



# AGRICULTURAL OUTLOOK UKRAINE

## 2030 CEREALS AND OILSEEDS MARKETS PROJECTIONS: 2023 – END OF THE WAR ASSUMPTION

MAY 2023

The RF's full-scale military invasion of Ukraine has last for almost 1.5 years now. It has devastating impacts on the people's lives, economies and food security around the globe. **Food commodities prices are still very high** "the [FAO Food Price Index](#), which tracks monthly changes in the international prices of commonly-traded food commodities, averaged 127.2 points in April 2023, up 0.6 percent from March. At that level, the Index was 19.7 percent below its level in April 2022, but still 5.2 percent higher than in [April 2021](#)", with **many countries facing high food prices inflation** "high [food price – from the authors] inflation in almost all low- and middle-income countries, with inflation levels above 5 percent in 94.1 percent of low-income countries, 86 percent of lower-middle-income countries, and 93.0 percent of upper-middle-income countries and many [countries – from the authors] experiencing double-digit inflation. In addition, 87.3 percent of high-income countries are experiencing high food price inflation. The countries affected most are in Africa, North America, Latin America, South Asia, Europe, and Central Asia. In real terms, food price inflation exceeded overall inflation (measured as year-on-year change in the overall CPI) in 88.8 percent of the 160 countries for which food CPI and overall CPI indexes are both [available](#)". As of end 2022, however, IFPRI states that the **major food crises has been averted** due to the Black Sea Grain Initiative, an increase in global humanitarian efforts to mitigate the impacts of the war and record wheat harvests in Canada, the European Union, and Russia.

With the world tackling the crisis with production growth in other regions and export initiative in Ukraine, the future for Ukrainian agriculture looks less and less pretty the longer the war lasts. According to the production experts and the producers themselves, whereas the 2022 sowing season took place with the resources accumulated in 2021, the 2023 and the following production seasons have considerably fewer means. The current paper reviews the 2022 situation and projects the markets development for 2023 and beyond assuming the 2023 status quo and the assumptions presented below.

### METHODOLOGY AND ASSUMPTIONS

To assess the future perspectives of the Ukrainian agricultural sector and markets, the AGMEMOD model is applied (see [KSE Agrocenter working paper](#)).



## Table Projection basis and assumptions

Assumptions	Values
Level of export	2023 as of today, 2024-2026 – only Odesa and Danube ports, 2027-2030 – all ports are available except of the Azov sea ports
Duration of war	2022-2023
Reduction of grains area due to occupation and active fighting in 2022-2023	-13% from the 2021 grains area harvested in 2021
Reduction of oilseeds area due to occupation and active fighting in 2022-2023	-20% from the 2021 oilseeds area harvested in 2021
Production costs	
Availability of financial resources for variable costs	the producers get the profit just to cover their expenses in 2023-2024, return to normal in 2025
Increase in fuel expenses compared to 2021	following annual average crude oil price change in 2022-2023 and projection for 2024 based on World Energy Outlook. For further years adjusted to inflation.
Increase in fertilizer expenses compared to 2021	80% increase in 2022 and 30% increase in 2023, further changes is annual inflation adjustment
Decrease in labor availability, and the resulting change in labor costs, due to mobilization, migration and war-related death*	in 2023-2024 30% less, starting from 2025 - gradual return to 2021 level*
Additional area of uncultivated arable land as an effect of increased production costs	-5%
World market prices in 2022–2030	OECD-FAO Outlook 2022
Crops storage assumption	Storage available
GDP projections 2022-2030 <i>IMF, April 2022</i> <i>SSSU projections</i> <i>Growth rate projected by USDA in 2021</i>	2022-2023: - 35% compared to 2021 2024: rebound by 12.5% 2025-2030: +3.1% annually
GDP deflator <i>As of July 2022, according to the National Bank of Ukraine</i> <i>According to the USDA 2021 projections</i>	- 2022: 30 2023–2030: +5% annual growth
UAH/USD currency exchange rate <i>As of July 2022, according to the National Bank of Ukraine</i> <i>According to the USDA 2021 projections</i>	- 2022–2023: 36.6 2024–2030: +0.2% annual growth
Population <i>Assuming 4 mil people left Ukraine considering 2021 USDA projections until 2030</i> <i>Return of all the war refugees, according to 2021 USDA projections until 2030</i>	- 2022-2023: -4 mil from the projected number 2024-2030: according to the former projections

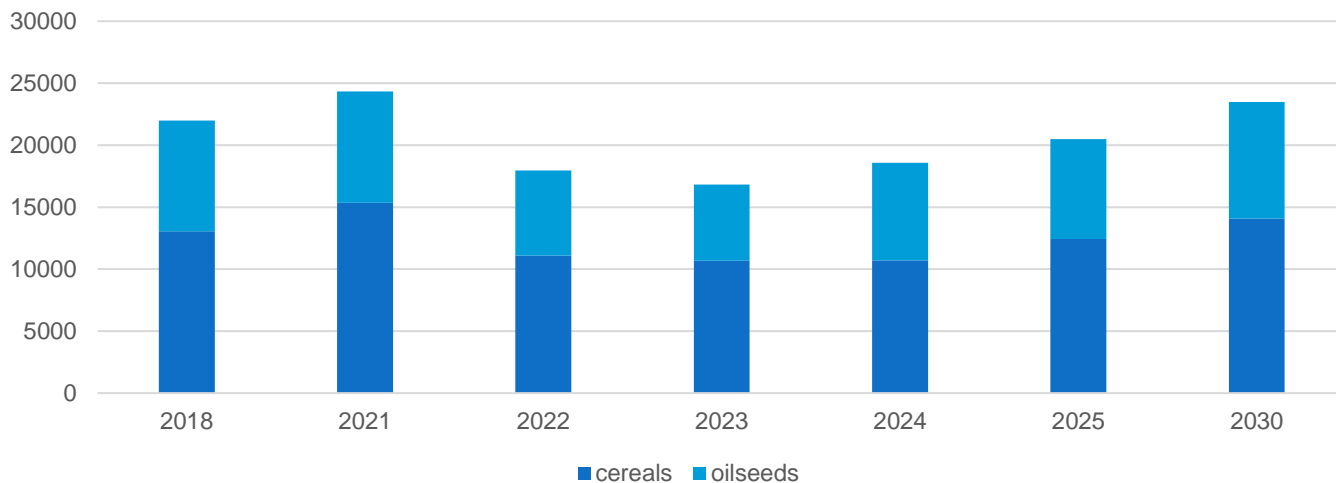
Source Own elaboration

**Note** \*We assume Leontieff production function, and that one worker may extend their working hours by max 1/3 that translates into the daily workload of 10.7 hours

In order to introduce access to ports into the model, we assume the maximum export capacity in 2023-2024 to equal the quantity exported during March 2022-March 2023, which is [54.6 million tonnes](#). The Odesa port is assumed to be able to transport [6.4 million tonnes](#) of agricultural commodities, and Azov ports are assumed to be able to transport up to 2.4 million tonnes of agricultural commodities.

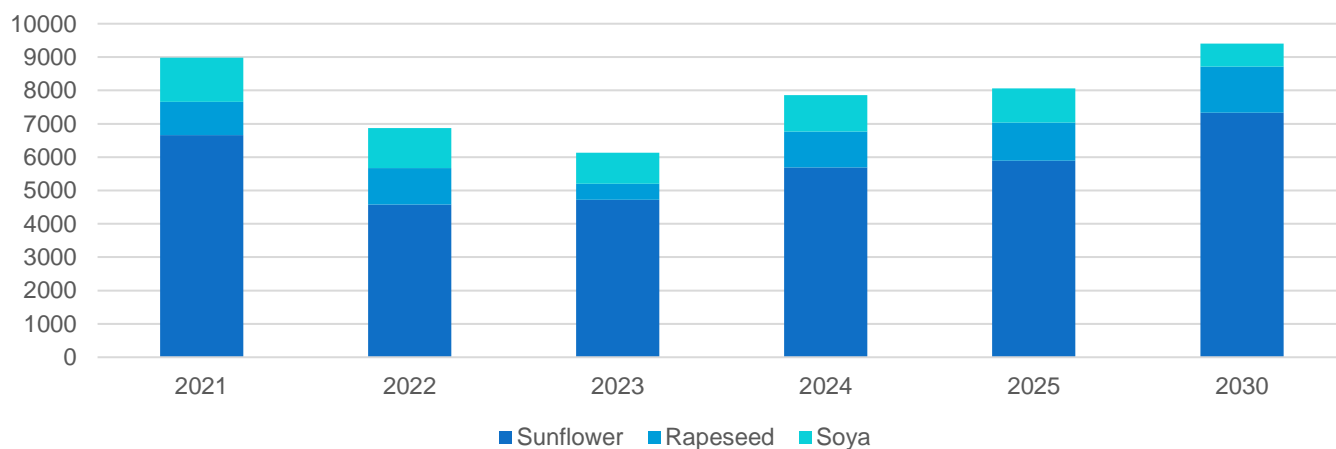
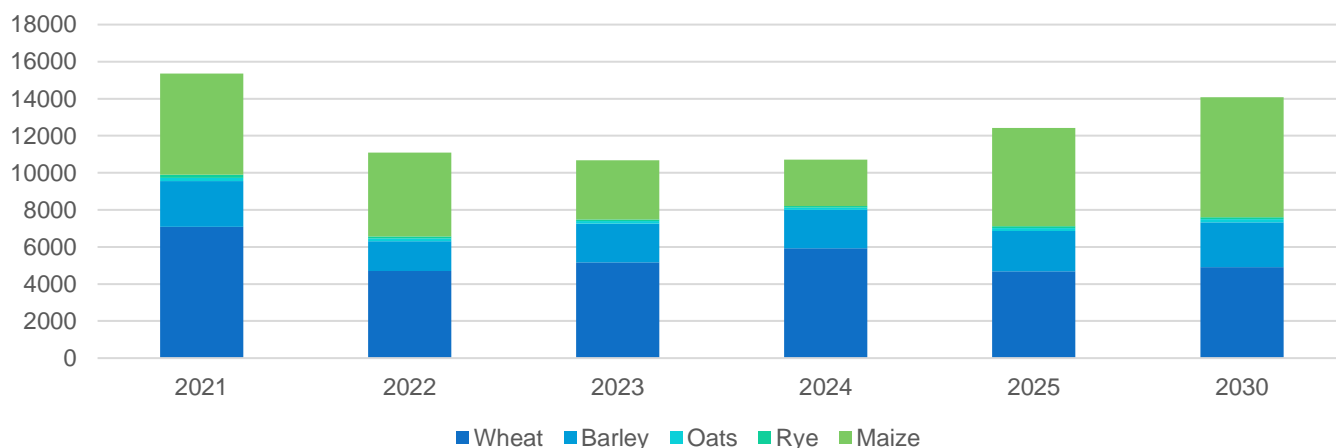
## GRAINS AND OILSEEDS AREAS

In the graph below we compare the grains (wheat, barley, rye, oats and corn) and oilseeds (sunflower, rapeseed and soya) areas harvested in 2021, 2022 and the projected in 2025 and 2030. Before the war, the total acreage of these crops was relatively stable, and therefore only 2021 is considered as a comparison year.



**Figure** Acreage of cereals and oilseeds in 2021-2030, thsd ha **Source** SSSU for 2021-2022, own estimation for 2023-2030

Before the RF invasion, areas of grains and oilseeds were, respectively, around 15 and 9 million hectares. In 2022, they dropped to around 11 and 7 million ha. With the war ongoing, further drop in areas is expected: to 10.6 and 6 million ha. The model estimates, that if the war ends before the sowing of winter crops, under the assumption described above, the sector will start the recovery. The pre-war acreage levels are expected to appear not sooner than in 2030.



**Figure** Acreage of cereals and oilseeds crops in 2021-2030, thsd ha **Source** SSSU for 2021-2022, own estimation for 2023-2030



Maize, wheat and barley are expected to remain the major crops during and after the war, as even reduced export possibilities will sustain these crops' relative profitability. The latter will play an important role in maize production: the producers move to wheat and barley production as the war continues and resume to corn after it ends. Moreover, the corn may become the major crop by 2030 due to the changing weather conditions and world market prices. Sunflower has been and will remain the major oilseed. Total area of oilseeds will even increase slightly at the expense of the grains area. This increase will only be reached by 2030. Area of soya will drop, and of rapeseed increase as compared to the pre-war levels. Overall, the projections show **area harvested recovery in seven years after the end of the war**.

## CROPS PRODUCTION AND EXPORT

During war, in 2022-2023, the production of the cereals modelled drops. Starting from the first post-war year, assumed 2024, the production will recover but at different levels. Although acreage of maize is expected to prevail, due to the yield differences, Ukraine will still produce more of wheat than of all other commodities. Maize, however, will be its major competitor. Although maize experiences major shock during the war time, it recovers very quickly. Quantity produced of wheat and of barley is affected by war less, and thus the recovery rates are less dramatic. Rye and oats are impacted severely as well. Their recovery rate is projected as rather smooth. Wheat, barley, rye and oats seem to be able to reach the pre-war production levels by 2030, whereas maize does not.

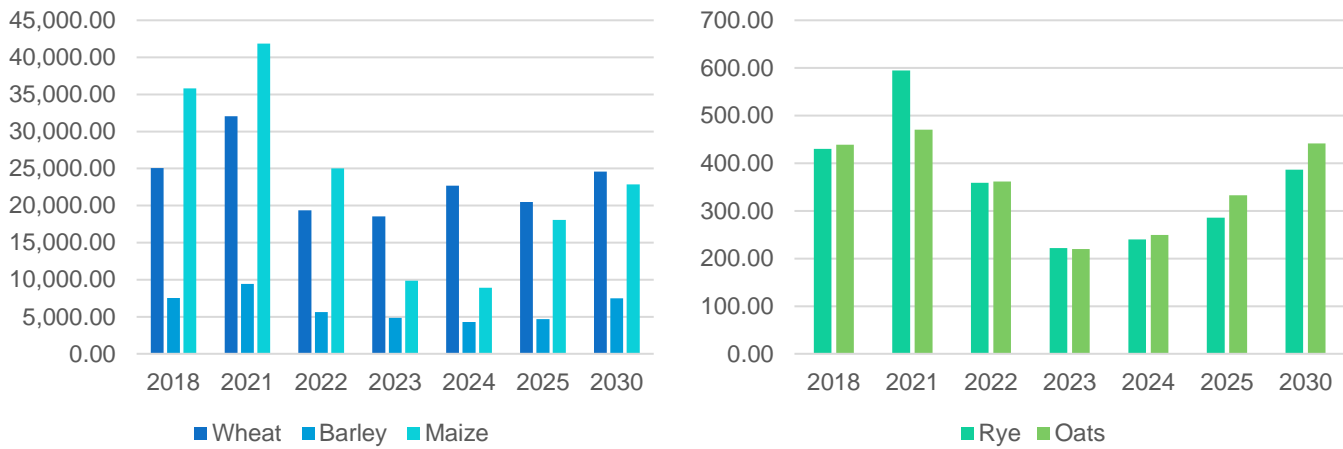


Figure Production of cereals in 2021-2030, thsd t Source SSSU for 2000-2022, own elaboration for 2023-2030

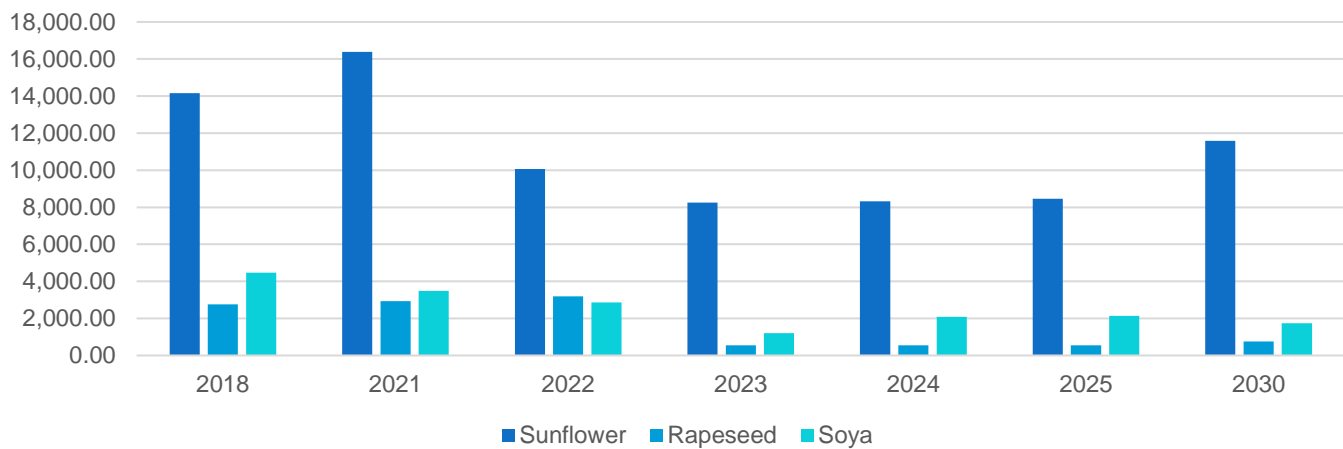
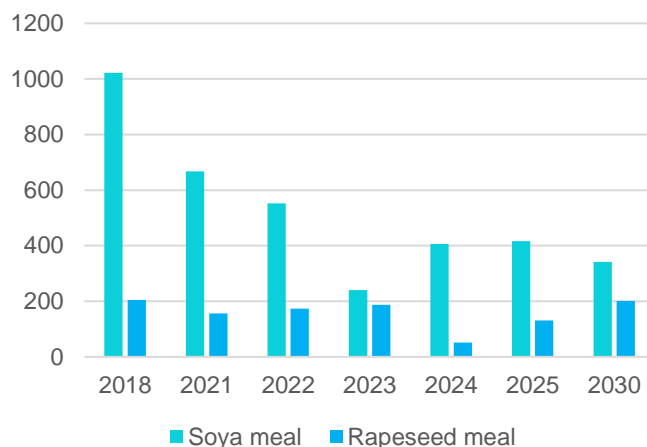
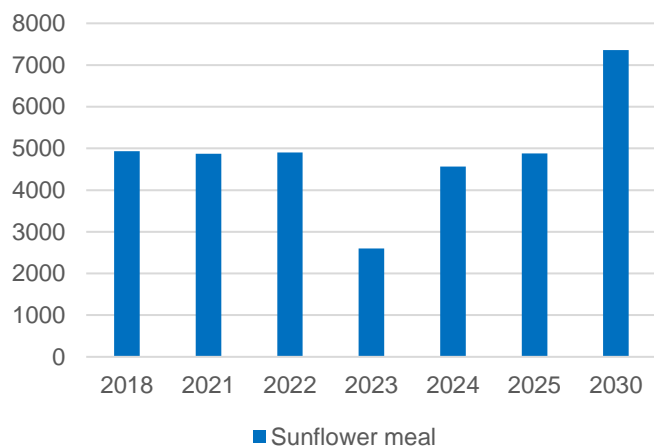
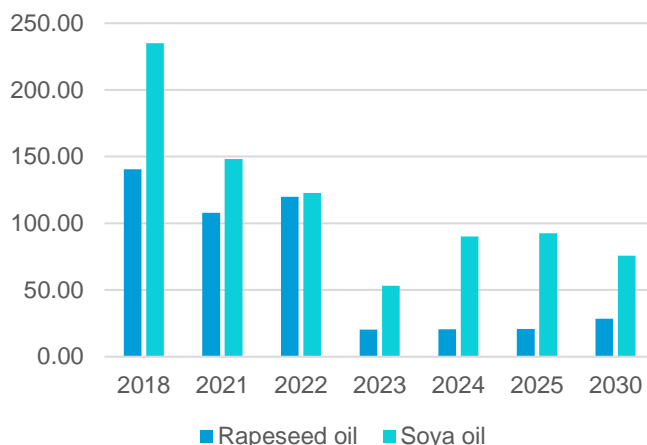
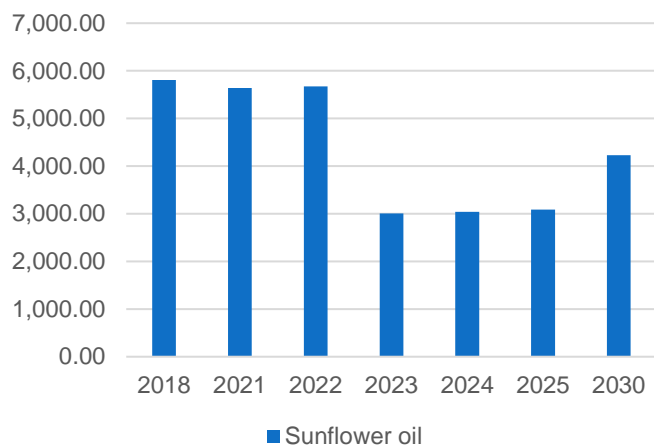


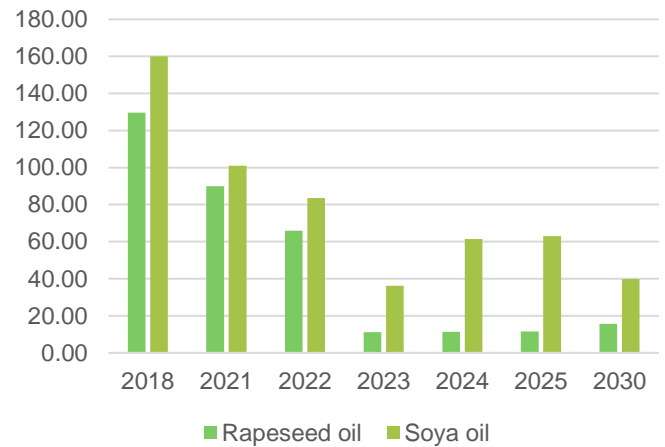
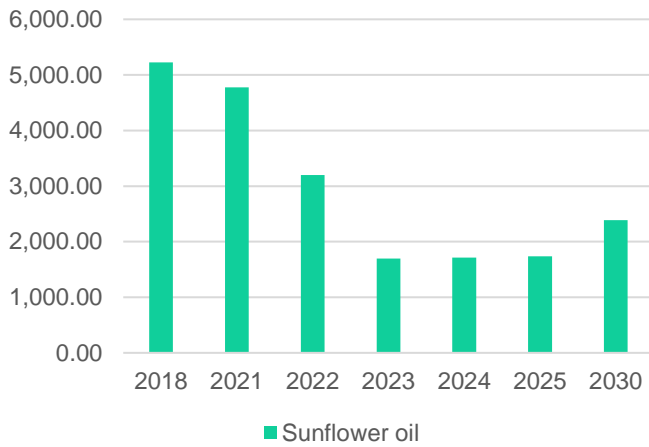
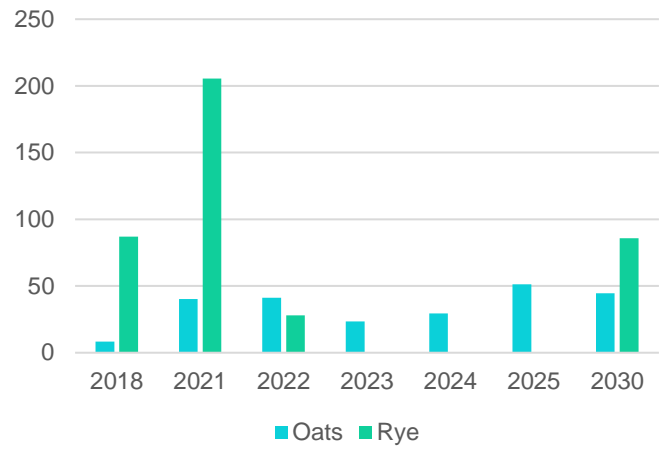
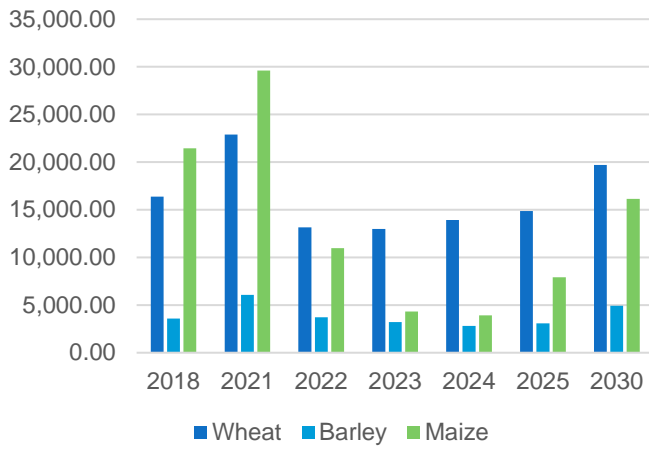
Figure Production of oilseeds in 2021-2030, thsd t Source SSSU for 2000-2022, own elaboration for 2023-2030



**Figure** Production of oilseed oils and meals in 2021-2030, thsd t **Source** SSSU for 2000-2022, own elaboration for 2023-2030

Although oilseeds area is projected to reach the pre-war level by 2030, their production is not. Due to the 2022-2023 shock (see modelling assumptions table above), and given absence of external support (e.g., subsidies) the producers will struggle to reaccumulate the necessary resources to invest in greater oilseeds yields. Thus, sunflower production in 2030 is expected to be 18% less than in 2018. Production of rapeseed seeds and soya beans will drop by 70% and 60%, respectively due to considerable yield reductions. Production of oils and meals will follow the production of the oilseed seeds.

Export of cereals and oilseed oils will largely follow the production. In particular, export of wheat and maize, as well as export of barley will grow after the shock of 2022-2023, but however will not reach the pre-war levels by 2030. Exports of oats and rye will recover fully, mainly because their export quantities before the war were relatively small as well. Exports of oilseed oils will be recovering slowly, not reaching the pre-war levels.



**Figure Exports of cereals and oilseed oils in 2021-2030, thsd t** Source SSSU for 2000-2022, own elaboration for 2023-2030

The price recovery stems from two factors. First, is the assumption of storage availability during export blockade (scenario BE). It allows the producers to go on with their production plan even with the delayed export. Second, is the return of connectedness of domestic market prices to the world market prices coupled with the increased UAH/USD conversion rate (i.e., around 36 UAH per 1 USD in 2023-2030 as opposed to 29 UAH per 1 USD in 2021). Re-establishment of the price connection is based on the assumption that the producers, having available storage facilities, will not rush into selling their crops at low prices (to save the harvest and at least partially cover their production costs). Instead, they will be able to claim better market price. The model, however, does not include increased storage costs which occur due to longer storage period and increased storage capacity (i.e., investment/amortization costs).

## CONCLUSIONS

As the RF's war in Ukraine goes on, the Ukraine's agricultural sector loses the resources for recovery. The financial and labor inputs are already stretched in 2023. According to the modelling results, some of the sectors will not reach the pre-war levels even after seven years of peace. In this was Ukraine stands its dignity and the freedom of choice, and it seems that the people including the farmers will rather lose everything than give in to the RF's regime. Therefore, the sooner the victory of Ukraine over the aggressive totalitarian regime comes, the more chances the Ukrainian agricultural sector will have to recover. It is important to note, however, that this analysis does not include any support for the sector. If it were hypothesized, the projection results could have been different.



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