrug.
- Temperatures dropped sharply to 2 °C to 6 °C below the LTA in the Volga okrug, the Central okrug and in most of the Southern okrug. Near-seasonal temperatures prevailed only in the south-westernmost oblasts (e.g. *Krasnodarskiy, Stavropolskiy*).
- Abundant rainfall prevailed during the second dekad, exceeding twice the LTA, in most parts of European Russia, except in the easternmost parts of the Volga okrug, where precipitation was significantly below the LTA. Temperatures stayed 1 °C to 2°C below the LTA in the Central okrug, while a positive thermal anomaly ranging from 1 °C to 2 °C was recorded in the Volga okrug and in the south-western oblasts.

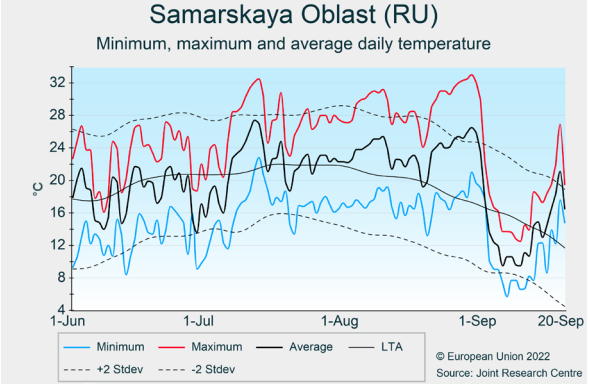


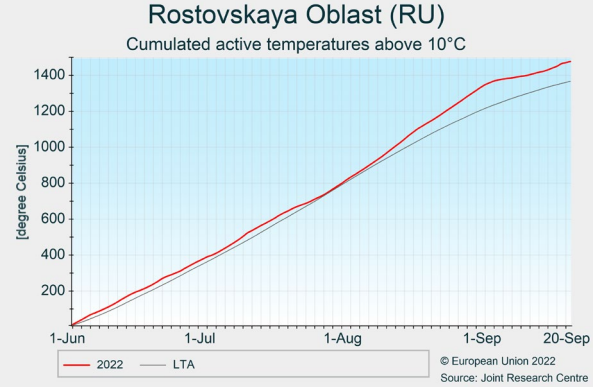


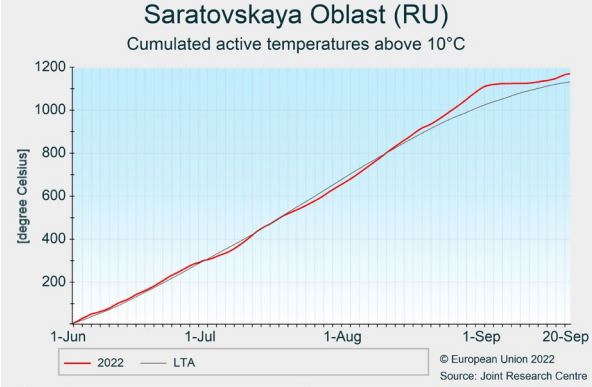












Asian Russia

June

- Near-seasonal rainfall prevailed in most oblasts of the Ural okrug, except in the north-eastern part where a rain surplus (up to 50% above the LTA) was registered.
- The western half of the Siberian okrug experienced slightly above-average rainfall. However, rainfall was 30% to 50% below the LTA in most of the eastern parts.
- Temperatures were average to slightly below average in most parts of Asian Russia. The most distinct thermal anomalies (-1 °C to -2 °C compared with LTA) were observed in the southern oblasts of the Ural okrug (e.g. Chelyabinskaya, Kurganskaya) and in the western oblasts of the Siberian okrug (e.g. Novosibirsk, Tomsk).

July

- Drier-than-usual conditions prevailed in most regions of the Ural okrug, particularly in the southern oblasts, where rainfall was 50% to 80% below the LTA.
- Near-seasonal rainfall prevailed in the southern half of the Siberian okrug, while wetter-than-usual conditions, with rainfall locally exceeding twice the LTA, were registered in the northern half (e.g. Krasnoyarskiy).

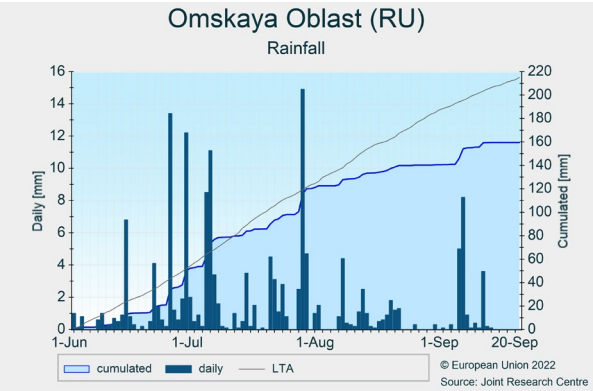
- Temperatures were 1 °C to 2 °C below the LTA in most agricultural areas of the Siberian okrug, and 1 °C to 2 °C above the LTA in the western half of the Ural okrug.

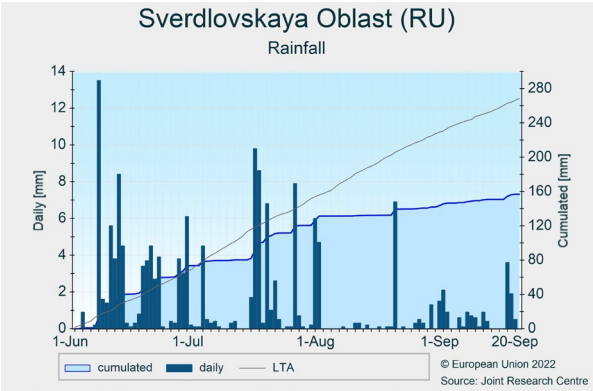
August

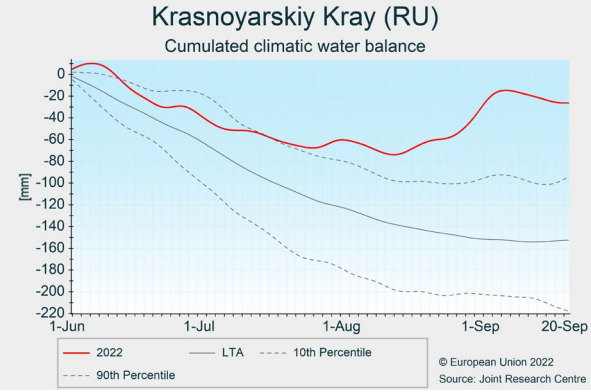
- Drier-than-usual conditions continued in the Ural okrug, most distinctly in the southern half, where rainfall was 50% to 80% below the LTA.
- Significantly drier-than-usual conditions prevailed in the south-western parts of the Siberian okrug, while the northern parts experienced abundant rainfall. Near seasonal conditions were registered in the other regions.
- Temperatures stayed below average in the Siberian okrug. The most distinct thermal anomalies (-2 °C to -4 °C) were recorded in the south of Krasnoyarskiy.
- Warmer-than-usual conditions prevailed in the Ural okrug, especially in the western half, where August temperatures were 2 °C to 4 °C above the LTA.

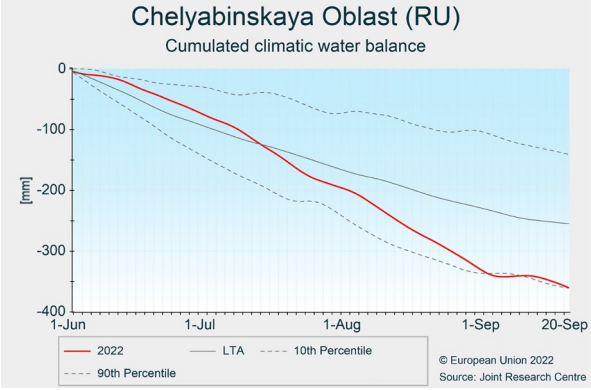
September (1-20)

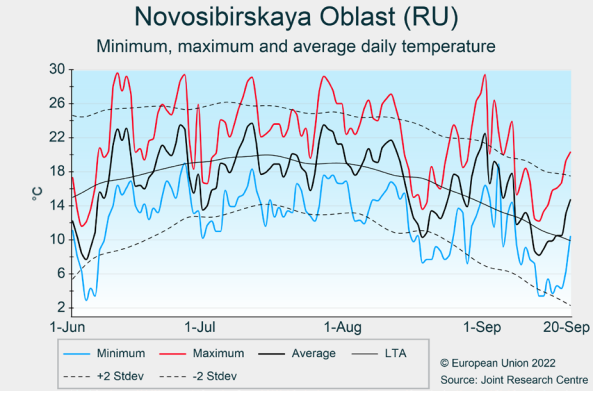
- The southern part of the Ural okrug remained drier than usual during the first dekad of September, while abundant rainfall prevailed in easternmost parts, along the border with the Siberian okrug.
- Rainfall was 50% to 80% below average in most of the southern parts of the Siberian okrug, while wetter-than-usual conditions prevailed in the central part.
- Slightly below-average temperatures prevailed in most regions, except in the southernmost parts of the Siberian okrug (e.g. Altayskiy), where temperatures were up to 4 °C above the LTA.
- Drier-than-usual conditions prevailed in most parts of Asian Russia during the second dekad of September, particularly in the Ural okrug and the western half of the Siberian okrug. A positive thermal anomaly ranging from 2 °C to 4 °C was observed in the Ural okrug, and slightly below-average temperatures in the Siberian okrug.

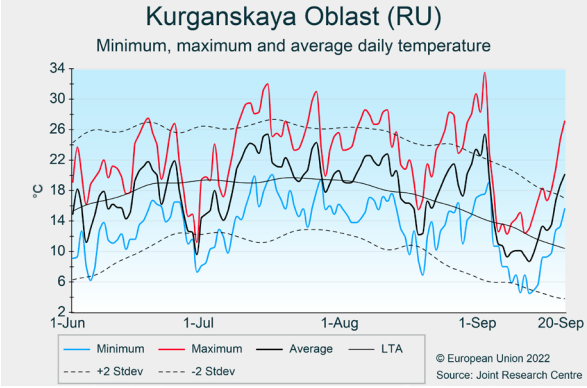


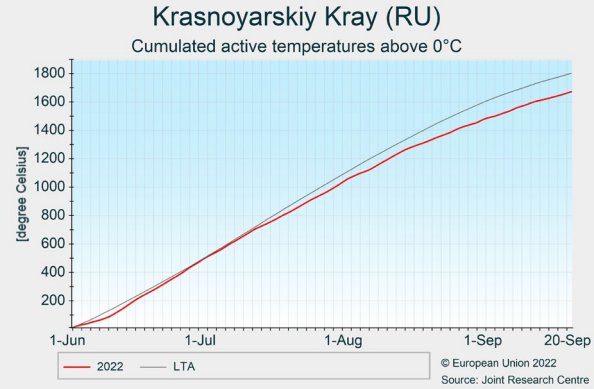


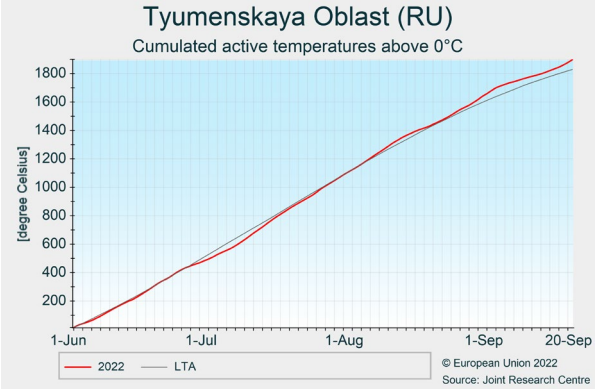





Novosibirskaya Oblast (RU)
Minimum, maximum and average daily temperature
°C
30
26
22
18
14
10
6
2
1-Jun
1-Jul
1-Aug
1-Sep
20-Sep
Minimum
Maximum
Average
LTA
+2 Stdev
-2 Stdev
© European Union 2022
Source: Joint Research Centre


Kurganskaya Oblast (RU)
Minimum, maximum and average daily temperature
°C
34
30
26
22
18
14
10
6
2
1-Jun
1-Jul
1-Aug
1-Sep
20-Sep
Minimum
Maximum
Average
LTA
+2 Stdev
-2 Stdev
© European Union 2022
Source: Joint Research Centre


Krasnoyarskiy Kray (RU)
Cumulated active temperatures above 0°C
[degree Celsius]
1800
1600
1400
1200
1000
800
600
400
200
1-Jun
1-Jul
1-Aug
1-Sep
20-Sep
2022
LTA
© European Union 2022
Source: Joint Research Centre


Tyumenskaya Oblast (RU)
Cumulated active temperatures above 0°C
[degree Celsius]
1800
1600
1400
1200
1000
800
600
400
200
1-Jun
1-Jul
1-Aug
1-Sep
20-Sep
2022
LTA
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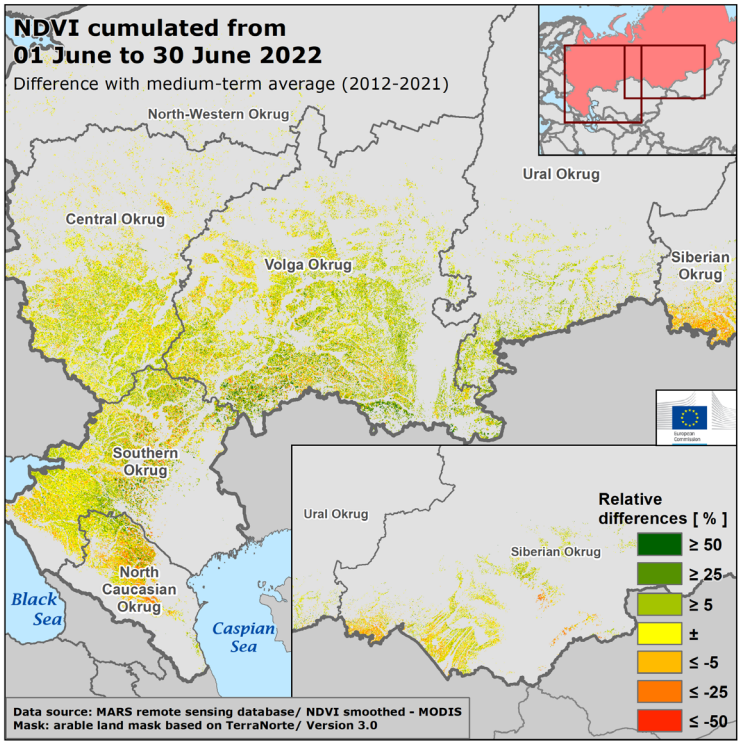
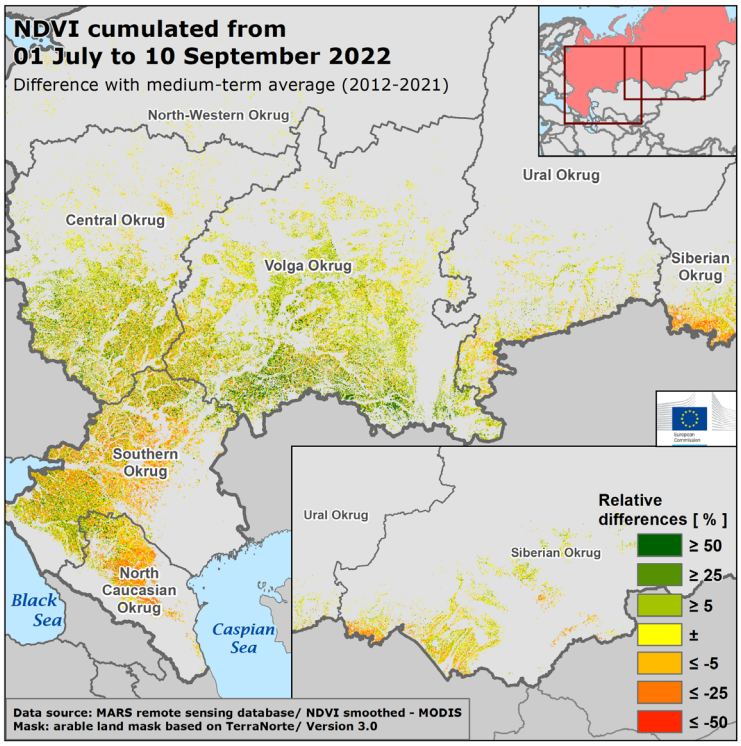
Source: Joint Research Centre

Crop canopy conditions





The maps above display the differences between the Normalised Difference Vegetation Index (NDVI) cumulated from 1 June to 30 June 2022 (top) and from 1 July to 10 September 2022 (bottom), and the medium-term average (MTA, 2012-2021) for the same periods, in arable land areas. Positive anomalies (in green) reflect above-average canopy density or early crop development while negative anomalies (in red) reflect below-average biomass accumulation or late crop development.

Winter and spring crops

The map showing the cumulated NDVI from 1 to 30 June reflects predominantly the condition of winter crops and spring cereals (the latter predominantly in Asian Russia), as biomass accumulation for summer crops had just started and contributed little to NDVI values. Positive anomalies prevail in large parts of **European Russia**, particularly in the Volga and the Central okrugs, where crops benefitted from adequate precipitation during the spring and from positive thermal anomalies in June after colder-than-usual conditions in May. The map displays slightly negative anomalies in some parts of the Southern okrug and the North Caucasian okrug (*Krasnodarskiy, Stavropolskiy*), where precipitation was scarce and maximum temperatures exceeded 30 °C in June, while crops were in grain filling. In **Asian Russia**, where spring cereals predominate, above-average biomass accumulation in the Ural okrug was supported by seasonal temperatures and optimal water supply just before flowering. The map shows negative NDVI anomalies in the westernmost parts of the Siberian okrug (*Omskaya*), where crops were exposed to rainfall deficit from early May until the first half of June.

Summer crops

The map showing the cumulated NDVI from 1 July to 10 September reflects predominantly the condition of spring and summer crops, as winter crops were in senescence or had already been harvested. Mixed conditions prevail in **European Russia**, as a consequence of uneven rainfall distribution during the summer. In the Southern okrug and North Caucasian okrug, negative anomalies reflect crops reaching early ripening, due to the combined effect of below-average precipitation during summer and warmer-than-usual temperatures in August. Conversely, the map displays positive anomalies in the Central and Volga okrugs, where crops benefitted from abundant rainfall and cooler-than-usual temperatures in July. In **Asian Russia**, temperatures in line with the LTA (Ural okrug) or even below the LTA (Siberia okrug) mitigated the negative impacts on crops of locally scarce precipitation. Therefore, average NDVI values still predominate on the map.

Crop growth conditions

Winter cereals

Warmer-than-usual temperatures in June slightly reduced the hitherto positive yield potential in the south-western parts of European Russia, but our yield forecast remains above the 5-year average. In the Central and Volga okrugs, the overall temperature surplus accumulated during summer allowed the crops to catch-up from the initially delayed development, and the favourable soil moisture conditions in most parts led to well above-average yields. A new record-high yield at country level is not excluded.

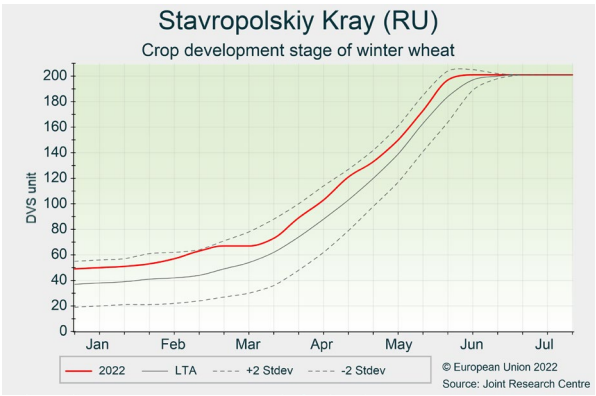
Thanks to optimal conditions during spring, winter cereals reached the flowering and early grain filling stages in very good condition, albeit with delayed phenological development in the Central okrug and in the Volga okrug.

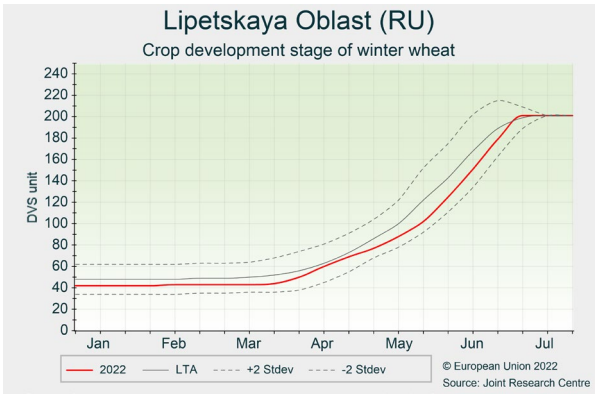
In the south-western part of European Russia (i.e. the Southern okrug, North Caucasian okrug), our crop model shows that crop development was advanced but the rain deficit in June led to a deteriorated soil moisture condition. Combined with above-average temperatures and daily maxima exceeding 30 °C for several days, this led to a suboptimal end of season and shortened the grain filling period, which prevented the achievement of new record high yields. Winter wheat reached maturity during the first dekad of July, after which harvest started slowly due to rainfall. Our yield forecast is above the 5-year average.

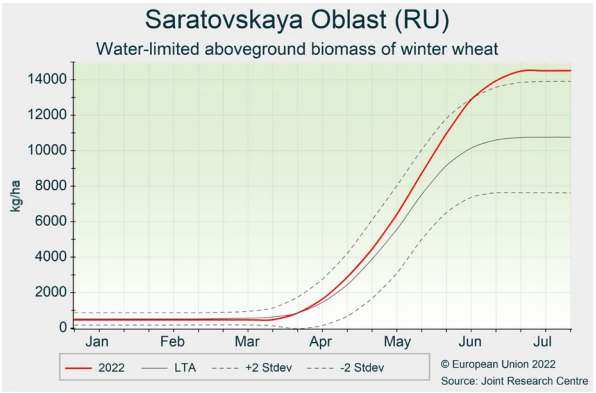
In the Central and the Volga okrugs, winter cereals were growing in very good condition until the end of spring, albeit with delayed phenological development. The positive thermal anomaly in June allowed an acceleration of crop development and winter cereals passed the flowering and grain filling stages under good conditions, as soil moisture reserves were adequate and daily maximum temperatures rarely exceeded 30 °C. According to our crop model, winter cereals reached maturity during the second half of July, when harvest started under wet conditions. Our yield forecast for this part of European Russia is well above the 5-year average and the historical trend. However, the rainfall in July may have negatively affected grain quality.

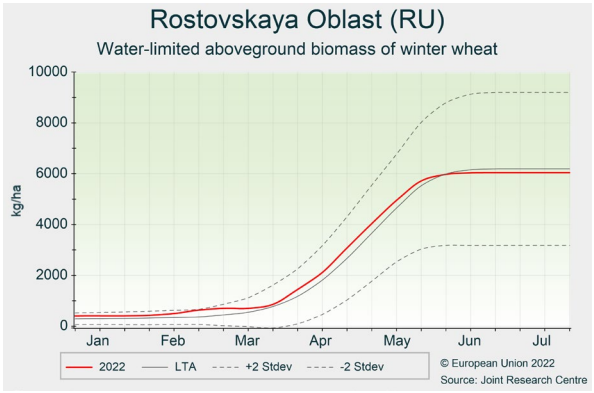
Mixed conditions prevailed in Asian Russia. In the Ural okrug, high soil moisture reserves prevailed throughout the season (despite a rainfall deficit in the south-western parts), resulting in well above-average yield expectations. In the Siberian okrug, the suboptimal start to the season was partly compensated by fair conditions during summer, since rainfall occurred in June and July. However, crop development was significantly delayed in the central and northern parts (e.g. *Krasnoyarskiy*). Consequently, our yield forecast for winter cereals is slightly below the historical trend.

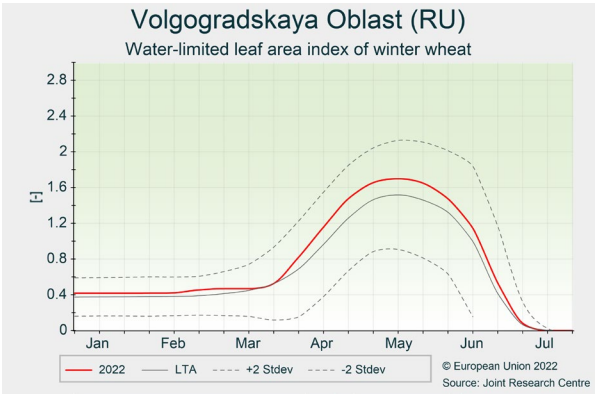
At country level, the positive yield outlook combined with an increased area of winter wheat result in a record-high level of production.

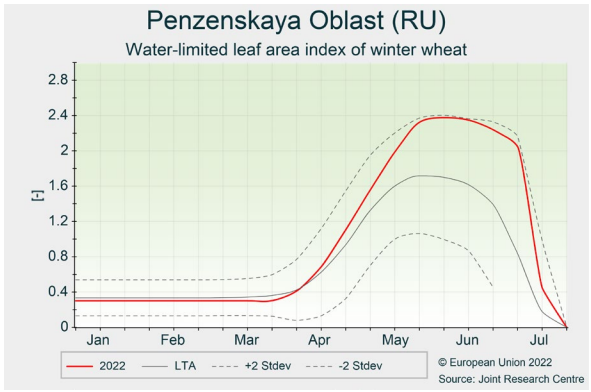


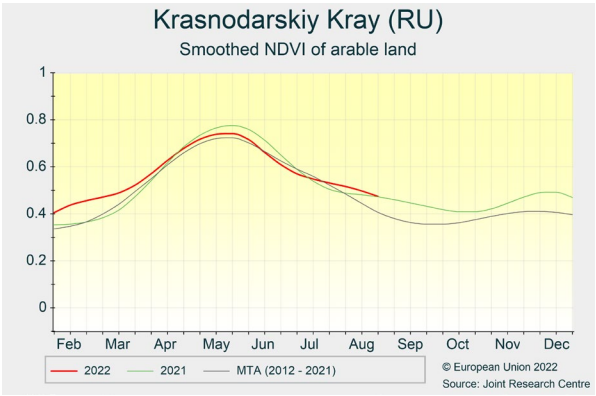


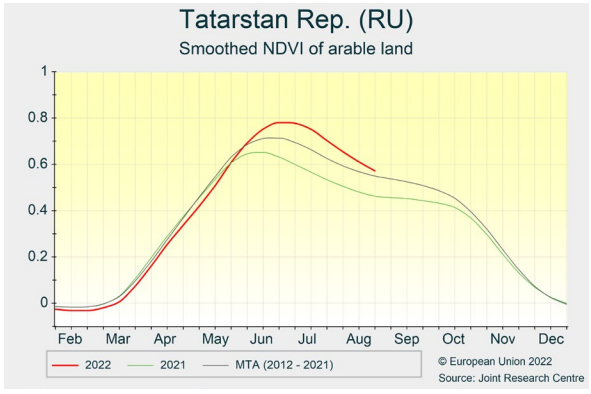












Spring cereals

Spring crops benefitted from adequate soil moisture conditions throughout spring in European Russia and in the Ural okrug, whereas the start to the season was more challenging in the Siberian okrug due to rainfall deficit and above-average temperatures in May. Conditions in June and July were positive overall and allowed to maintain optimal soil moisture conditions in the major spring wheat and spring barley producing regions. Cooler-than usual temperatures in several parts during July prolonged the grain filling stage and led to well above-average yield expectations at country level.

Wetter and colder-than-usual conditions in spring delayed the phenological development of spring wheat and spring barley in most of European Russia and the Ural okrug, as reported in the June edition of the Bulletin[1].

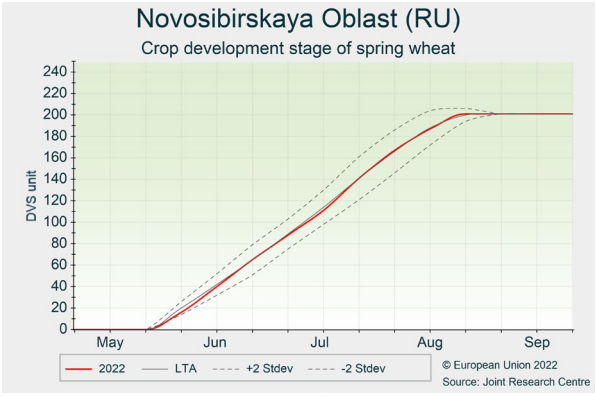
In the Central okrug, the increased temperatures in June resulted in an acceleration of the crop development under sufficient soil moisture reserves. Rainfall continued in July but temperatures dropped to slightly below-average levels, allowing optimal conditions for flowering and early grain filling. However, thermal stress in August, caused by the significantly above-average temperatures, slightly negatively affected the hitherto high yield potential. Harvest started during the second half of August. Our yield forecast remains well above the historical trend.

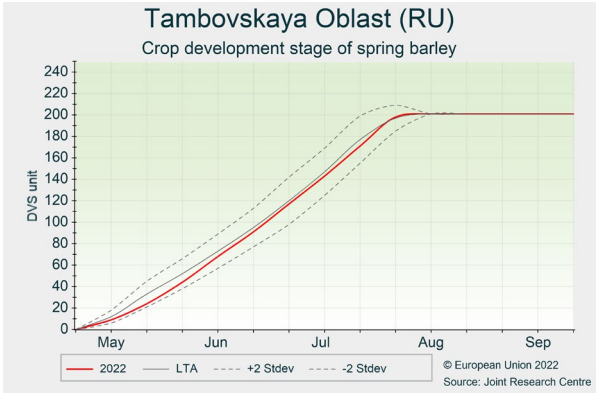
[1] https://publications.jrc.ec.europa.eu/repository/handle/JRC127975

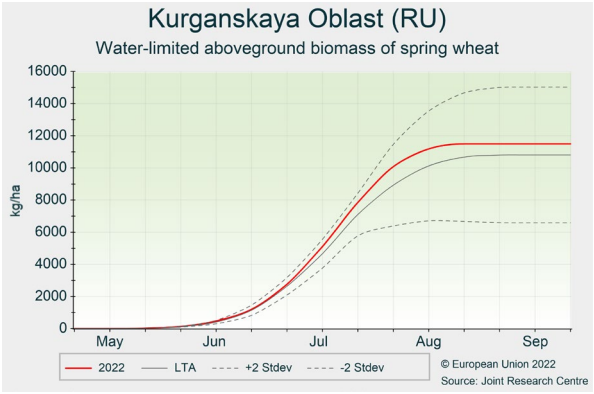
In the Volga okrug, favourable conditions prevailed during summer. Weather conditions became drier and warmer than usual only in August, but did not affect the yield potential since soil water reserves were high and temperatures did not reach critical levels (above 30 °C). Our yield forecast is well above the historical trend and record-high yields are expected in some oblasts.

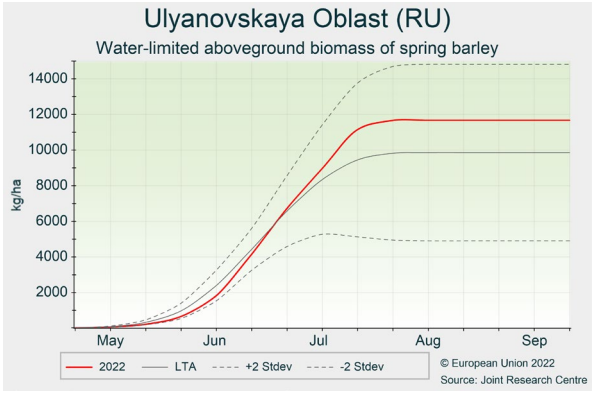
In the Ural okrug, favourable conditions prevailed in June with mostly above-average rainfall and below-average temperatures, leading to strong biomass accumulation. However, the drier and warmer-than-usual temperatures during the rest of July and August led to an acceleration of crop development and a rapid deterioration of crop condition, as shown by the remote sensing images. Harvesting started toward the end of August and is still ongoing. Our yield forecast is slightly above the historical trend.

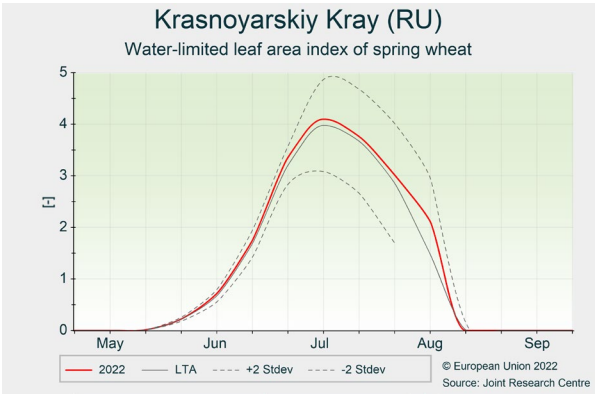
In the Siberian okrug, rainfall in June and July combined with seasonal to slightly below-average temperatures allowed crops to recover from the dry and warm conditions in May. With the rainfall surplus in August, soil moisture conditions improved (particularly in the northern oblasts), while the slightly below-average temperatures are expected to have prolonged the grain filling stage. Our yield forecast is slightly below last year's levels.

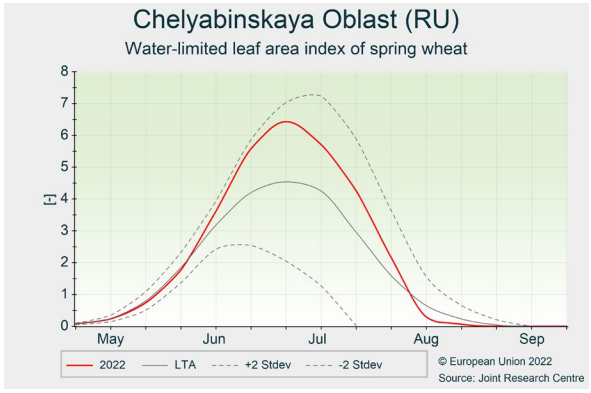


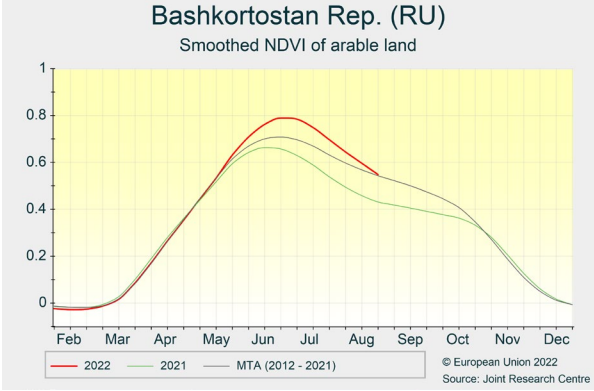


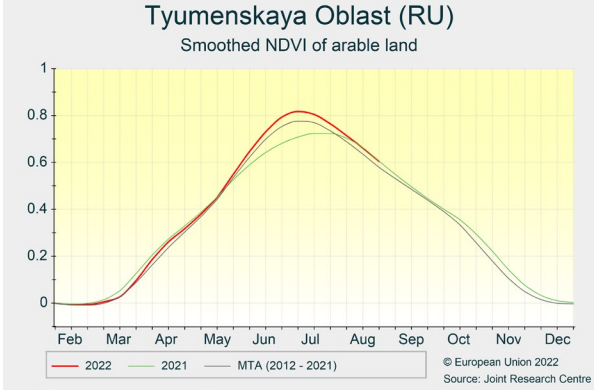












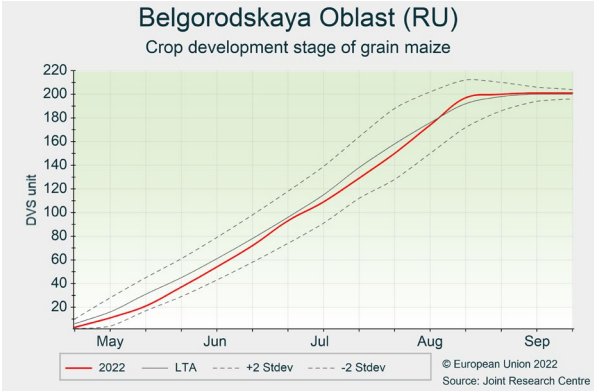
Grain maize

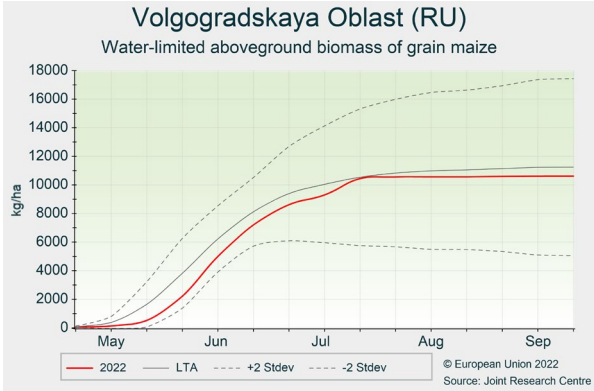
The sowing of grain maize followed a normal path in April and May in most of the producing regions but the colder-than-usual temperatures hampered early development, especially in the Central okrug. The rainfall deficit combined with thermal stress during summer negatively affected the yield potential in south-western parts of European Russia.

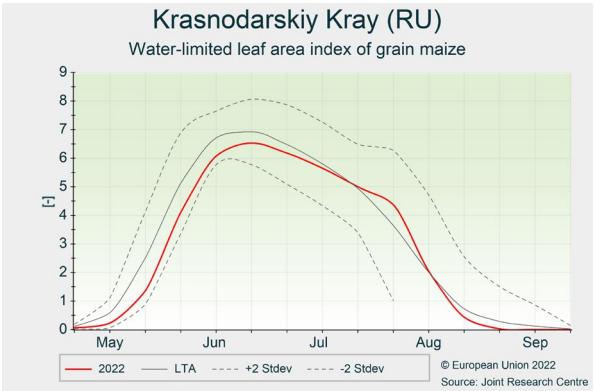
Grain maize production is concentrated in the Central okrug, the Southern okrug and in the North Caucasian okrug.

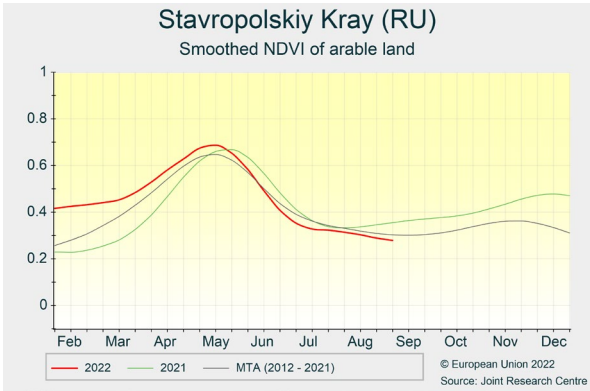
In the Central okrug, grain maize profited from the positive thermal anomalies in June to partly offset the delayed start to the season. The below-average temperatures in July allowed the flowering stage to take place under good conditions. However, the hot temperatures in August slightly negatively affected yield formation. Our yield forecast is well above last year and slightly above the historical trend.

In the south-western parts of European Russia, the persistent rain deficit in several oblasts combined with hot temperatures, especially in August, led to suboptimal crop development according to our crop model (e.g. *Stavropolskiy*, *Rostovskaya*). This led to a mediocre yield outlook in the Southern and the North Caucasian okrugs.









Crop yield forecast

Yield forecasts for Russia - winter wheat - September 2022 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	15 694	15 500	**16 920**	+ 8	+ 9	3.66	3.47	**4.15**	+ 13	+ 20	57 455	53 718	**70 200**	+ 22	+ 31
Central Okrug	3 747	3 613	**3 915**	+ 5	+ 8	4.20	3.73	**4.83**	+ 15	+ 30	15 723	13 475	**18 913**	+ 20	+ 40
North-Western Okrug	80	86	**95**	+ 19	+ 10	4.57	4.58	**4.58**	+ 0	+ 0	364	395	**433**	+ 19	+ 10
Southern Okrug	6 225	6 240	**6 709**	+ 8	+ 8	3.98	4.16	**4.45**	+ 12	+ 7	24 792	25 959	**29 867**	+ 21	+ 15
North Caucasian Okrug	2 024	1 933	**2 219**	+ 10	+ 15	3.53	3.61	**3.61**	+ 3	+ 0	7 137	6 979	**8 019**	+ 12	+ 15
Volga Okrug	3 334	3 315	**3 678**	+ 10	+ 11	2.62	1.85	**3.32**	+ 26	+ 79	8 750	6 133	**12 197**	+ 39	+ 99
Urals Okrug	30	33	**32**	+ 8	– 2	1.90	1.18	**2.40**	+ 26	+ 104	57	39	**77**	+ 36	+ 99
Siberian Okrug	254	280	**272**	+ 7	– 3	2.48	2.64	**2.55**	+ 3	– 4	631	738	**694**	+ 10	– 6

Yield forecasts for Russia - spring wheat - September 2022 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	12 355	12 678	**12 128**	– 2	– 4	1.80	1.78	**2.04**	+ 14	+ 15	22 226	22 531	**24 796**	+ 12	+ 10
Central Okrug	827	1 195	**878**	+ 6	– 27	3.59	3.35	**4.05**	+ 13	+ 21	2 971	4 004	**3 558**	+ 20	– 11
North-Western Okrug	55	46	**53**	– 2	+ 16	2.83	2.69	**3.15**	+ 11	+ 17	154	124	**168**	+ 9	+ 36
Southern Okrug	134	157	**131**	– 2	– 17	1.50	1.92	**1.51**	+ 0	– 21	201	301	**197**	– 2	– 35
North Caucasian Okrug	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
Volga Okrug	3 570	3 741	**3 469**	– 3	– 7	1.68	1.36	**2.01**	+ 20	+ 48	5 983	5 088	**6 959**	+ 16	+ 37
Urals Okrug	2 238	2 203	**2 189**	– 2	– 1	1.52	1.16	**1.76**	+ 16	+ 52	3 396	2 555	**3 854**	+ 14	+ 51
Siberian Okrug	5 531	5 336	**5 408**	– 2	+ 1	1.72	1.96	**1.86**	+ 8	– 5	9 519	10 459	**10 059**	+ 6	– 4

Yield forecasts for Russia - total wheat - September 2022 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	28 049	28 178	**29 048**	+ 4	+ 3	2.84	2.71	**3.27**	+ 15	+ 21	79 680	76 249	**94 996**	+ 19	+ 25
Central Okrug	4 574	4 808	**4 793**	+ 5	– 0	4.09	3.64	**4.69**	+ 15	+ 29	18 694	17 478	**22 471**	+ 20	+ 29
North-Western Okrug	134	132	**148**	+ 10	+ 12	3.86	3.92	**4.06**	+ 5	+ 4	519	519	**601**	+ 16	+ 16
Southern Okrug	6 359	6 397	**6 839**	+ 8	+ 7	3.93	4.11	**4.40**	+ 12	+ 7	24 993	26 261	**30 065**	+ 20	+ 14
North Caucasian Okrug	2 024	1 933	**2 219**	+ 10	+ 15	3.53	3.61	**3.61**	+ 3	+ 0	7 137	6 979	**8 019**	+ 12	+ 15
Volga Okrug	6 904	7 056	**7 147**	+ 4	+ 1	2.13	1.59	**2.68**	+ 26	+ 69	14 734	11 221	**19 156**	+ 30	+ 71
Urals Okrug	2 268	2 236	**2 221**	– 2	– 1	1.52	1.16	**1.77**	+ 16	+ 53	3 453	2 594	**3 931**	+ 14	+ 52
Siberian Okrug	5 785	5 616	**5 680**	– 2	+ 1	1.75	1.99	**1.89**	+ 8	– 5	10 150	11 197	**10 753**	+ 6	– 4

Yield forecasts for Russia - winter barley - September 2022 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	612	741	**670**	+ 10	– 10	3.83	3.89	**4.30**	+ 12	+ 11	2 341	2 880	**2 882**	+ 23	+ 0
Central Okrug	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
North-Western Okrug	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
Southern Okrug	365	449	**395**	+ 8	– 12	4.10	4.15	**4.69**	+ 15	+ 13	1 494	1 862	**1 856**	+ 24	– 0
North Caucasian Okrug	247	292	**274**	+ 11	– 6	3.43	3.48	**3.74**	+ 9	+ 7	847	1 018	**1 025**	+ 21	+ 1
Volga Okrug	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
Ural Okrug	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
Siberian Okrug	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—

Yield forecasts for Russia - spring barley -September 2022 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	7 697	7 390	**7 322**	– 5	– 1	2.27	2.10	**2.57**	+ 13	+ 22	17 491	15 531	**18 785**	+ 7	+ 21
Central Okrug	1 850	1 752	**1 751**	– 5	– 0	3.40	3.29	**3.75**	+ 10	+ 14	6 288	5 766	**6 561**	+ 4	+ 14
North-Western Okrug	111	108	**105**	– 6	– 3	2.46	2.00	**2.21**	– 10	+ 11	273	215	**232**	– 15	+ 8
Southern Okrug	710	642	**685**	– 3	+ 7	1.92	2.19	**2.10**	+ 10	– 4	1 359	1 406	**1 439**	+ 6	+ 2
North Caucasian Okrug	90	83	**89**	– 1	+ 7	2.33	2.43	**2.44**	+ 5	+ 0	209	203	**217**	+ 4	+ 7
Volga Okrug	3 012	2 941	**2 859**	– 5	– 3	1.93	1.52	**2.33**	+ 21	+ 53	5 827	4 470	**6 663**	+ 14	+ 49
Urals Okrug	770	768	**722**	– 6	– 6	1.60	1.31	**1.82**	+ 13	+ 39	1 235	1 006	**1 313**	+ 6	+ 31
Siberian Okrug	1 155	1 096	**1 111**	– 4	+ 1	1.99	2.25	**2.13**	+ 7	– 6	2 299	2 466	**2 361**	+ 3	– 4

Yield forecasts for Russia - total barley - September 2022 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	8 309	8 131	**7 992**	– 4	– 2	2.39	2.26	**2.71**	+ 14	+ 20	19 833	18 411	**21 666**	+ 9	+ 18
Central Okrug	1 850	1 752	**1 751**	– 5	– 0	3.40	3.29	**3.75**	+ 10	+ 14	6 288	5 766	**6 561**	+ 4	+ 14
North-Western Okrug	111	108	**105**	– 6	– 3	2.46	2.00	**2.21**	– 10	+ 11	273	215	**232**	– 15	+ 8
Southern Okrug	1 074	1 091	**1 081**	+ 1	– 1	2.66	3.00	**3.05**	+ 15	+ 2	2 853	3 269	**3 295**	+ 15	+ 1
North Caucasian Okrug	337	376	**363**	+ 8	– 3	3.13	3.25	**3.42**	+ 9	+ 5	1 056	1 220	**1 242**	+ 18	+ 2
Volga Okrug	3 012	2 941	**2 859**	– 5	– 3	1.93	1.52	**2.33**	+ 20	+ 53	5 827	4 470	**6 663**	+ 14	+ 49
Urals Okrug	770	768	**722**	– 6	– 6	1.60	1.31	**1.82**	+ 13	+ 39	1 235	1 006	**1 313**	+ 6	+ 31
Siberian Okrug	1 155	1 096	**1 111**	– 4	+ 1	1.99	2.25	**2.13**	+ 7	– 6	2 299	2 466	**2 361**	+ 3	– 4

Yield forecasts for Russia - grain maize - September 2022 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	2 724	2 966	**2 996**	+ 10	+ 1	5.14	5.24	**5.48**	+ 7	+ 5	13 998	15 537	**16 416**	+ 17	+ 6
Central Okrug	888	990	**1 013**	+ 14	+ 2	6.22	5.72	**7.08**	+ 14	+ 24	5 524	5 660	**7 170**	+ 30	+ 27
North-Western Okrug	18	23	**19**	+ 9	– 18	7.71	7.82	**7.88**	+ 2	+ 1	137	184	**152**	+ 11	– 17
Southern Okrug	856	833	**927**	+ 8	+ 11	4.33	4.81	**4.35**	+ 1	– 10	3 705	4 007	**4 033**	+ 9	+ 1
North Caucasian Okrug	578	640	**609**	+ 5	– 5	5.50	6.09	**5.63**	+ 2	– 8	3 182	3 895	**3 432**	+ 8	– 12
Volga Okrug	364	451	**405**	+ 11	– 10	3.78	3.70	**3.79**	+ 0	+ 2	1 374	1 670	**1 535**	+ 12	– 8
Ural Okrug	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
Siberian Okrug	20	29	**22**	+ 9	– 25	3.76	4.19	**4.26**	+ 14	+ 2	76	122	**93**	+ 23	– 24

Yield forecasts for Russia - September 2022 Bulletin

Country	Crop	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
		Avg 5yrs	2021	2022	%22/5yrs	%22/21	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21	Avg 5yrs	2021	2022	%22/5yrs	%22/21
Russia	Total wheat	28 049	28 178	**29 048**	+ 4	+ 3	2.84	2.71	**3.27**	+ 15	+ 21	79 680	76 249	**94 996**	+ 19	+ 25
	Winter wheat	15 694	15 500	**16 920**	+ 8	+ 9	3.66	3.47	**4.15**	+ 13	+ 20	57 455	53 718	**70 200**	+ 22	+ 31
	Spring wheat	12 355	12 678	**12 128**	– 2	– 4	1.80	1.78	**2.04**	+ 14	+ 15	22 226	22 531	**24 796**	+ 12	+ 10
	Total barley	8 309	8 131	**7 992**	– 4	– 2	2.39	2.26	**2.71**	+ 14	+ 20	19 833	18 411	**21 666**	+ 9	+ 18
	Winter barley	612	741	**670**	+ 10	– 10	3.83	3.89	**4.30**	+ 12	+ 11	2 341	2 880	**2 882**	+ 23	+ 0
	Spring barley	7 697	7 390	**7 322**	– 5	– 1	2.27	2.10	**2.57**	+ 13	+ 22	17 491	15 531	**18 785**	+ 7	+ 21
	Grain maize	2 724	2 966	**2 996**	+ 10	+ 1	5.14	5.24	**5.48**	+ 7	+ 5	13 998	15 537	**16 416**	+ 17	+ 6

NB: Yields are forecast for crops with more than 10 000 ha per okrug.

Sources: 1996-2021 data for area and yields come from Federal State Statistics Service.

2022 areas: AGRI4CAST estimates, based on historical trends, taking account of sowing conditions and winter kill losses.

2022 yields come from MARS Crop Yield Forecasting System (output up to 20.09.2022).

The column header '%22/5yrs' stands for the 2022 change with respect to the 5-year average(%). Similarly, '%22/21' stands for the 2022 change with respect to 2021(%).

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Technical note
The long-term average (LTA) used within this Bulletin as a reference is based on an archive of data covering 1991-2021. The medium-term average (MTA) used within this Bulletin as a reference is based on an archive of data covering 2012-2021.

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