

OVERVIEW OF PRODUCTION, TRADE AND LOGISTICS OF GRAIN AND DISTILLERS' PRODUCTS IN THE CONTEXT OF RUSSIA'S MILITARY INVASION OF UKRAINE



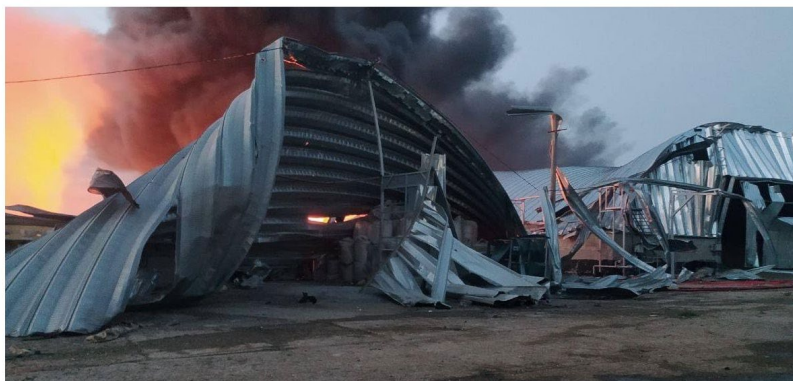
Antonina Broyaka

PhD in Economics, Associate Professor

Extension Associate of Agricultural Economics Department,
Kansas State University

OUTLINE:

- Damages and losses from the war
- Biofuel industry
- Export of ag commodities and “Grain initiative”
- Forecast of grain production and export from Ukraine and Russia



Russian attacks, Odesa region

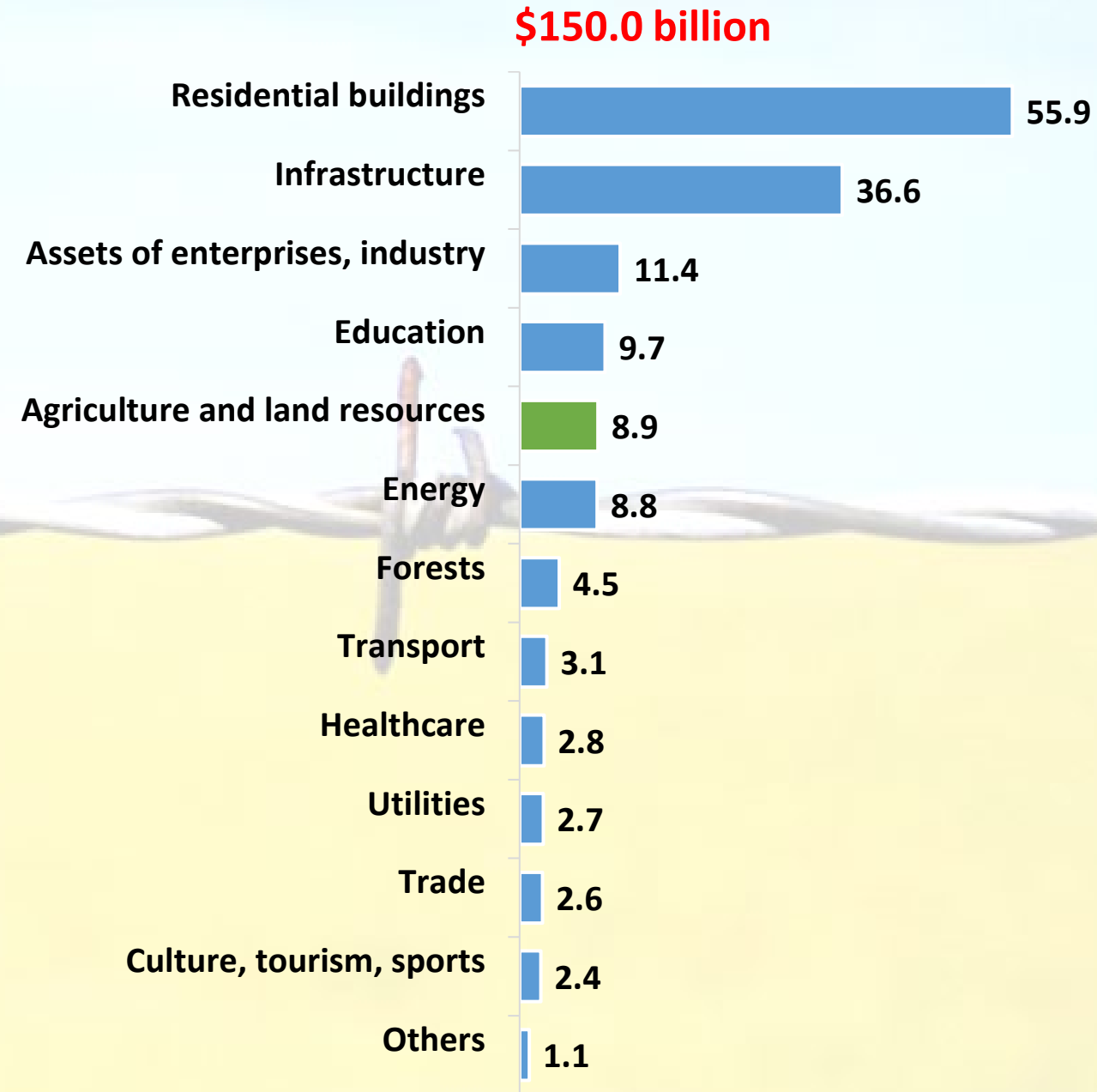
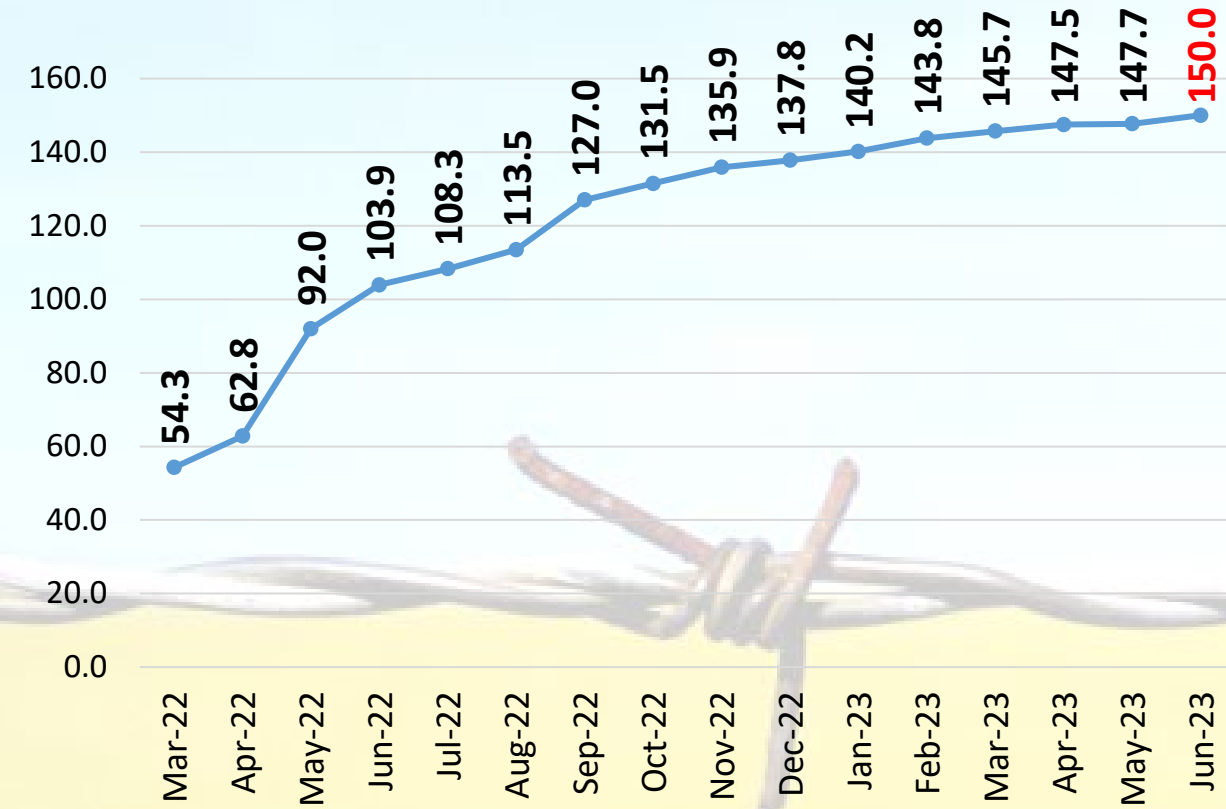
UKRAINE'S PLACE IN GLOBAL AGRICULTURAL EXPORTS IN 2021



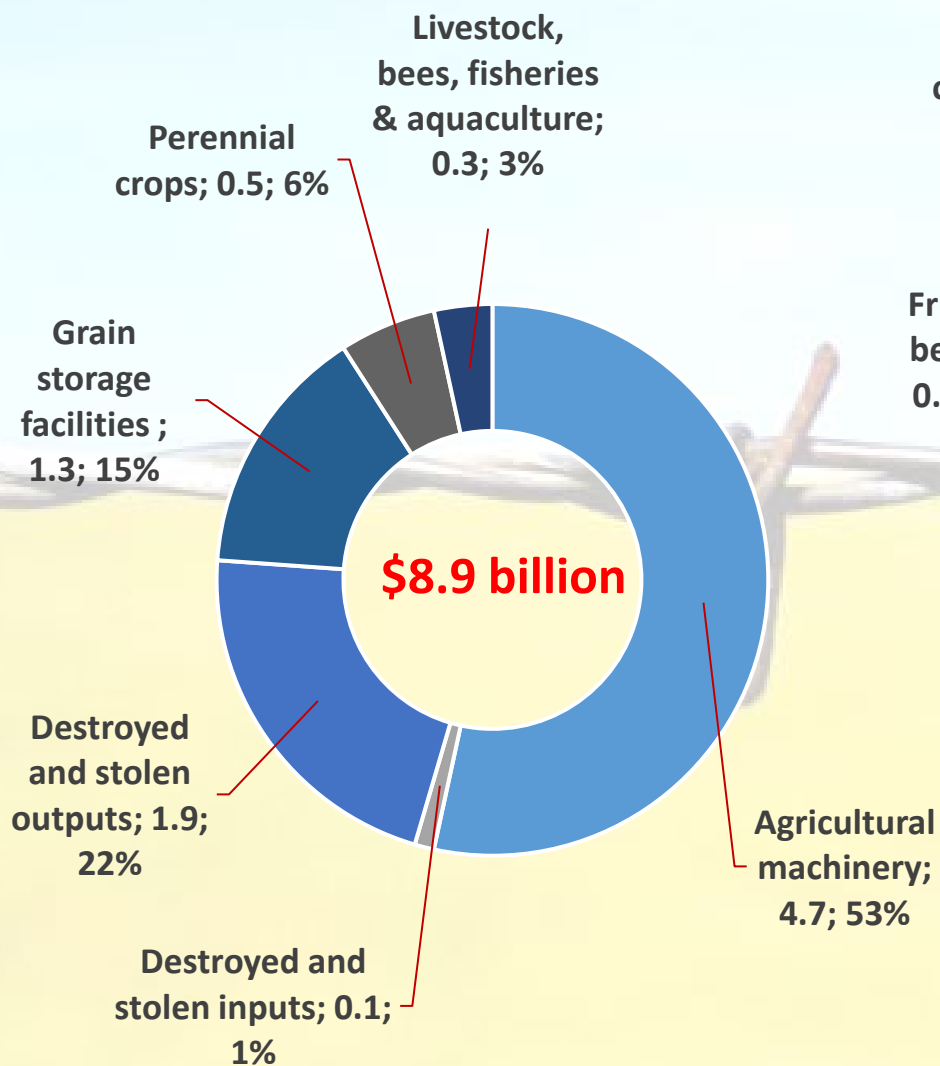
% - a share in the global structure of agricultural exports



DIRECT DAMAGES TO UKRAINIAN ECONOMY, \$ billion

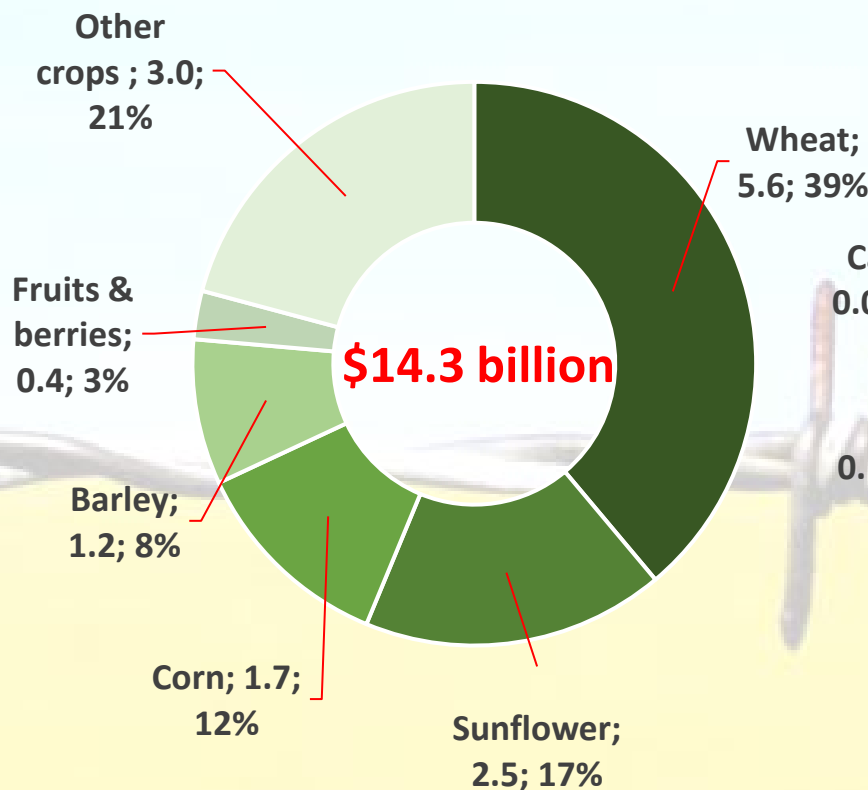


DIRECT DAMAGE FROM THE WAR TO UKRAINIAN AGRICULTURE, \$ billion

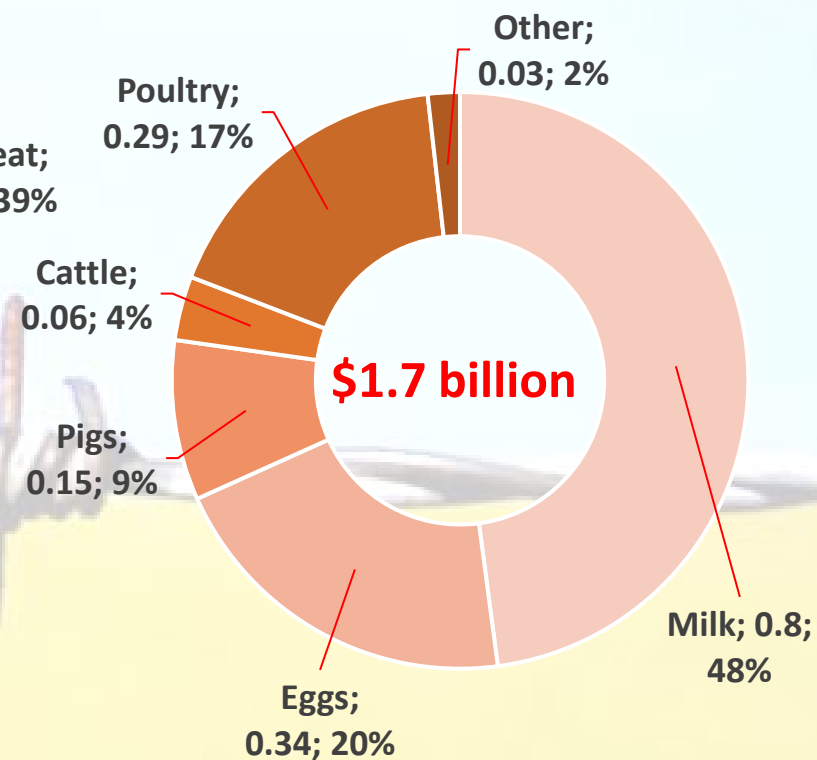


INDIRECT LOSSES FROM THE WAR TO UKRAINIAN AGRICULTURE, \$ billion

Crop losses due to lower production, \$ billion



Livestock losses due to lower production, \$ billion



Other losses: \$15.6 billion

- due to decrease in the prices for export-oriented commodities - \$14.5 billion;
- due to decrease in the prices for fertilizers - \$377.1 million;
- due to decrease in the prices for fuel - \$467.4 million;
- recultivation of the land affected by battles and missiles - \$183.9 million;
- fisheries and aquaculture losses - \$53.8 million

CHANGES IN AGRICULTURE FOR THE YEAR OF THE WAR IN UKRAINE (2022 to 2021)

PRODUCTION

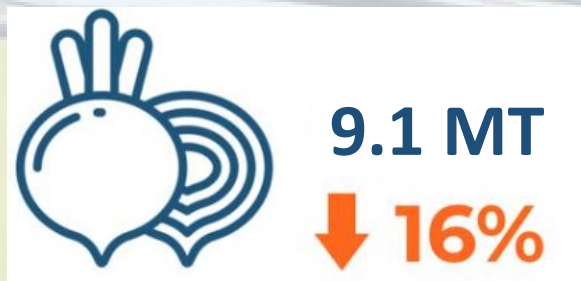
Grain



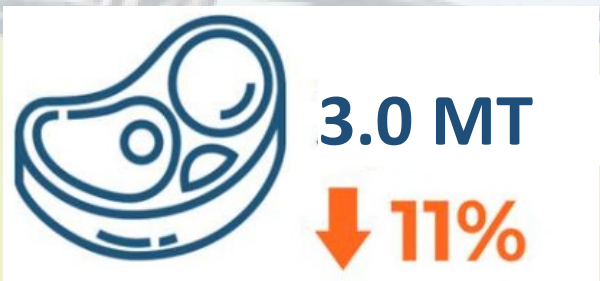
Oil seeds



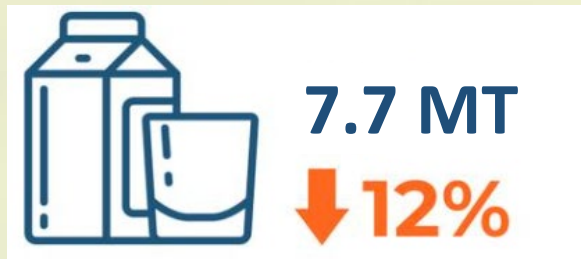
Sugar beets



Meat, all types



Milk



Eggs

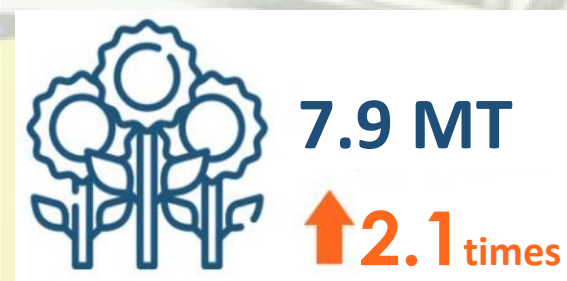


EXPORT

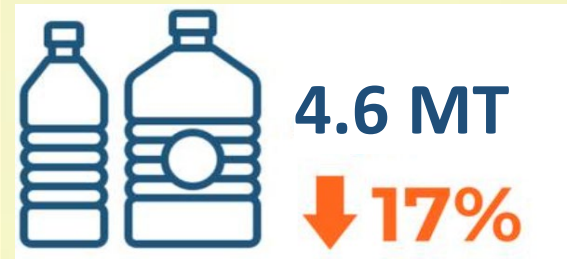
Grain



Oil seeds



Vegetable oil



THE PRICE GAP BETWEEN THE WORLD AND DOMESTIC PRICES AT THE END OF THE YEAR

Wheat

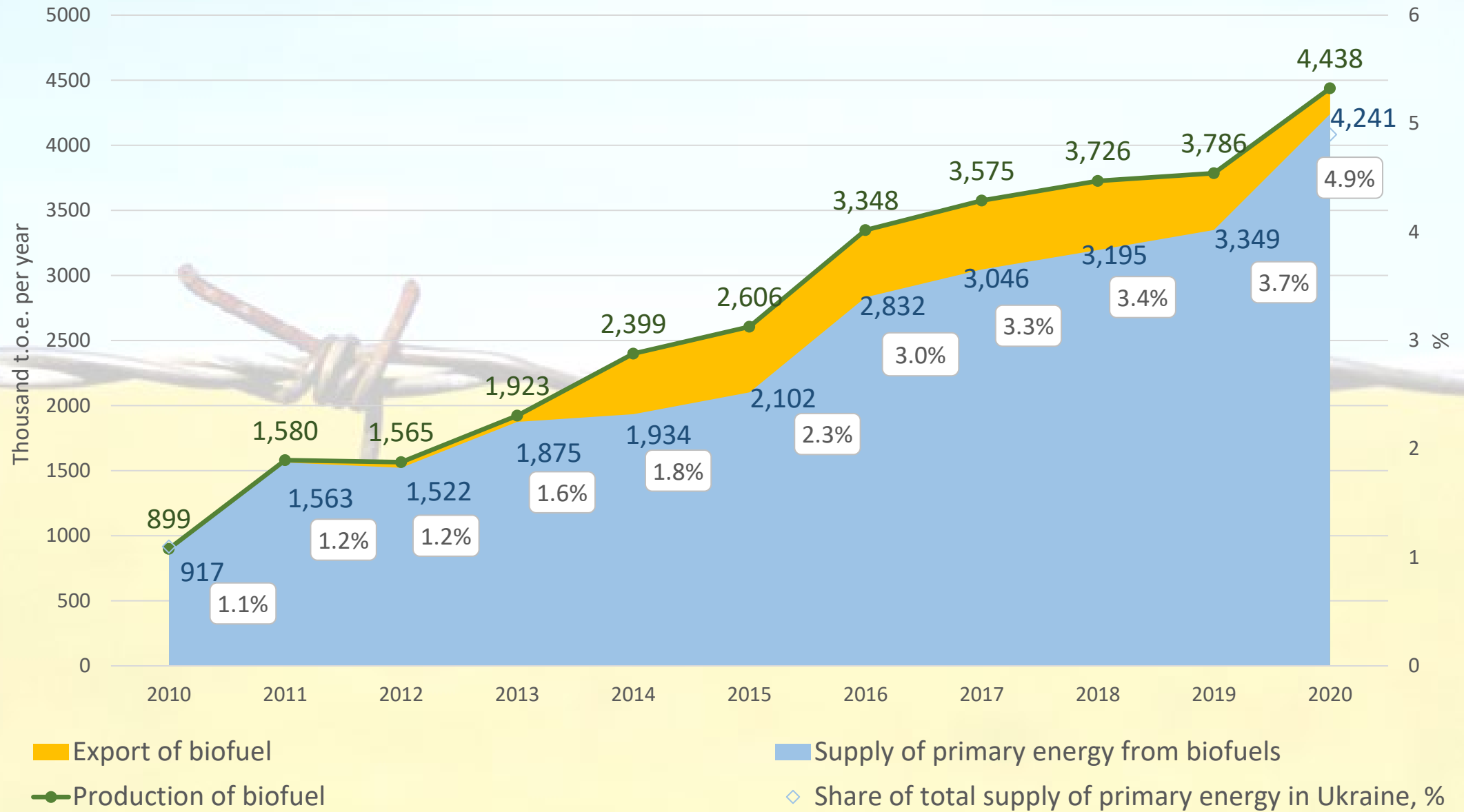


Corn



Source: based on data of Ministry of Agrarian Policy and Food of Ukraine, State Customs Service of Ukraine and UCAB

BIOFUEL PRODUCTION AND EXPORT FROM UKRAINE



ENERGY POTENTIAL OF BIOMASS IN UKRAINE (2021)

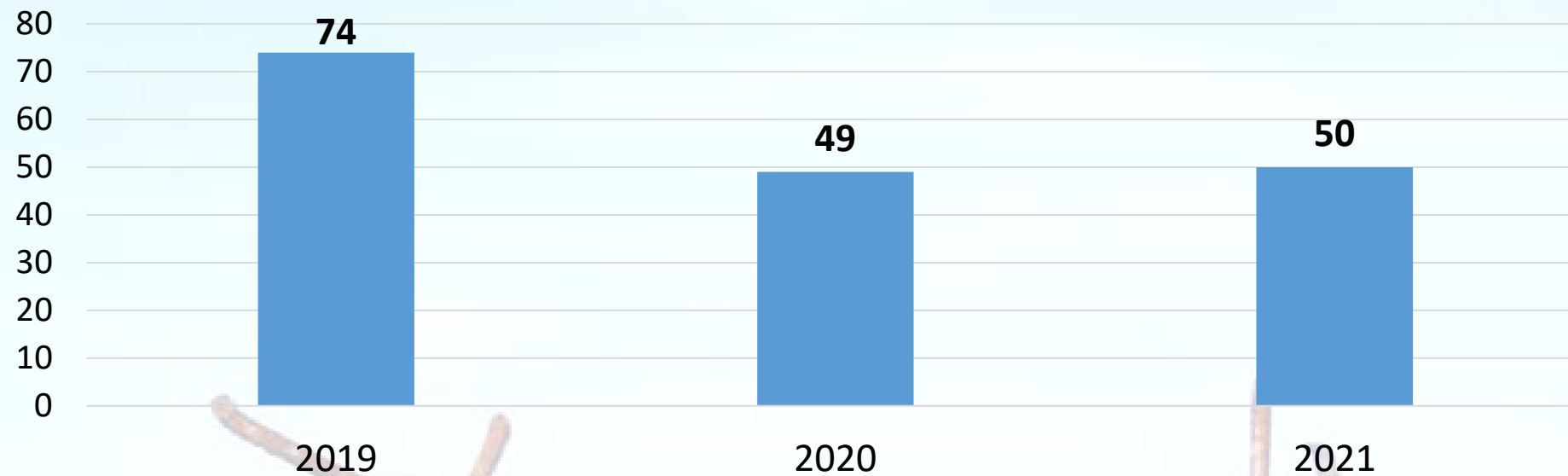
Type of biomass	Theoretical potential, million tonnes	Potential availability for energy	
		Share of the theoretical potential, %	Million t.o.e.
Straw of grain crops	42.0	30	4.31
Straw of rapeseed	5.3	40	0.72
By-products of corn production (stalks, cobs)	54.7	40	4.18
By-products of sunflower production (stalks, cobs)	31.1	40	1.79
Secondary agricultural residues (sunflower husk)	2.8	100	1.16
Wood biomass (firewood, felling residues, wood processing waste)	7.2	95	1.68
Wood biomass (dead wood, wood from shelterbelt forests, pruning)	8.8	45	1.02
Biodiesel (rapeseeds)	-	-	0.41
Bioethanol (corn, sugar beets)	-	-	0.93
Biogas from waste and by-products of agricultural sector	2.8 bln m³ CH₄	42	0.99
Landfill gas	0.6 bln m³ CH₄	29	0.14
Sewage gas (industrial and municipal wastewater)	0.4 bln m³ CH₄	28	0.09
Energy crops: willow, poplar, miscanthus (1 million hectares)	11.5	100	4.88
Energy crops: corn for biogas (1 million hectares)	3.0 bln m³ CH₄	100	2.57
TOTAL			24.87

49%

30%

Source: Bioenergy Association of Ukraine (UABIO)

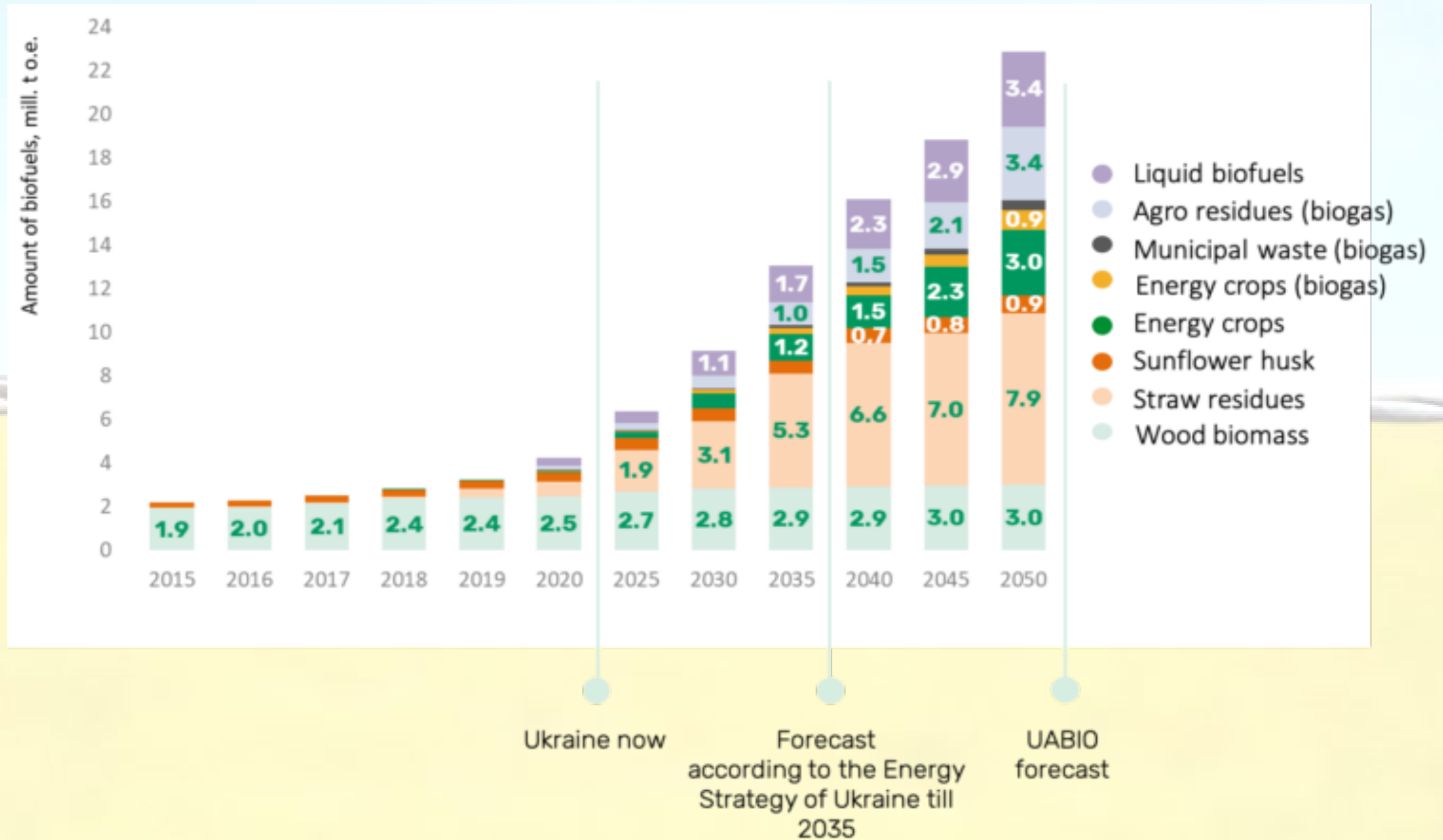
DOMESTIC USE OF BIOETHANOL IN UKRAINE, 2019-2022, thousand tonnes



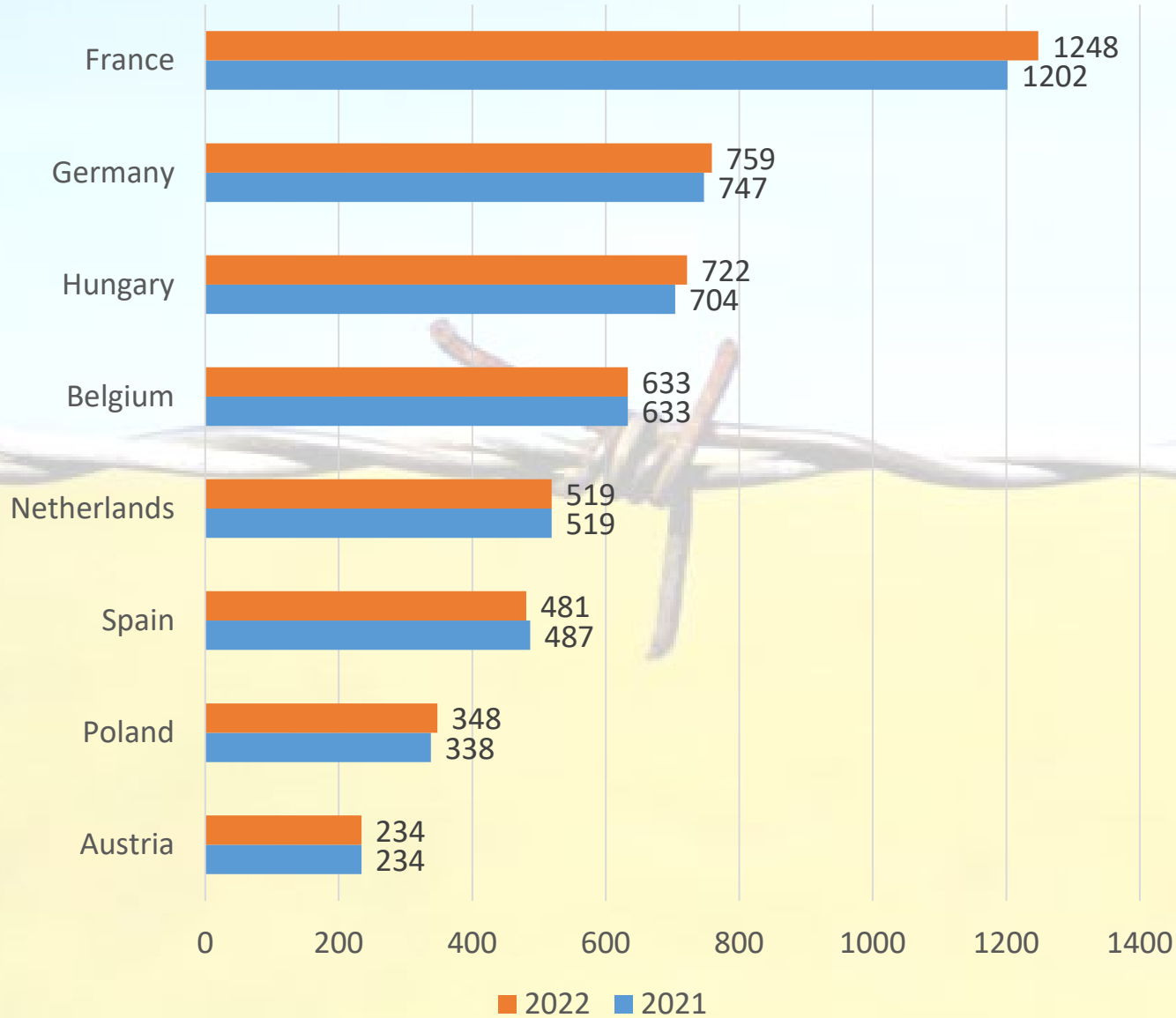
USE OF THE QUOTA FOR EXPORT TO THE EU OF BIOETHANOL IN 2019-2022, tonnes

Year	Quota	Export	Avg. in the month	Increase, %	Quota balance
2021	100,000	27,518	2,293	11%	72,482
2020	85,400	24,786	2,066	307%	60,614
2019	70,800	6,083	507	4%	64,717

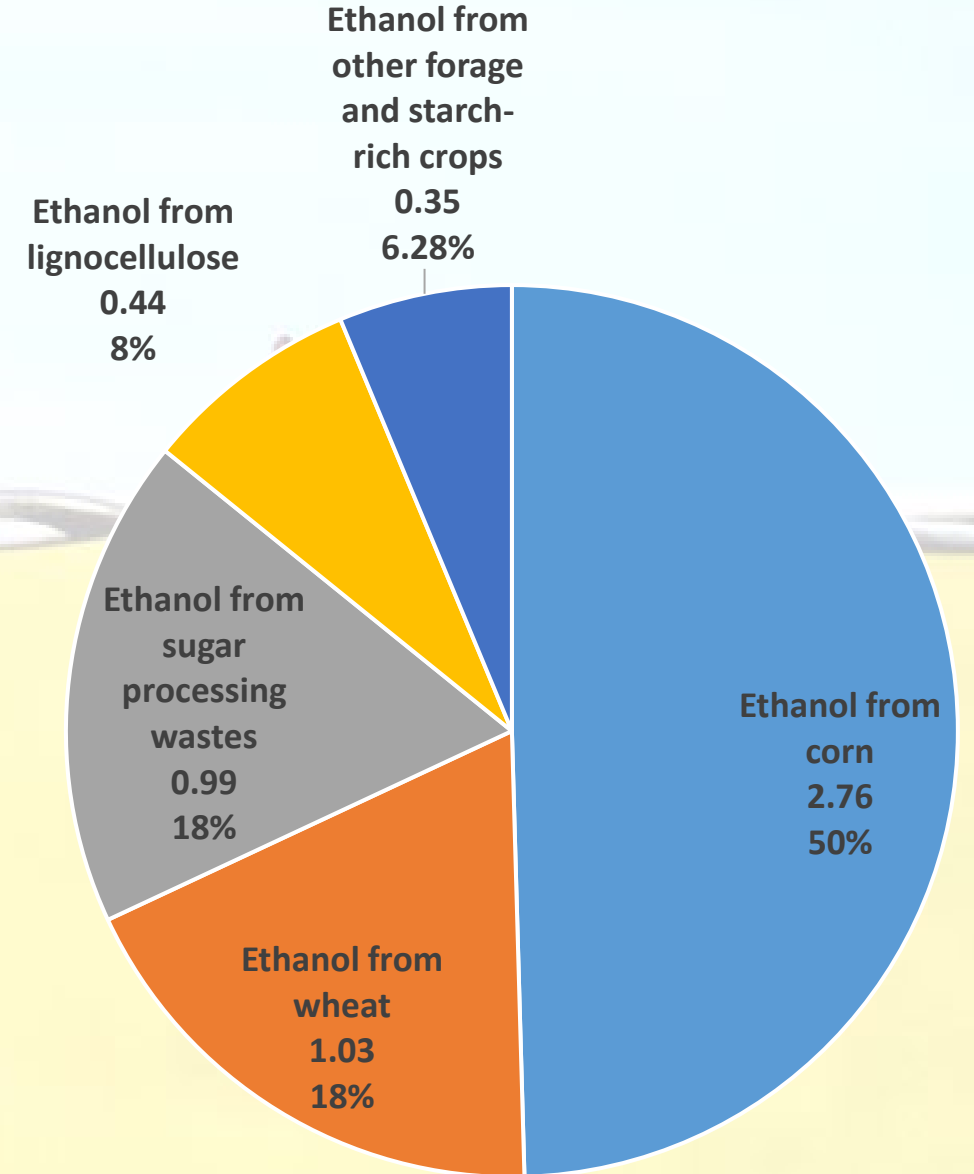
FORECAST FOR THE BIOENERGY DEVELOPMENT IN UKRAINE IN 2020-2050



THE MAIN PRODUCERS OF BIOETHANOL IN EUROPE,
billion liters per year



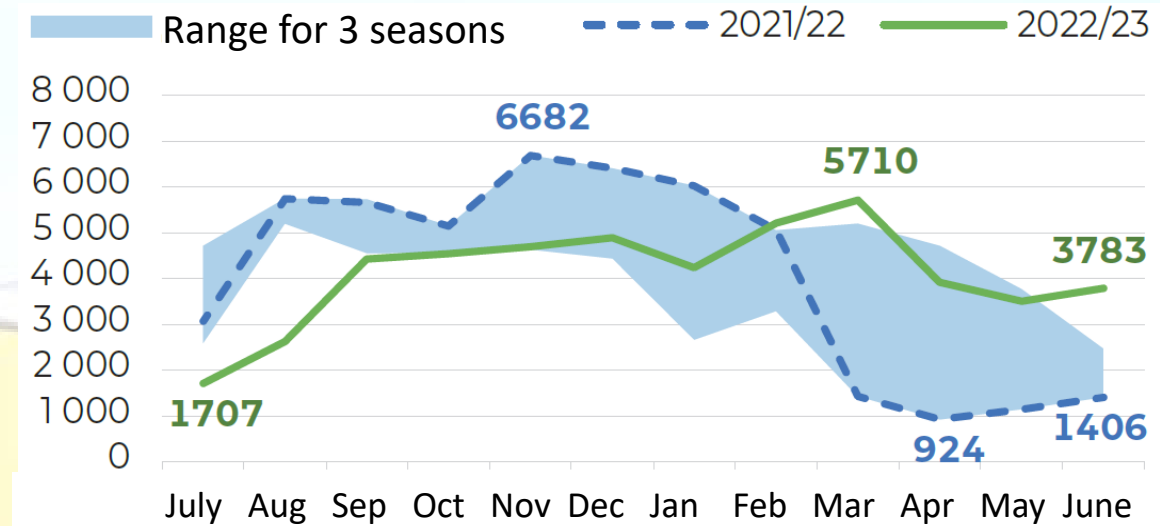
STRUCTURE OF RAW MATERIALS FOR BIOETHANOL
PRODUCTION IN EUROPE, billion liters



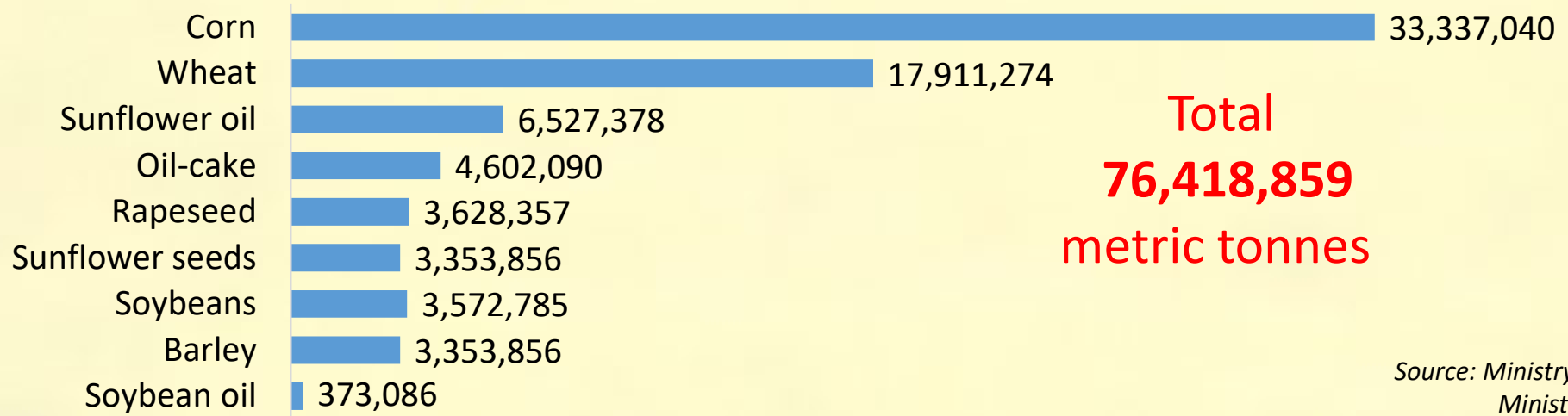
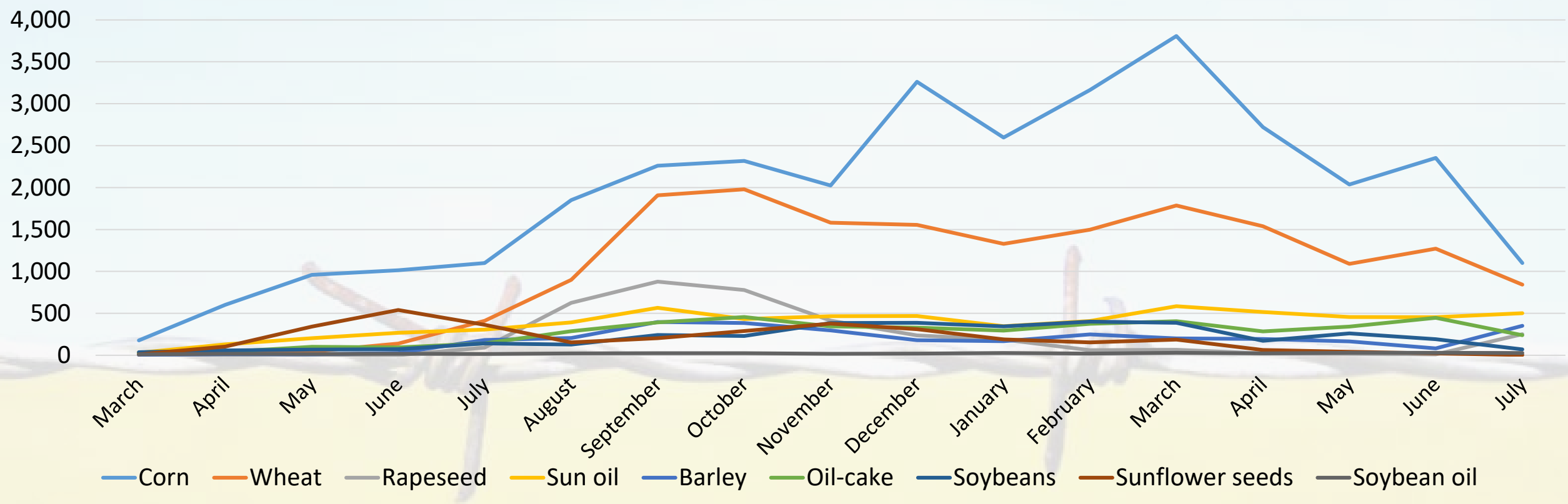
EXPORT OF GRAIN and LEGUMES FROM UKRAINE
with products of their processing (MY July-June),
thousand tonnes

	2020/2021 MY Total	2021/2022 MY		2022/2023 MY	
		Total	including June 2022	Total	including June 2023
Grain and legumes, total	43,939	48,508	1,403	49,079	3,783
• wheat	16,413	18,741	143	16,900	1,385
• barley	4,210	5,752	36	2,713	66
• rye	15.8	161.9	0	18.0	0
• corn	22,596	23,535	1,212	29,299	2,325
Wheat flour	123.7	69.4	1.9	148.1	11.4
Other flour	1.1	1.5	0.1	6.2	0.6
<i>Total flour</i>	<i>124.8</i>	<i>70.9</i>	<i>2.0</i>	<i>154.3</i>	<i>12.0</i>
Total export (grain + flour)	44,105	48,579	1,405	49,233	3,795

Dynamics of grain exports from Ukraine, thousand tonnes



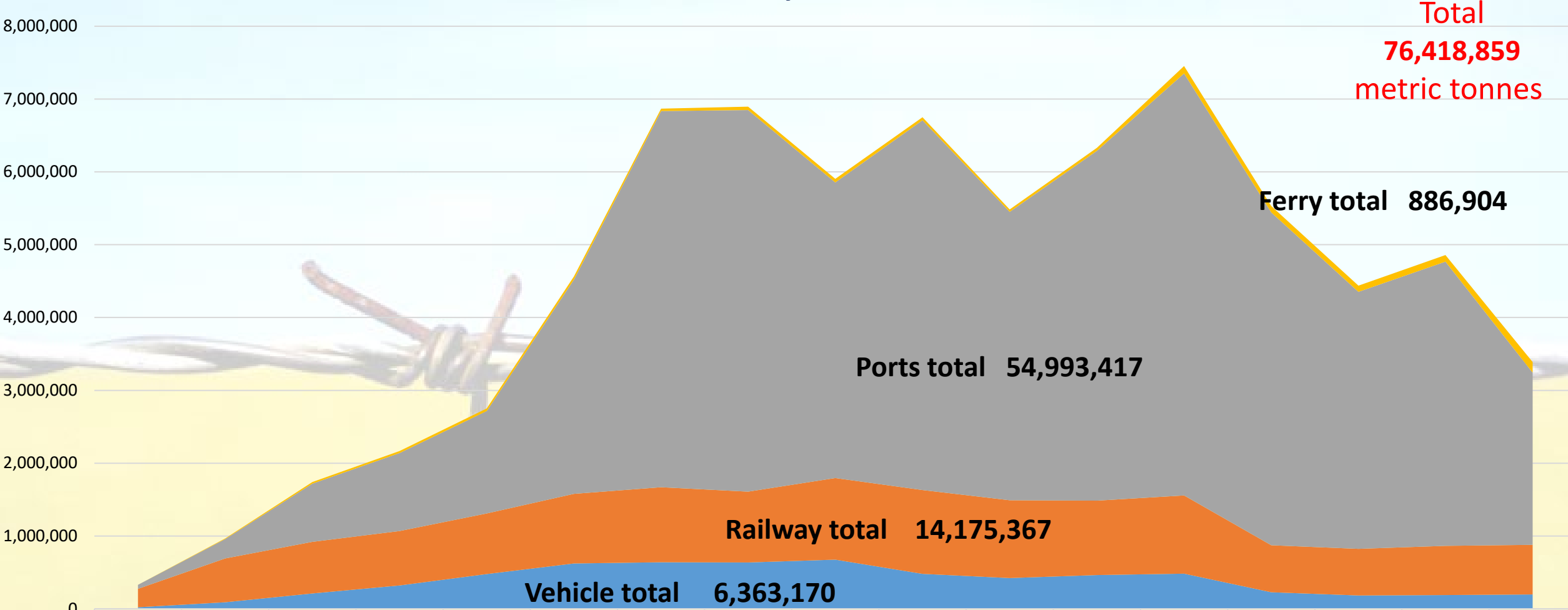
BORDER-CROSSING FROM UKRAINE DURING THE WAR TIME BY TYPES OF AGRICULTURAL PRODUCTS,
March 1, 2022 – July 31, 2023, thousand metric tonnes



Total
76,418,859
metric tonnes

Source: Ministry of Agrarian Policy and Food of Ukraine
Ministry of Infrastructure of Ukraine

**BORDER-CROSSING OF AGRICULTURAL PRODUCTS FROM UKRAINE IN TRANSPORTATION BREAKDOWN,
March 1, 2022 – July 31, 2023, metric tonnes**



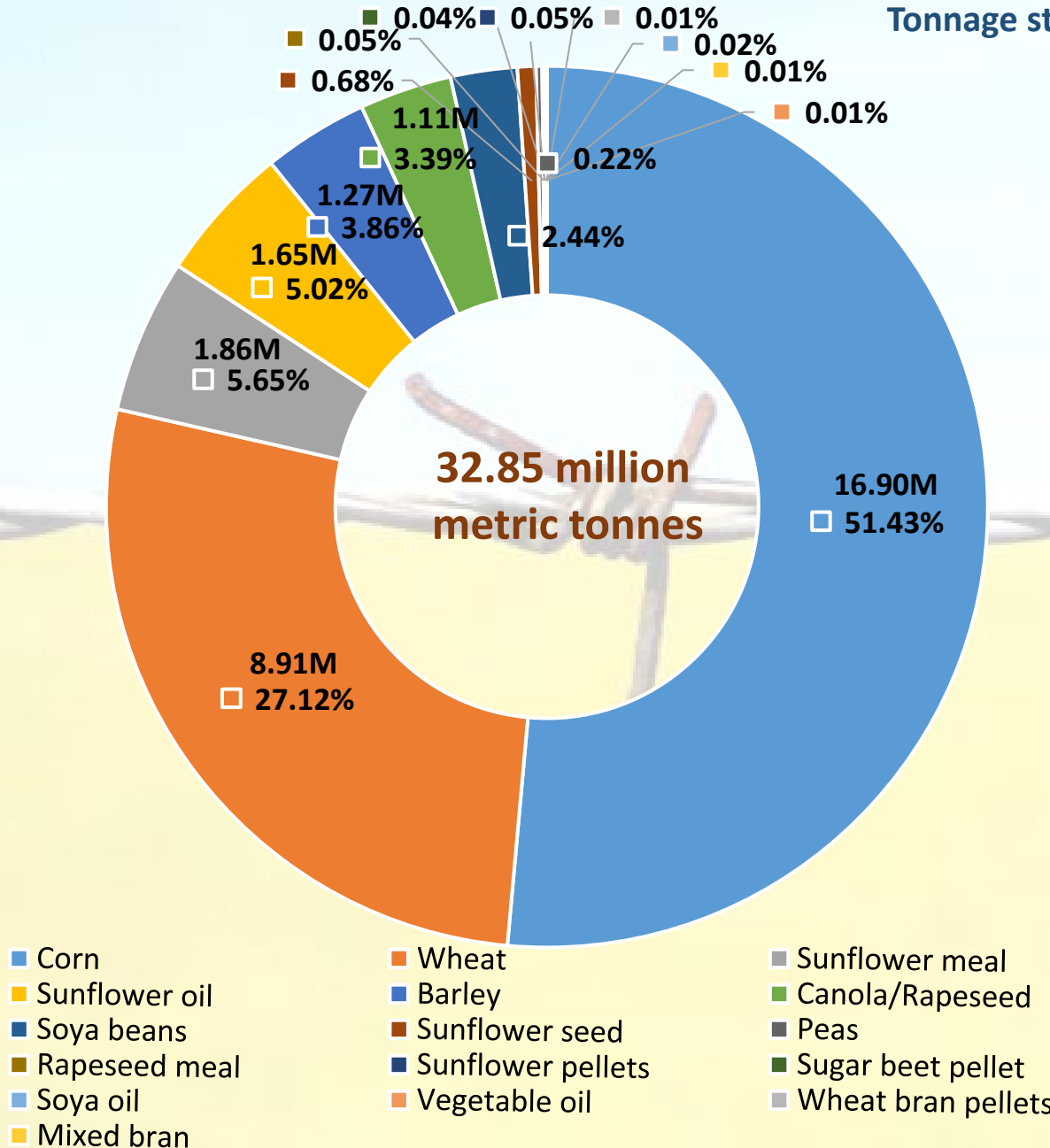
	March	April	May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July
Ferry	76	9,368	22,112	28,419	36,502	41,818	31,814	45,974	46,903	41,669	31,712	41,106	100,370	89,438	85,251	90,424	143,948
Ports	55,670	265,657	798,803	1,069,847	1,405,173	2,941,376	5,166,260	5,239,526	4,060,184	5,075,522	3,959,209	4,802,926	5,792,583	4,568,184	3,526,874	3,900,758	2,364,863
Railway	252,916	601,739	709,616	746,793	832,375	954,963	1,030,254	970,200	1,119,027	1,152,358	1,069,546	1,020,485	1,075,273	644,344	638,585	675,281	681,612
Vehicle	22,894	91,551	212,089	323,375	477,606	624,887	639,669	638,570	676,682	480,114	422,997	465,462	483,404	229,811	186,096	190,290	197,673

Source: Ministry of Agrarian Policy and Food of Ukraine and Ministry of Infrastructure of Ukraine

EXECUTION OF THE AGREEMENT "Initiative for the safe transportation of grain and food products from Ukrainian ports"

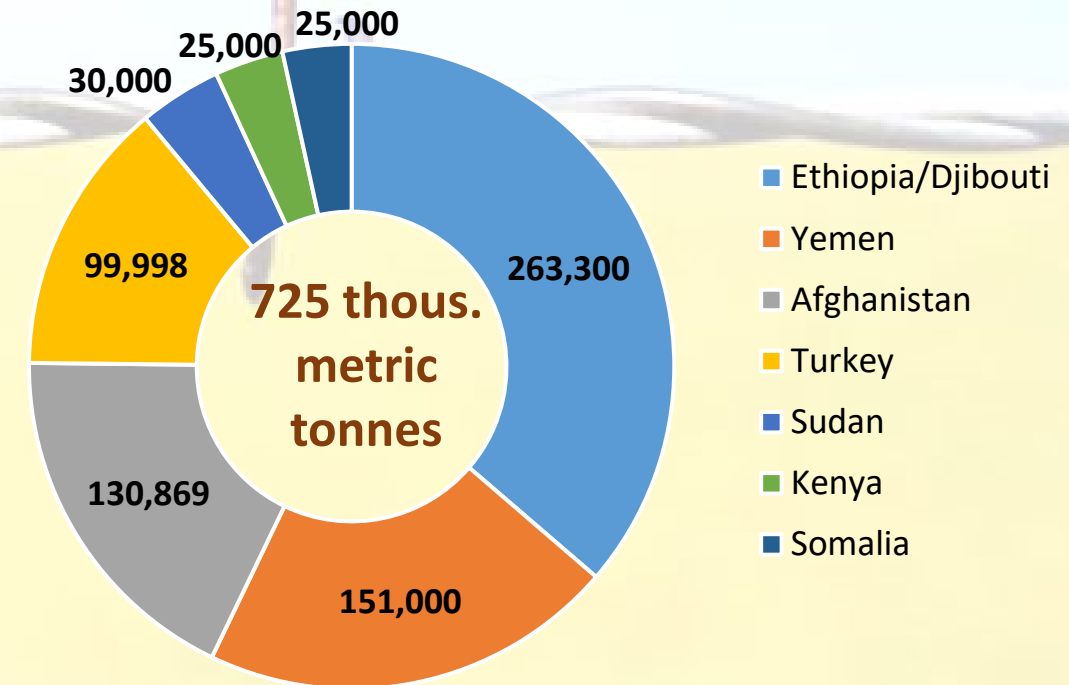
August 1, 2022 – July 17, 2023

Tonnage structure by commodities, %



1144 shipments (1004 vessels) of 32,856,036 metric tonnes of grains and other foodstuffs have left Ukrainian ports.

World Food Programme humanitarian shipment by country



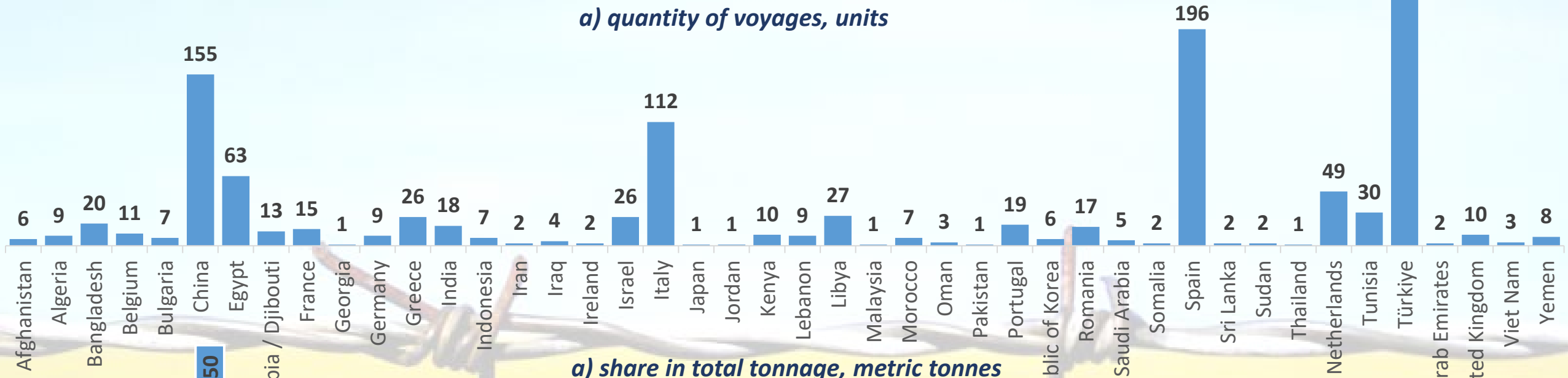
Note: Certain WFP wheat shipments went to Turkey to be milled into flour and then will be shipped to countries under WFP humanitarian operations

Source: based on the data of the Black Sea Grain Initiative Joint Coordination Centre

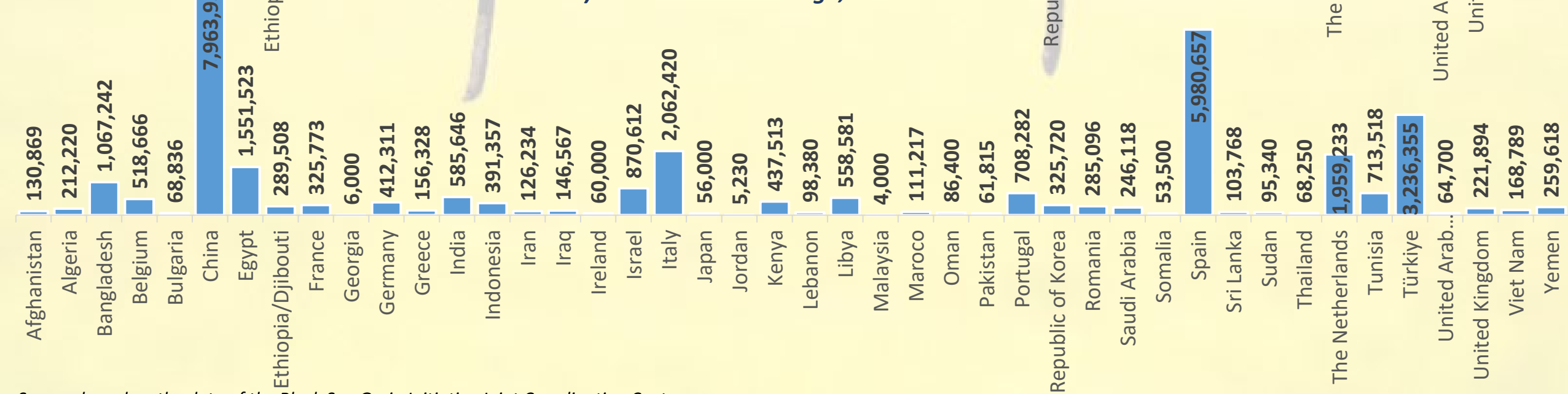
EXECUTION OF THE AGREEMENT "Initiative for the safe transportation of grain and food products from Ukrainian ports"

Structure of delivered loads by destination, August 1, 2022 – July 17, 2023

a) quantity of voyages, units

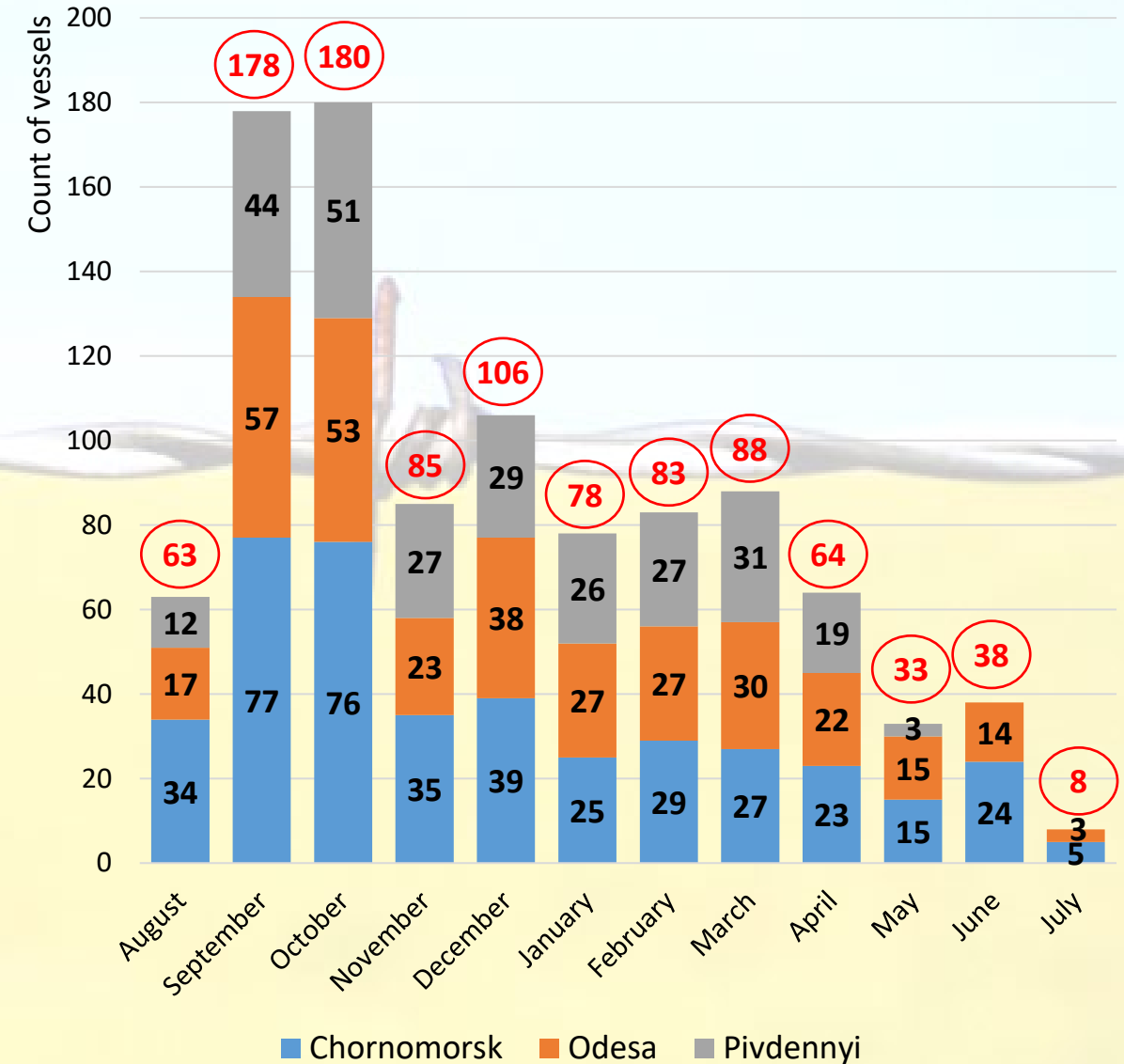
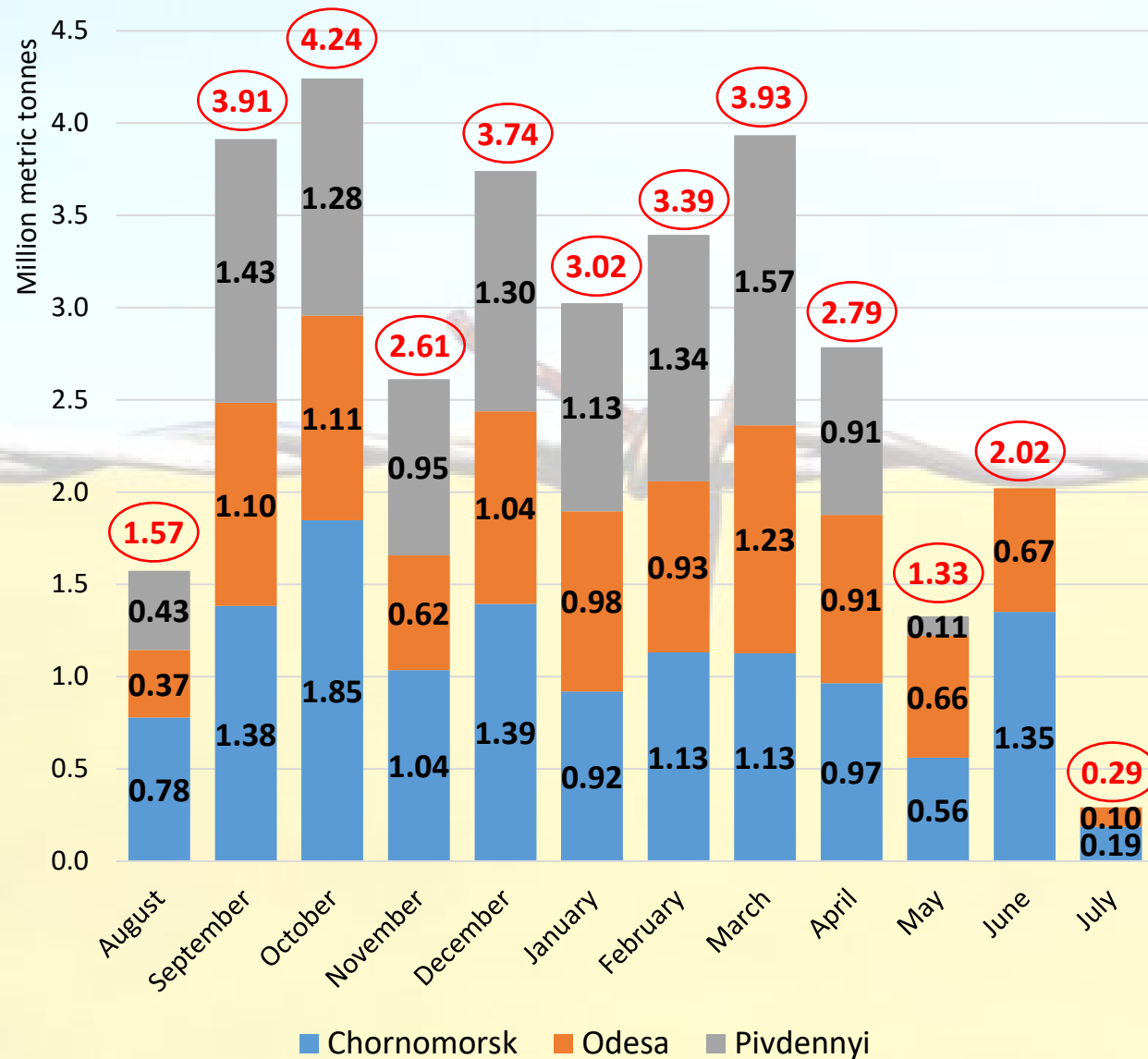


a) share in total tonnage, metric tonnes



EXECUTION OF THE AGREEMENT "Initiative for the safe transportation of grain and food products from Ukrainian ports"

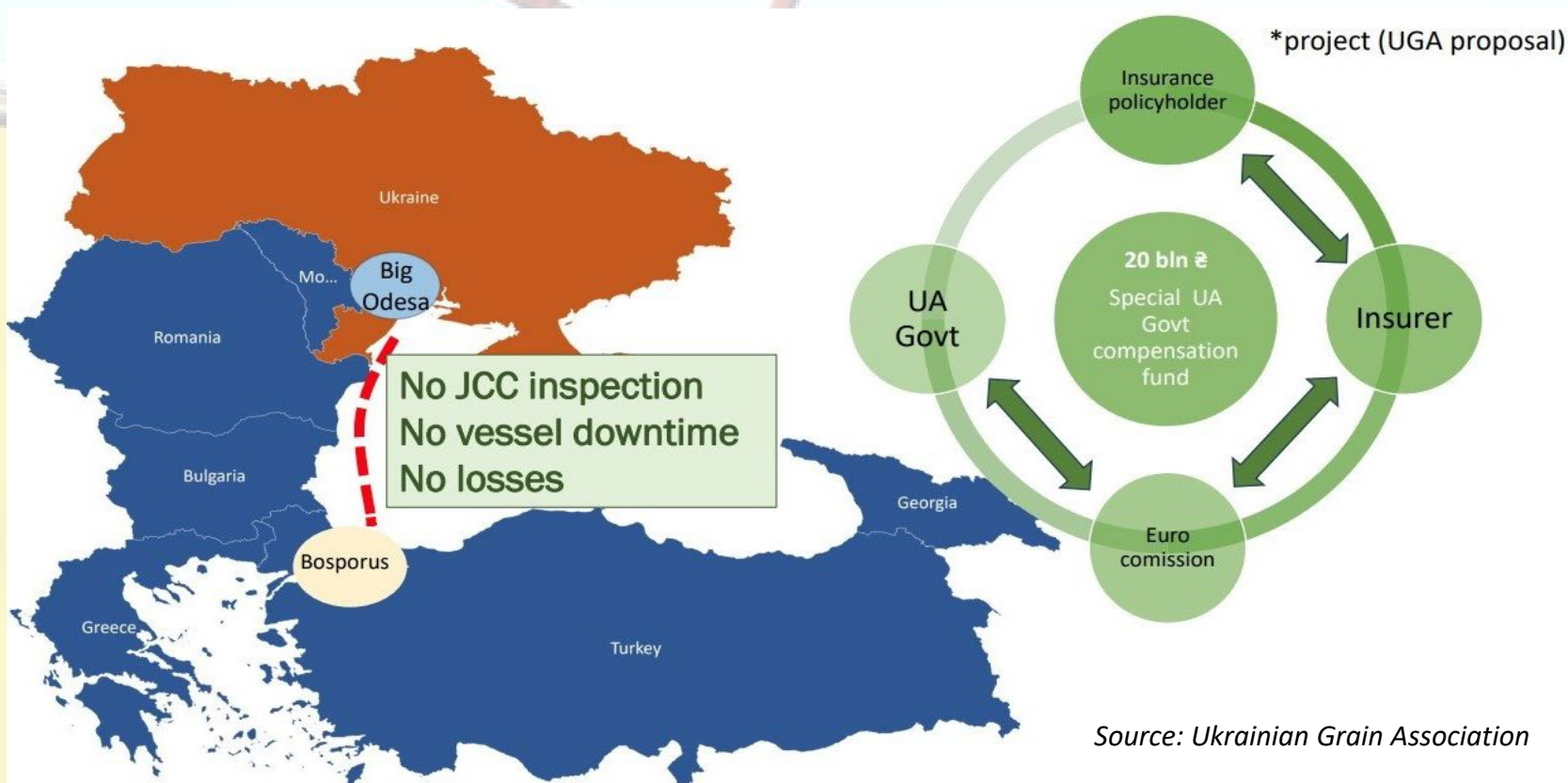
Departure from Ukraine by ports, August 1, 2022 – July 17, 2023



BLACK SEA GRAIN INITIATIVE WITHOUT RUSSIA


ADVANTAGES:

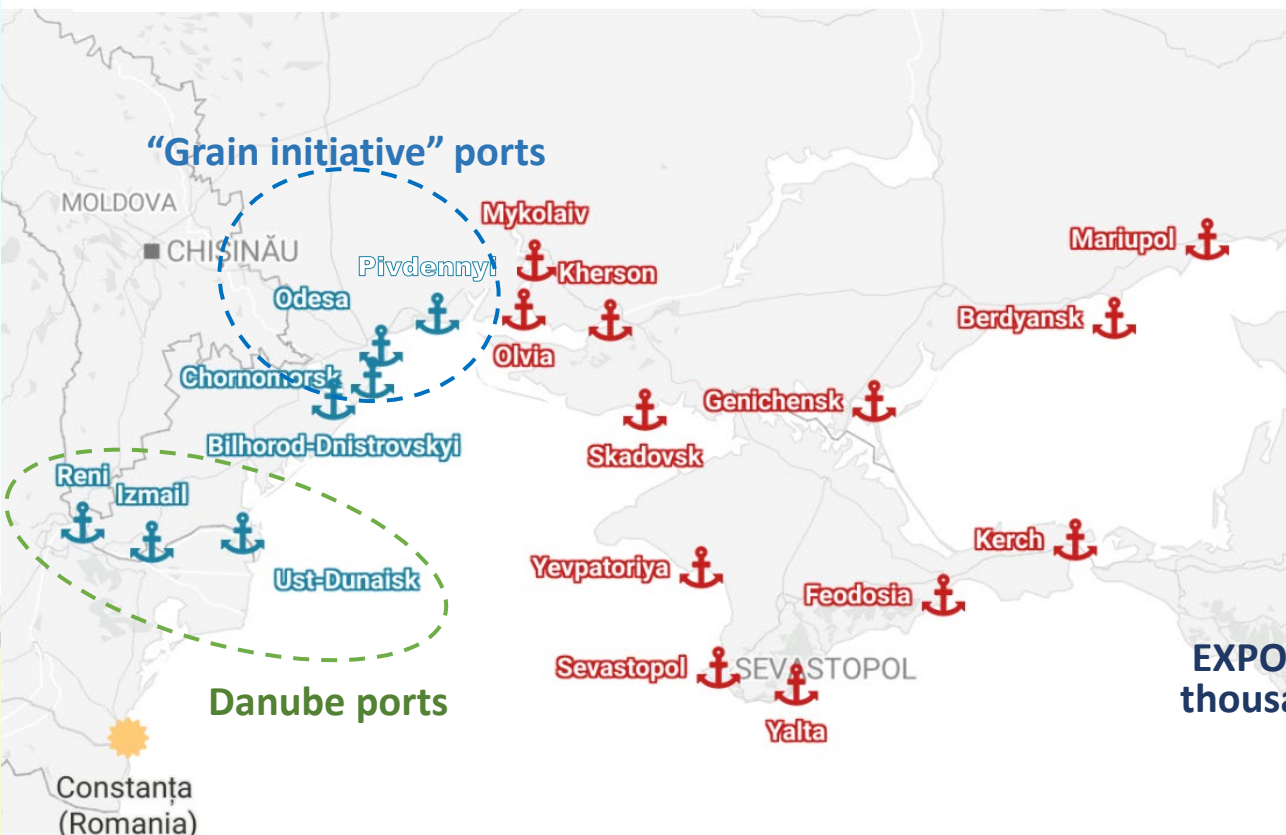
- 1) **No inspection.** Ukrainian exports will no longer be sabotaged by Russian inspectors from the Joint Coordination Center (JCC) in Istanbul.
- 2) **Logistics cost reduction.** The delay of ships negatively affected the work of Ukrainian grain producers due to the increase in the cost of logistics (from 30\$/T to 100\$/T). Some vessels waited 3 months and more
- 3) **World food security increase.** Due to Russian sabotage of the grain corridor, the world did not get the minimum of 20 million tons of agricultural products.



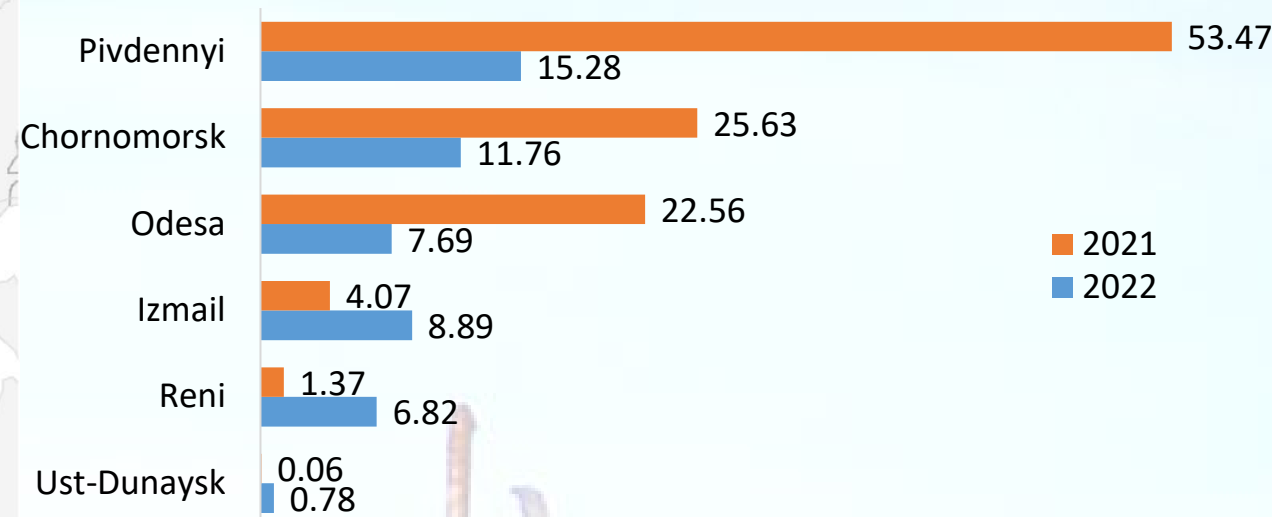
RUSSIAN REQUIREMENTS:

- 1) removal from **sanctions** of the supply of Russian grain and fertilizers to world markets,
- 2) unimpeded conditions for expanding supplies of Russian **fertilizers** and raw materials for their production,
- 3) resuming supplies to Russia of **spare parts** and components for agricultural machinery and the fertilizer production industry,
- 4) connection of Russian banks to **SWIFT** and the termination of "all restrictions",
- 5) resolving issues with ship freight and **insurance** of Russian food export supplies, ensuring the logistics of food supplies,
- 6) the operation of the **Togliatti-Odesa ammonia pipeline** should be restored,
- 7) unblocking of Russian **financial assets** related to the agricultural sector.

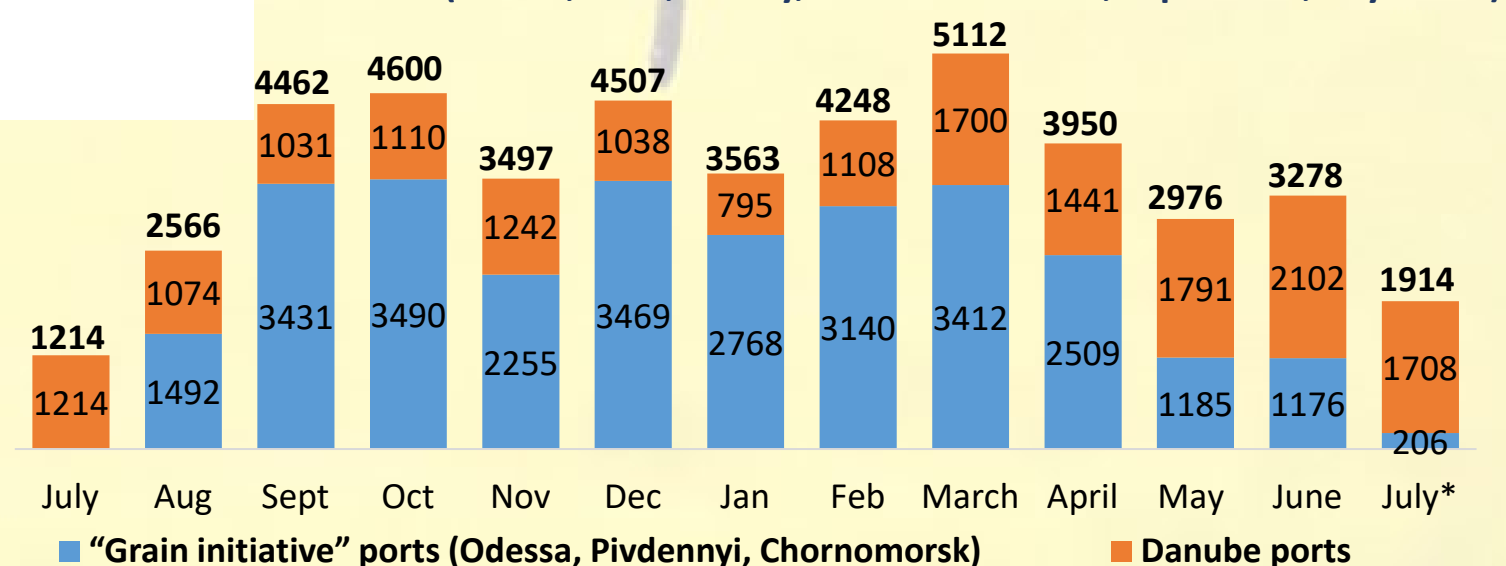
 **Blocked ports**  **Available ports**



TOTAL VOLUME OF CARGO HANDLING IN THE BLACK SEA PORTS OF UKRAINE, million tonnes

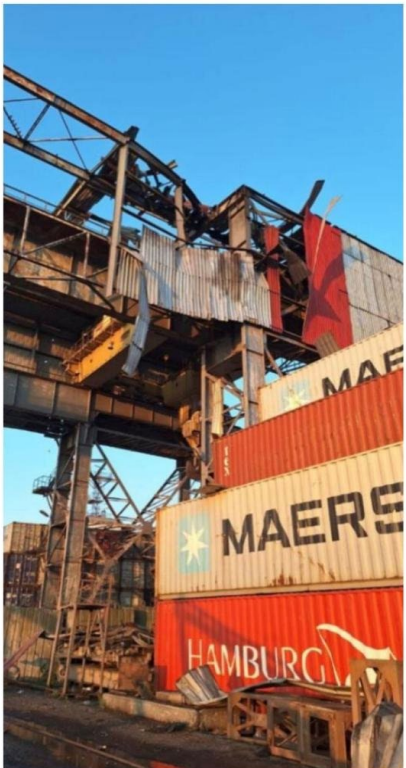
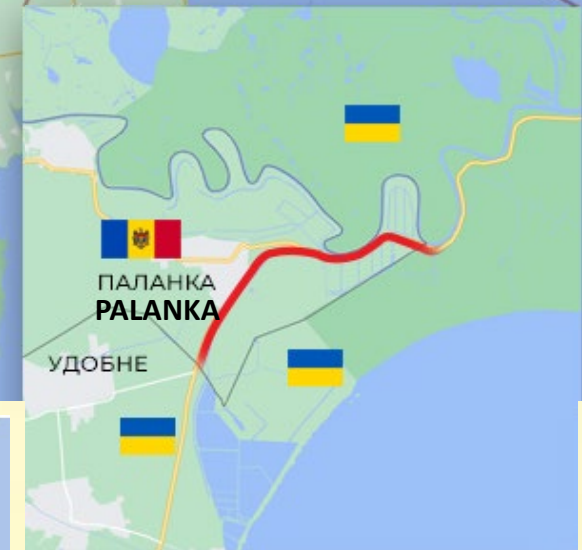


EXPORT OF GRAINS AND OILSEEDS FROM UKRAINIAN PORTS IN 2022/23MY, thousand tonnes (wheat, corn, barley, sunflower seeds, rapeseeds, soybeans)

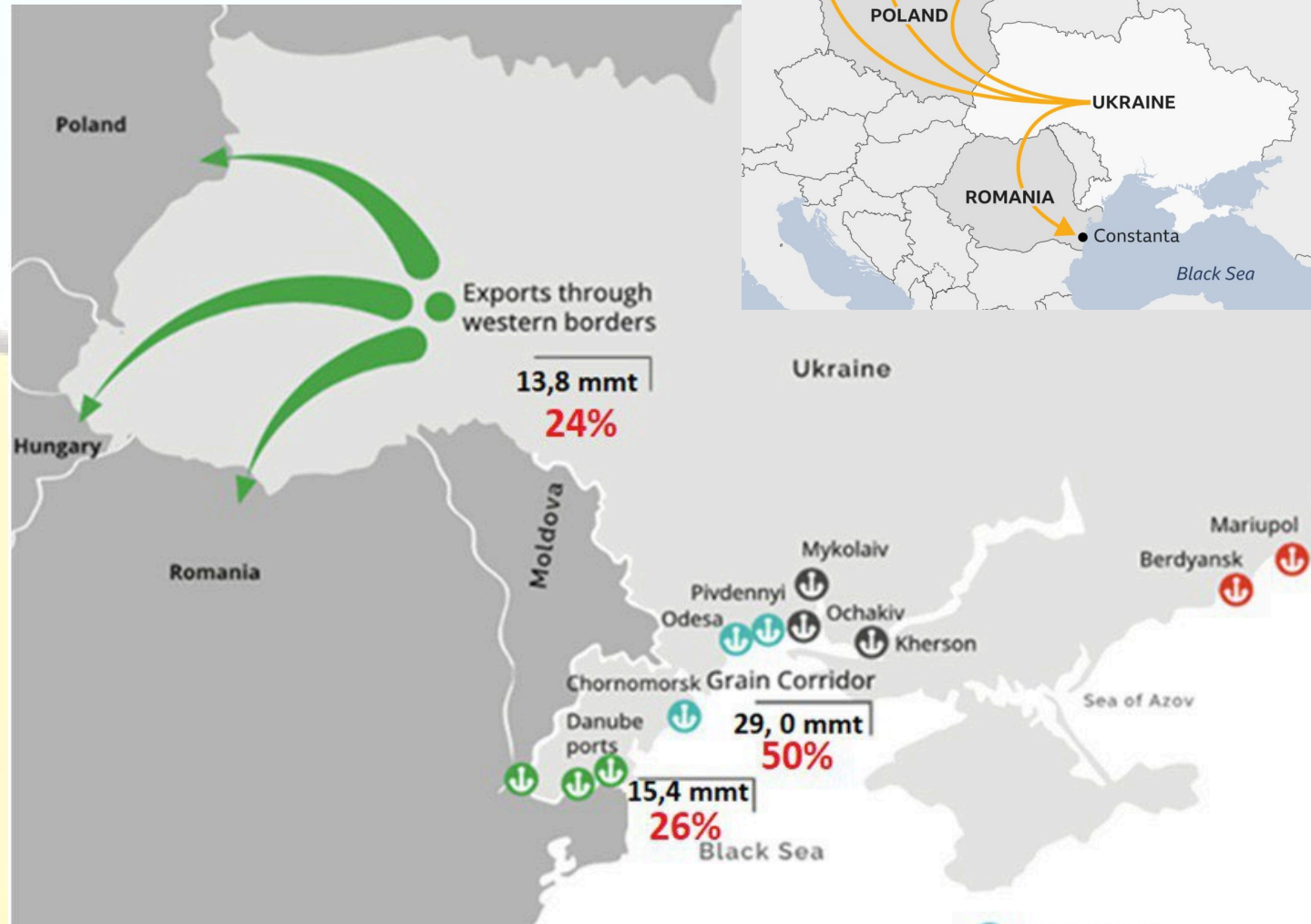
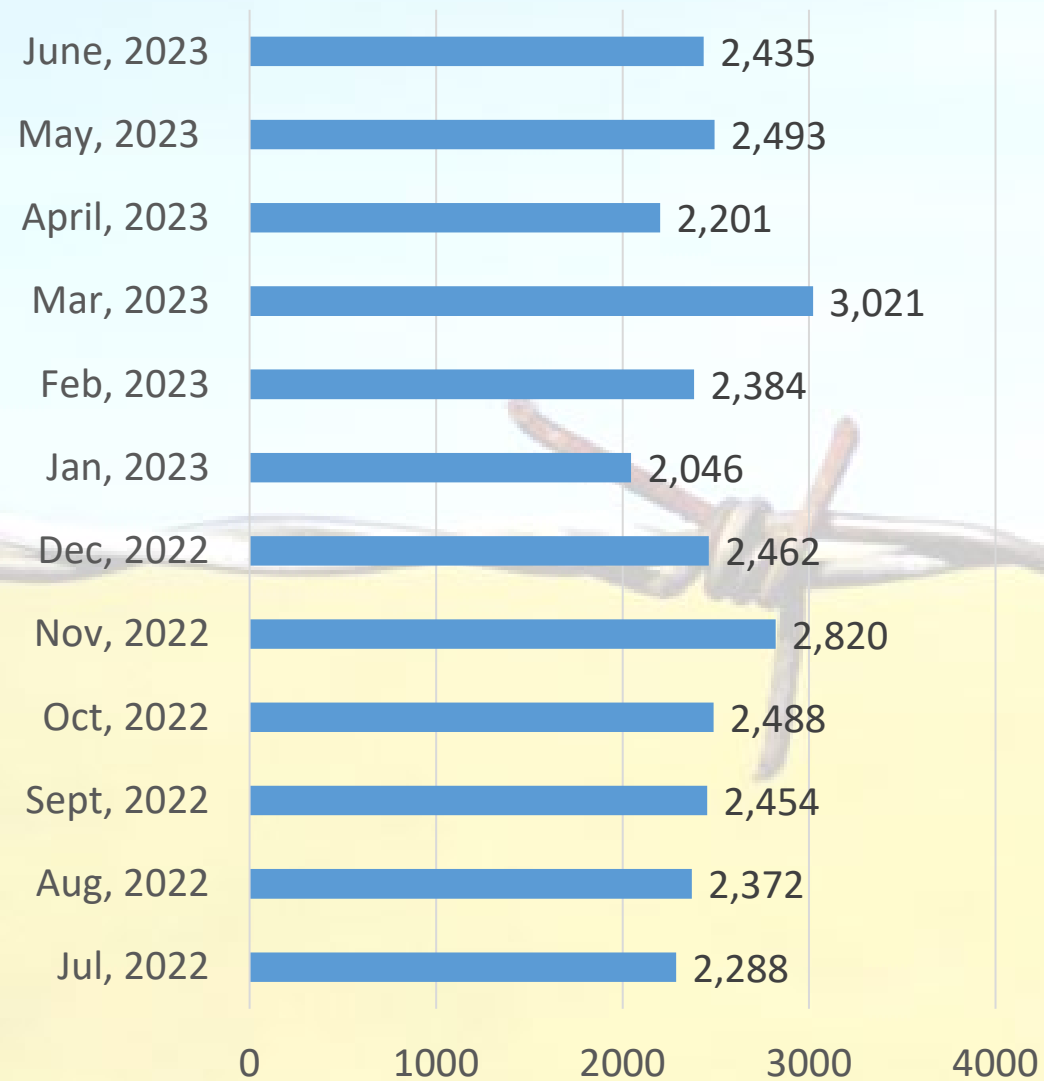


COMPLICATIONS OF THE DANUBE PORTS LOGISTIC

- limited access to the ports by railway and roads (over the bridge in Zatoka or through Moldova);
- the navigation needs to be coordinated with Romania;
- the small depth of Ukrainian canals, which limits the size of ships;
- the lack of warehouses - the available storage capacities were not designed for transshipment of 15 million tons of cargo per year;
- limited loading capacity (e.g. cargo cranes) and ports infrastructure (terminals, driveway and railway, etc.);
- partially destroyed Reni and Izmil ports infrastructure after Russian attack.

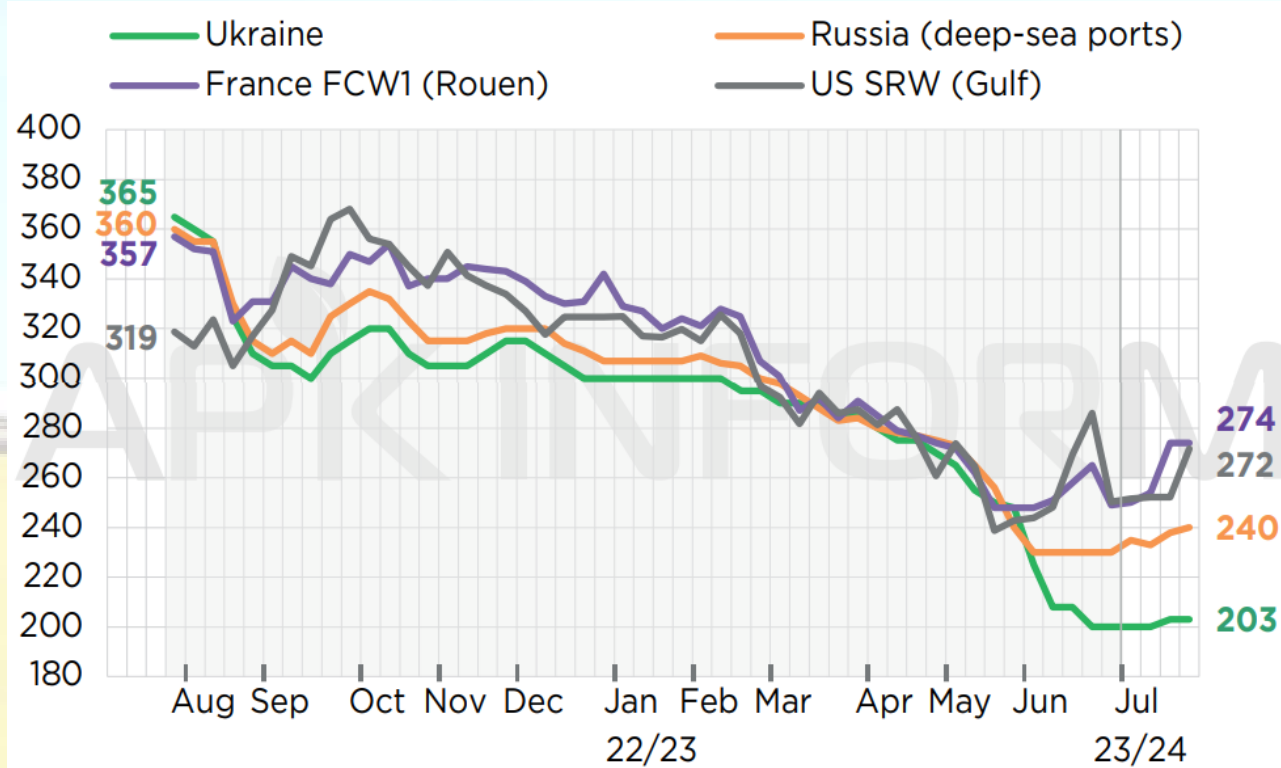


EXPORT OF GRAINS AND OILSEEDS FROM UKRAINE THROUGH “SOLIDARITY LINES” TO EU in 2022/23 MY (wheat, corn, barley, sunflower seeds, rapeseeds, soybeans), thousand tonnes

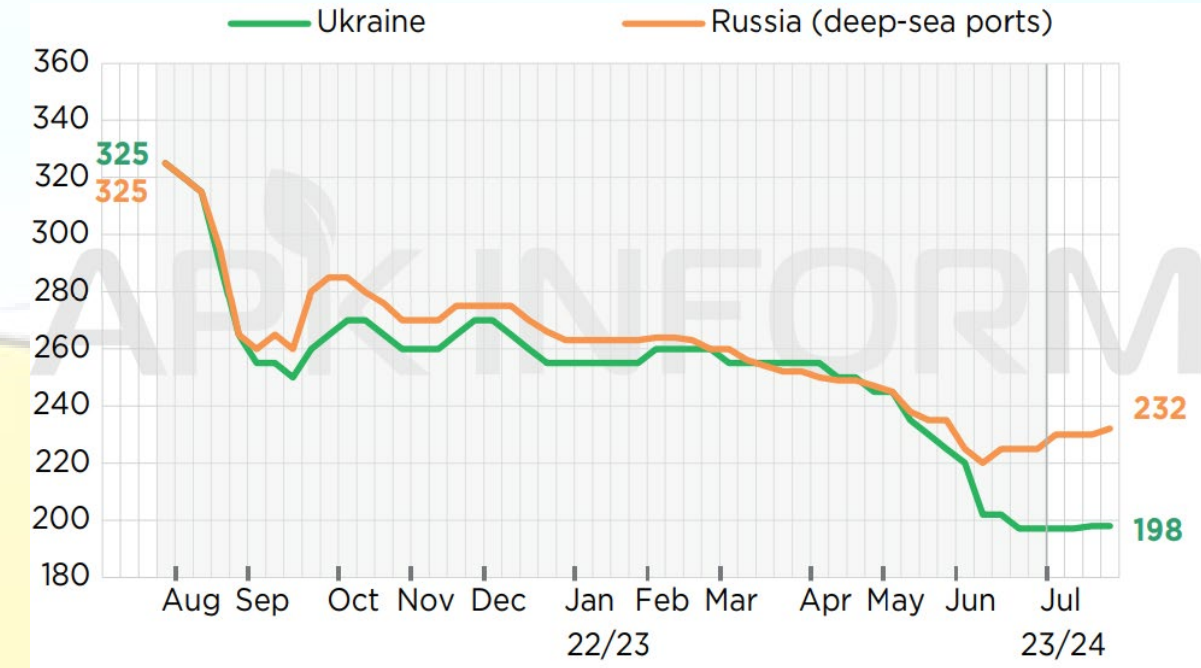


IMPACT OF THE WAR ON GRAIN PRICES

Dynamics of milling wheat prices, USD/t

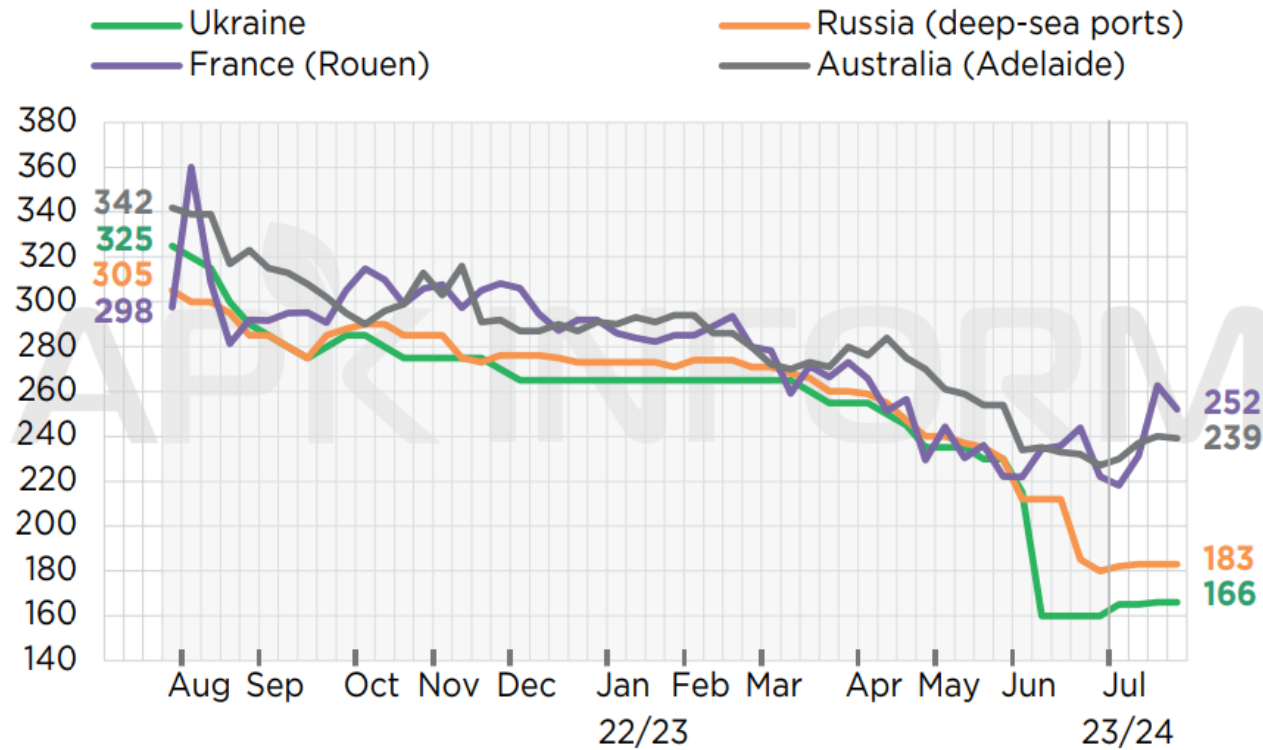


Price dynamics of feed wheat (offer, FOB), USD/t

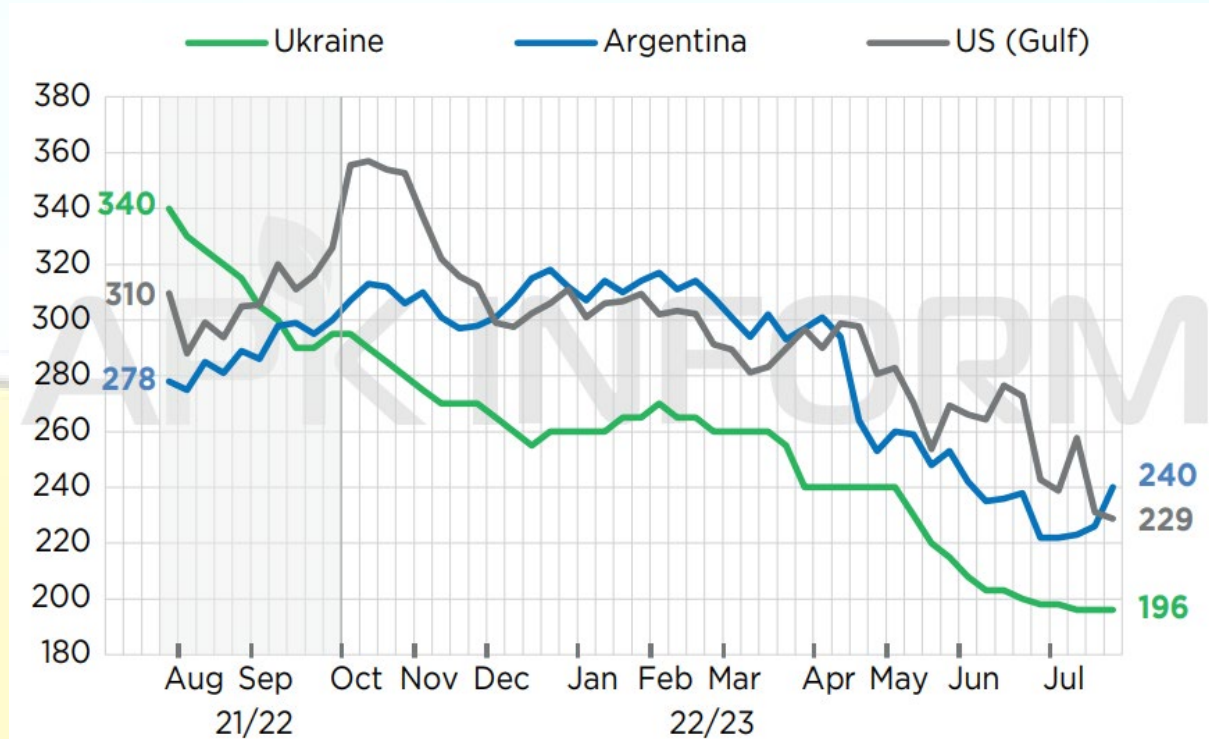


IMPACT OF THE WAR ON GRAIN PRICES

Price dynamics of feed barley (offer, FOB), USD/t



Price dynamics of corn (offer, FOB), USD/t



SOWN AREA OF WINTER CROPS IN UKRAINE, thousand hectares

Crops	Sown areas in 2020	Sown areas in 2021	Planted in 2022 for the 2023 harvest	% of planted in 2022 to 2021
Winter crops total, including:	8,973.5	9,029.4	5,449.4	60.3 %
• winter wheat	6,714.4	6,538.4	3,758.8	57.5 %
• winter barley	1,080.4	969.0	612.5	63.2 %
• winter rye	166.8	108.5	79.2	73.0 %
• winter rapeseeds	1,011.9	1,413.5	998.9	70.7 %

Note: includes data from territories under Ukrainian control as of the reporting date

SOWN AREA OF SPRING CROPS IN UKRAINE thousand hectares

Crops	2021	2022	2023	2023 to 2022	2023 to 2021
Total (selected crops)	15633.2	12327.0	12907.0	104.71%	82.56%
Spring cereals and legumes	7586.0	6196.9	5672.2	90.47%	73.91%
including:					
• <i>spring wheat</i>	192.1	191.1	280.0	146.52%	145.76%
• <i>spring barley</i>	1337.0	951.4	821.9	86.39%	61.47%
• <i>oats</i>	177.9	159.3	150.1	94.22%	84.37%
• <i>peas</i>	242.1	131.0	139.3	106.34%	57.54%
• <i>corn</i>	5474.8	4639.4	4043.5	87.16%	73.86%
• <i>buckwheat</i>	84.0	75.3	120.7	160.29%	143.69%
• <i>millet</i>	78.1	49.5	51.1	103.23%	65.43%
Spring rapeseed	33.2	34.1	n/a	n/a	n/a
Soybeans	1279.6	1212.6	1779.8	146.78%	139.09%
Sunflower	6509.7	4702.7	5307.5	112.86%	81.53%
Sugar beet	224.7	180.6	213.1	118.00%	94.84%

HARVESTING OF GRAIN, LEGUMES AND OIL CROPS IN UKRAINE, as of August 4, 2023

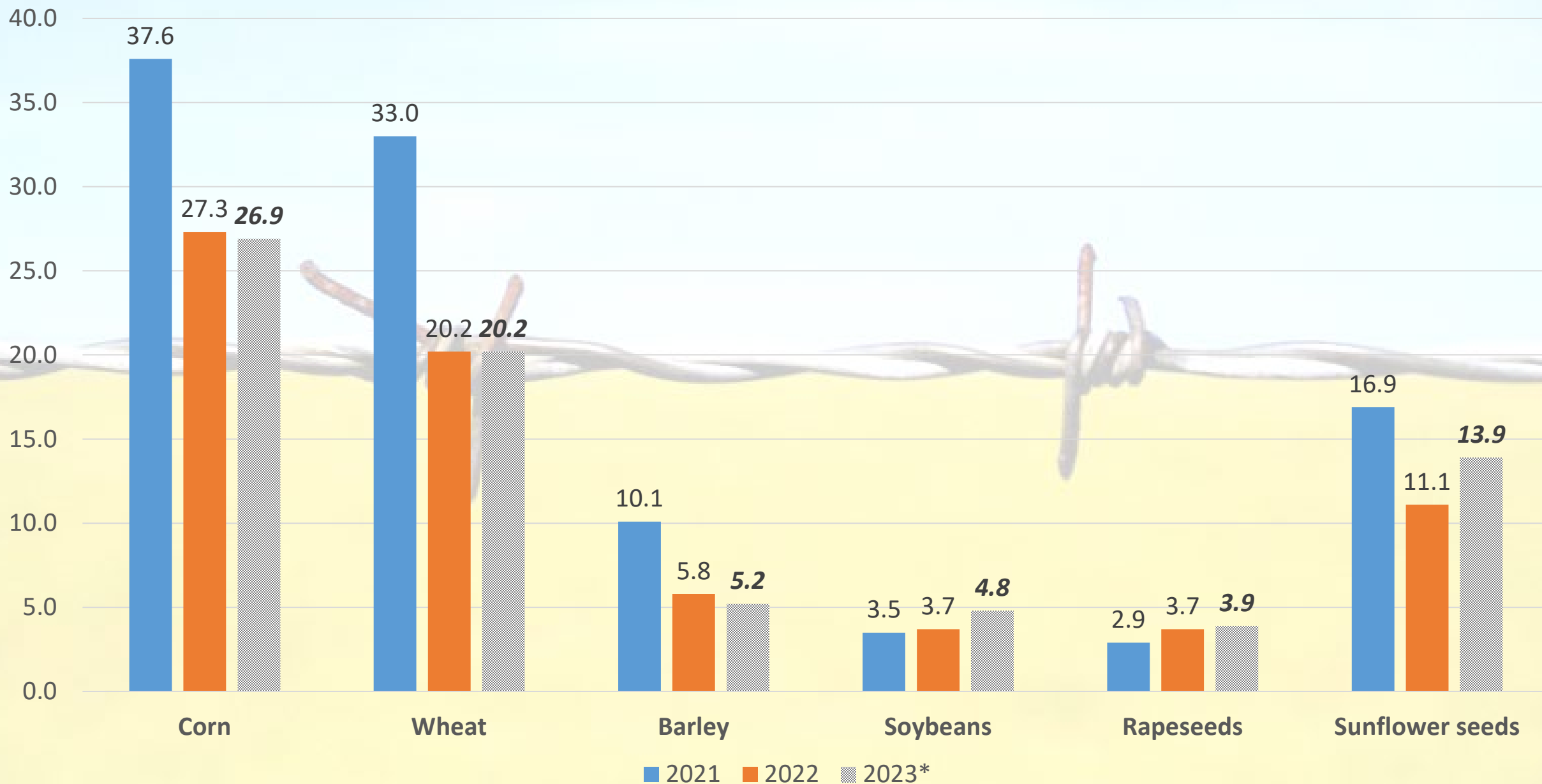
Crops	Harvested, thousand hectares		2023*		Harvested to forecast 2023*, %	Harvested 2023*, thousand metric tonnes	Average yields, metric tonnes per hectare			Change in yields per hectare 2022 to 2021, %
	2021	2022	Forecast, thousand hectares	Harvested, thousand hectares			2021	2022	2023*	
Grain and legumes total, including:	15,299.2	10,969.7	10,307.6	3,762.6	38.3%	16,574.4	5.50	4.88	4.41	-11.5 %
•wheat	7,073.0	4,979.4	4,498.5	2,697.8	60.0%	12,513.1	4.64	4.05	4.64	-12.7 %
•barley	2,467.7	1,666.5	1,431.7	939.5	65.6%	3,754.8	3.92	3.47	4.00	-11.5 %
•peas	240.4	118.1	143.6	125.3	87.3%	306.4	2.43	2.28	2.45	-6.2 %
•buckwheat	84.2	115.9	139.2	0.1	0.1%	0.1	1.30	1.37	1.20	5.4 %
•millet	77.9	44.7	51.1	0			2.52	2.28		-9.5%
•corn	5,356.0	4,045.0	4,043.5	0			8.01	6.68		-16.6 %
Soybeans	1,279.5	1,537.0	1,779.8	0			2.68	2.43		-9.3 %
Rapeseed	1,013.9	1,134.8	1,376.5	1,182.3	85.9%	3,319.8	2.95	2.86	2.81	-2.0 %
Sunflower	6,482.4	4,825.5	5,307.5	0			2.52	2.18		-13.9 %

Note: includes data from territories under Ukrainian control as of the reporting date

Source: based on the data of the State Statistic Service of Ukraine

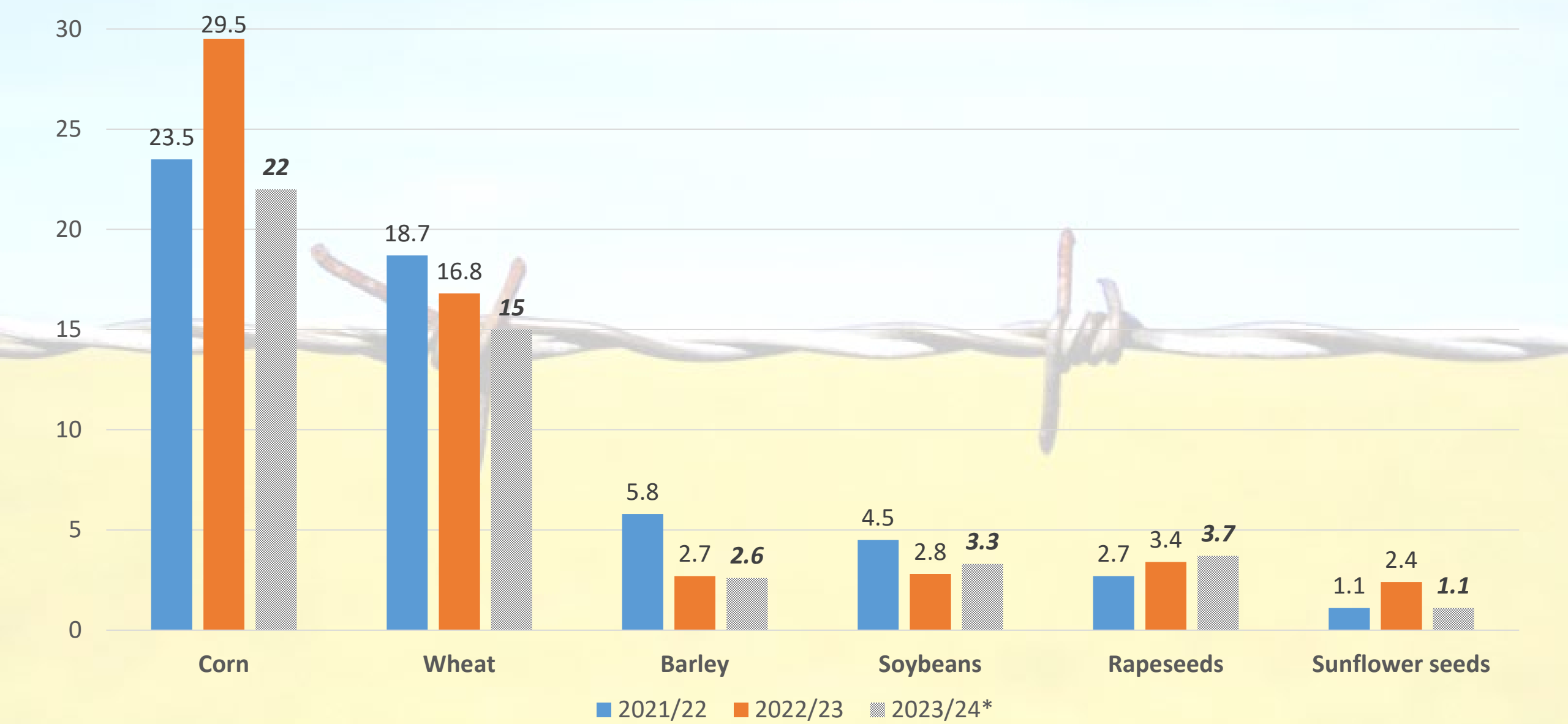


FORECAST OF HARVEST OF GRAIN, LEGUMES AND OIL CROPS IN UKRAINE IN 2023, mln tonnes



Source: based on data of Ukrainian Grain Association, August 2023

FORECAST OF EXPORT POTENTIAL OF GRAIN, LEGUMES AND OIL CROPS IN UKRAINE IN 2023/24 MY, mln tonnes



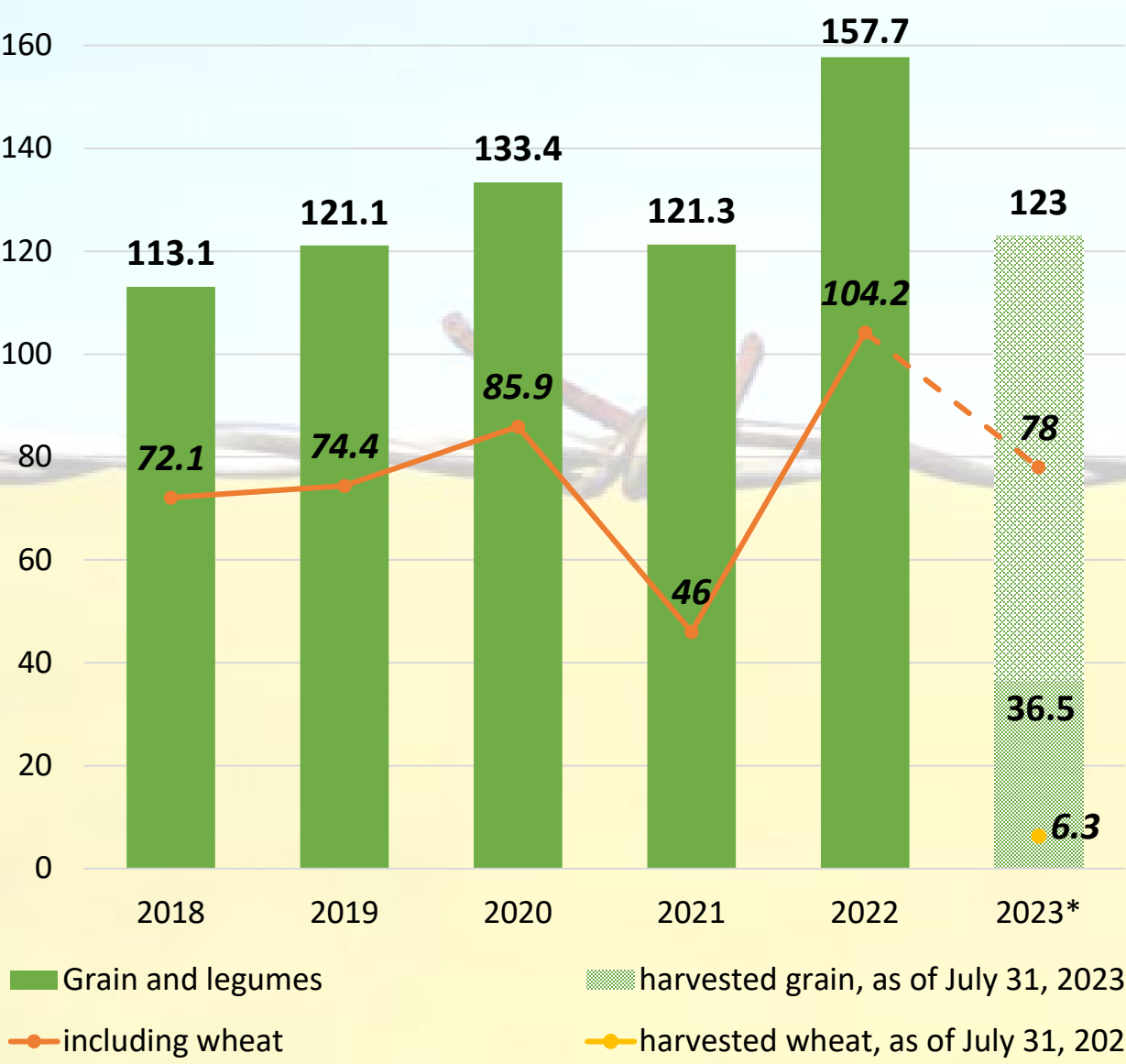
Source: based on data of Ukrainian Grain Association, August 2023

BALANCE OF SUPPLY AND DEMAND OF GRAIN AND LEGUMES IN UKRAINE (*forecast as of July 7, 2023)

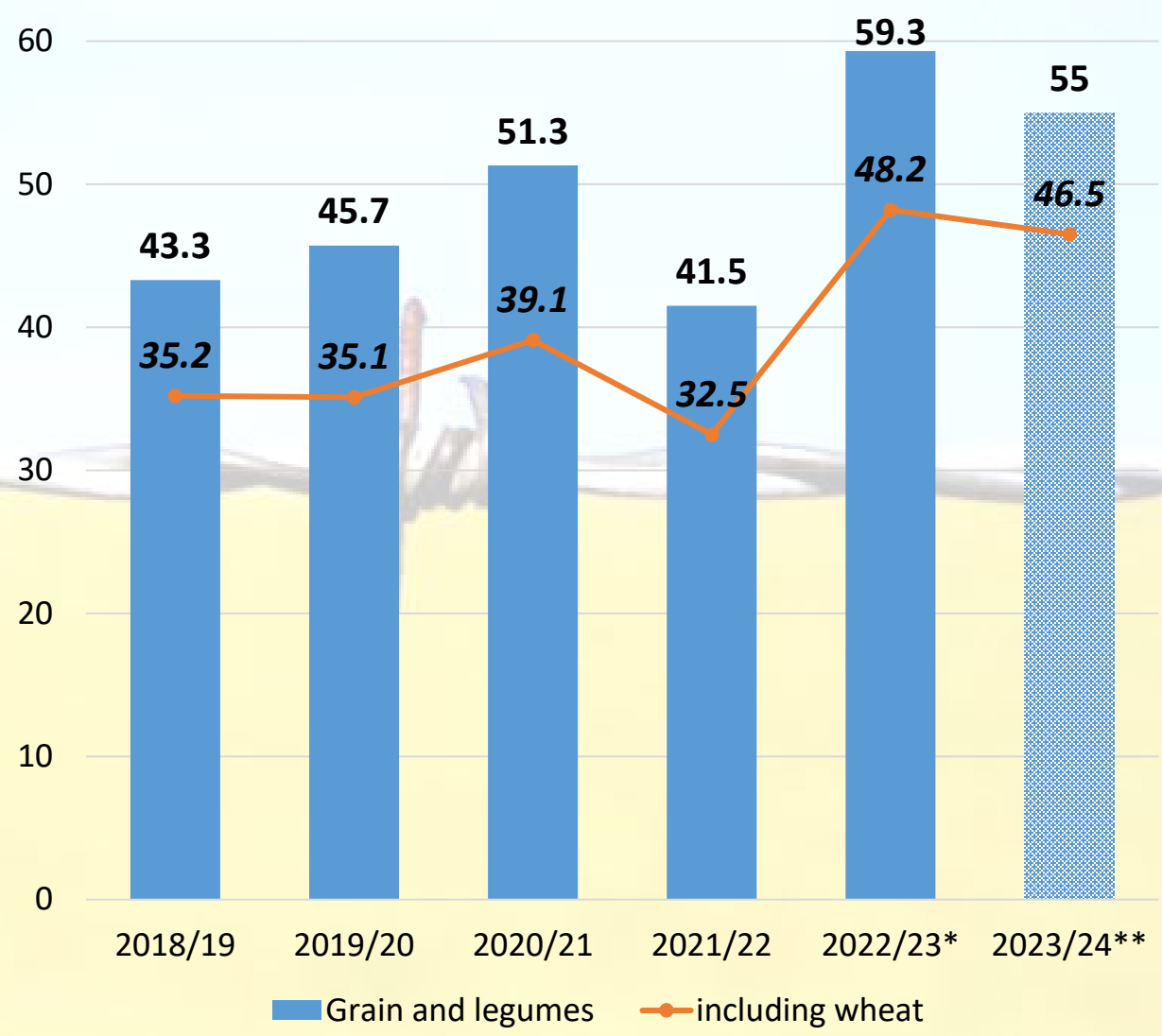
	2021/22	2022/23	2023/24*	Deviation , %	
	thousand tonnes	thousand tonnes	thousand tonnes	2022/23 to 2021/22	2023/24 to 2022/23
Initial stocks	4,817	12,465	3,800	in +2,6 times	-69.5%
Sown area, thousand hectares	15,995	12,171	10,735	-23.9%	-11.8%
Harvested area, thousand hectares	15,948	11,773	10,465	-26.2%	-11.1%
Yield, tonnes / hectare	5.39	4.58	4.67	-15.0%	+2.0%
Gross harvest	86,010	53,864	48,887	-37.4%	-9.2%
Import	123	153	131	+24.4%	-14.6%
Total supply	90,951	66,482	52,818	-26.9%	-20.6%
Domestic consumption:	26,277	17,148	17,237	-34.7%	+0.5%
food	4,634	4,272	4,025	-7.8%	-5.8%
fodder	13,325	8,685	9,565	-34.8%	+10.1%
seeds	1,666	1,408	1,538	-15.5%	+9.2%
losses	5,692	1,996	1,346	-64.9%	-32.6%
other (alcohol, malt, starch, etc.)	960	787	763	-18.1%	-3.0%
Export	52,209	45,534	30,108	-12.8%	-33.9%
Total distribution (demand)	78,486	62,682	47,345	-20.1%	-24.5%
Ending stocks	12,465	3,800	5,474	-69.5%	+44.1%
Ratio of ending stocks to distribution	16%	6%	12%		

Source: based on "APK-Inform", the State Statistic Service of Ukraine and the State Customs Service of Ukraine

FORECAST OF GRAIN AND LEGUMES PRODUCTION IN RUSSIA,
million tonnes



FORECAST OF GRAIN EXPORT FROM RUSSIA,
million tonnes



Source: based on Ministry of Agriculture of the Russian Federation



Thank you!

Questions?