



Post-Russian Invasion Survey of Smallholder Farmers in Ukraine

Baseline Data Collection (August 2022 – January 2023)

Study Documentation

May 2023

List of Acronyms

MAPF – Ministry of Agricultural Policy and Food

SSSU – State Statistics Service of Ukraine

SAR – State Agrarian Registry

PSG – Producer Support Grant

EU – European Union

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1.0 Background

With a total agricultural area of close to 45 million ha of very fertile land,¹ Ukraine has long been a major breadbasket and exporter of agricultural commodities. Beyond causing immediate hardship and triggering a large exodus of displaced people, Russia's military invasion of Ukraine and the economic blockade of its Black Sea export routes have also led to sharp increases in grain prices (von Cramon-Taubadel 2022) and raised concern about global food security. To provide information to the government for developing policies and programs to support the agricultural sector in Ukraine after the war, the World Bank launched a nationwide survey of post-war farmers in cooperation with the Ministry of Agricultural Policy and Food (MAPF), with financial support from the EU, in areas controlled by Ukraine from October to December of 2022.

The survey objective is to obtain information on changes in welfare, production, and productivity in the small and medium farm sector between 2021 and 2022 and to identify ways in which the farmers could be most effectively supported. The survey data is collected via phone by researchers at the Kyiv International Institute of Sociology (KIIS) under the monitoring of the research team in the World Bank.

1.1 Survey Design

To cover family farms that often remained informal, the State Agrarian Registry (SAR) was used as a sample frame. The SAR is an electronic registry, established in August 2022, with the objective of transferring support to small and medium farmers in a transparent yet expeditious way. Farmers can sign up at the SAR website (<https://www.dar.gov.ua/>) using their electronic signature and provide a minimum of personal information including a bank account to which any resource transfers can be made, irrespectively of their legal status, i.e., registered legal entity, family-owned business (FOP), or individual. The system gathers information for all land parcels to which the farmer has registered rights from the registry of rights and the cadaster and adds information on the farm from several other official registries.² Information in SAR can be used by MAPF or any authorized entity to advertise or implement programs in support of the agricultural sector and to interact electronically with potential participants. Farmers can take any actions required digitally rather than by filling paper forms, including uploading scanned documents, photos, or providing authorization for providers of certain services to access specific types of personal information stored on the system.

The raw data was cleaned by dropping: (i) farms located in amalgamated communities with active conflicts; (ii) without any registered land; and (iii) with missing phone numbers. The final frame consisted of 63,374 registered farms. The distribution of farms by size and program participation shows that most of the farms are small (85%) with farm size less than 50 ha (35,264 PSG non-applicants vs. 18,605 PSG applicants) followed by farms with 50-120 ha (7.5% with 1,634 PSG non-applicants and

¹ Ukraine's agricultural land endowment is larger than the agricultural area of France (18 million ha), Germany (12 million ha) and Poland (11 million ha) combined.

² For example, the SAR automatically gathers information on any outstanding debts to the state (which would legally disqualify them from receiving state support) and on farmers' registered livestock from the animal registry and Government plans to add information from other registries, including the mortgage registry and the registry of court cases, in the near future.

3,107 PSG applicants) and farms that are not eligible for PSG participation with size greater than 120 ha (7.5% with 2,743 less than 500 ha and 2,021 greater than 500 ha).

The expected sample size for the phone survey was 2,500 farms with 10% each in the small size category from PSG applicants and non-applicants, 20% each in the farm category of 50-120 ha from PSG applicants and non-applicants, 20% from the farm size category of 120-500 ha and 20% from the farm size category of greater than 500 ha. Given the expected high non-response rate of phone interviews, all the farms with size greater than 50 ha were included in the sample and then 1,125 and 1,126 farms were randomly selected from PSG non-participants and participants in the less than 50 ha category. The final response rate was about 20% with the lowest in the greater than 500 ha category (15%) and the highest in the 50-120 ha PSG non-applicant category (28%). The survey initially targets 2,500 farms, and eventually collected data for 2,251 farms.

2.0 Survey Questionnaire – Review of Sections

The survey questionnaire comprised four sections namely:

- Screener & Background.
- Household Roster.
- Agricultural Production.
- Property and Finance.

Each of the sections had varying sub-sections and questions, and below we review these sections.

2.1 Screener & Background

The purpose of this section was to collect background information on the farm, such as the farmland area, number of adults in the owner's household, and household head demographics such as gender, age, education, residency, etc.

2.2 Household Roster

The purpose of this section is to provide basic information such as relationship to the farm's owner, age, sex, education level, residency, employment type, income, etc. of each household member aged 16 years and older who were present in the household in January 2022 (i.e. before the war).

2.3 Agricultural Production

The purpose of this section is to provide information on agricultural production, including the total cultivated area, war impacts on farmland or structure, and information on agricultural production by crops in both the 2022 and 2021 seasons. The crop-level information includes the cultivated area, total (expected) output, sold volume, the price received, costs on purchased inputs (fertilizer, herbicide, pesticides, and seeds), machinery services (for soil preparation, sowing, fertilizer/herbicide application, and harvesting), and hired labor, and planned cultivated area of various winter crops.

2.4 Property and Finance

The purpose of this section is to provide information related to other income or assets of the household. This includes information on the number of full-time household members and other hired employees worked at the farm, the number of part-time household members worked at the farm, land leasing price,

willingness to buy or sell the lands, value of tractors and other agricultural equipment, number of owned cows and pigs, credits and interest rate, received public social support payments and remittances, received public support on agricultural production and war-related monetary assistance, received technical assistance, self-evaluation on personal or the country's situation before and after the war, etc.

Table 1 Organization of Survey Questionnaire (WBfarms_UKR.dta)

Name	Section Name	Level of Analysis	Identification Variable
S0	Screenener & Background	Household	CASE_ID
S1	Household Roster	Household	CASE_ID
S2	Agricultural Production	Household	CASE_ID
S3	Property and Finance	Household	CASE_ID

3.0 Construction of Input Data

The effort is to collect data on the cost of hired labor, purchased material inputs (mainly fertilizer and pesticides and other crop protection chemicals) and machinery services by crop for both the 2021 and 2022 agricultural seasons.

Although this was possible for most of the respondents, some of them found it difficult to provide disaggregated information at the farm level. The scenarios were reporting: (i) total input cost at the farm level for all crops; (ii) total input cost by crop; (iii) total cost of purchased material inputs and machinery services at the farm level for all crops; and (iv) total cost of purchased material inputs and machinery services by crop. We followed the following steps to construct crop level input costs data: (i) crop area is used to apportion reported farm level total costs at the crop level; (ii) data within the survey is used to assign the share of hired labor vis-à-vis non-labor inputs when aggregate figures are reported – the median share of hired labor and non-labor inputs are 15% and 85% for farms that reported these inputs separately; and (iii) similar approach is followed to divide aggregate figures between purchased material inputs (fertilizer and other chemicals) and machinery services, i.e., the median shares for farms reporting disaggregated inputs are 64% and 36%, respectively.

Table 2 Variables of Input Data on HHs with Needs on Disaggregation (comments_all.dta)

Variable Name	Description
CASE_ID	Household ID
varn	Variable names of inputs with needs on disaggregation
explanation	Notes on the aggregated input cost

4.0 Input Prices, Family Labor and Own Equipment Services

In efforts to estimate the war impacts on productivity, input price data and imputed values of family labor, own tractors & equipment services are constructed.

Input prices: Median regional prices for fertilizer, hired labor, and machinery services are derived from Prozorro contracts and surveys of community leaders across Ukraine. More specifically, (i) daily wages for hired casual labor are from a survey of community leaders; (ii) fertilizer prices for ammonium nitrate and urea are from Prozorro contracts; and (iii) harvesting machinery service prices for wheat are from both Prozorro contracts and survey of community leaders and harvesting machinery service prices for maize and plowing machinery service prices for wheat and maize are from a survey of community leaders.

Imputed family labor and own tractors and equipment services: To construct imputed values for family and permanent hired labor as well as own tractor and equipment services, we have made the following assumption: (i) full-time family labor and permanent farm workers spend on average 240 days on agricultural activities per annum; (ii) part-time family workers spend half of that time (120 days per annum); and (iii) currently owned tractors and equipment are assumed to be used for the coming ten years with 36% salvage value (note this assumption does not take the current age of tractors and equipment into account). Area share of the main crops is then used to appropriate the total imputed value of family labor and own tractors and equipment.

Table 3 Variables of Regional Input Price Data (*Input_price_index.dta*)

Name	Description
region	Central/East/North/Southern/West
year	2021/2022
fertp	Fertilizer price (UAH/50kg)
fertpind	Fertilizer price index (2021=1)
dieselp	Diesel price (UAH/litre)
dieselpind	Diesel price index (2021=1)
hprozwp	Wheat harvesting machinery services price (from Prozorro), (UAH/ha)
hprozwpind	Wheat harvesting machinery services price index (from Prozorro), (2021=1)
harvwp	Wheat harvesting machinery services price (from community survey), (UAH/ha)
harvwpind	Wheat harvesting machinery services price index (from community survey), (2021=1)

harvmp	Maize harvesting machinery services price (UAH/ha)
harvmpind	Maize harvesting machinery services price index (2021=1)
plowp	Plowing services price (USH/ha)
plowpind	Plowing services price index (2021=1)
wage	Labor price (UAH/day)
wageind	Labor price index (2021=1)

5.0 Sample and Field Work Organization

5.1 Sample

The World Bank team has provided the list of the contacts for the survey. A total of 11,064 farms/enterprises were on the list sorted by priority. All the farms have been divided into 6 sampling categories with a target task set for each category:

Sampling category	Phone numbers provided	Target sample size
1	1444	250
2	1065	250
3	1498	500
4	2669	500
5	2564	500
6	1824	500
TOTAL	11064	2500

5.2 Field Stage Implementation

Data have been collected through phone interviews. Interviewers from KIIS' central and regional teams have been involved in data collection (total of 45). Three supervisors led by the fieldwork director controlled interviewers' work.

All interviewers who conduct quantitative interviews in the KIIS surveys have passed general training and acquired knowledge and skills in conducting interviews and converting refusals (16 hours). In this study, the fieldwork director conducted additional distant online training for interviewers. Taking into account the length of the fieldwork, video-recorded training was posted on the internet for interviewers to refresh their knowledge. Also, online chat has been established where interviewers could ask questions or share challenging situations, and project or fieldwork managers consulted them.

An official letter has been prepared from KIIS' management and was emailed to the potential respondents who had questions or doubts about the survey.

At least three call-backs have been made to the respondents who could not be reached. Each interview was conducted by a trained interviewer in one of two languages – Russian or Ukrainian, up to the respondent's choice.

The fieldwork stage of the survey began on October 24, 2022, and was finished on January 16, 2023.

5.3 Response Rate

Reasons for non-participation were as follows:

ELIGIBLE	Interview	2251
	Refusal	3646
	Refusal (incomplete interview)	60
	Not relevant contact: refused to redirect to a knowledgeable person	66
	Could not respond due to security reasons	12
UNKNOWN	No response (Nobody answers; Out of reach; Auto answering machine; Busy	4536
NON-ELIGIBLE	The farm did not operate in 2022	220
	Not relevant contact: does not know contacts of a knowledgeable person	68
	Denies applying	97
	Enterprise is closed	58
	Non-existent number	16
	Respondent moved abroad	33
	Enterprise is bankrupt	1
TOTAL		11064

Overall response rate = 21.3%. Cooperation rate = 37.3%.

The average interview length is 40 minutes.

5.4 Data Control

Internal control of the sample quality means the control of the interviewers' work. Target 10% of interviews were to be controlled by listening to the interview or repeated contact with the respondent. The supervisor checked the fact of the interview; whether all the questions have been fully read/asked; and responses to a couple of key questions.

The internal control was carried out by specially trained interviewers/controllers during the whole period of data collection. A total of 450 interviews conducted by 45 interviewers have been verified. No significant violations have been observed.

5.5 Data Coding and Processing

Data have been collected electronically. Survey logic has been incorporated into the instrument. After data collection, mainly general data completeness and outliers have been checked. Also, all text responses to open-ended questions have been analyzed and coded if necessary.

The final data file contains data from 2,251 interviews. It was provided to the World Bank team in SPSS formats.

6.0 Producers

The PIs for this study are Daniel Ali Ayalew, Klaus Deininger, and Thea Hilhorst from the World Bank.

This work was supported by the EU and the World Bank.

Data collection was done by research teams at the Kyiv International Institute of Sociology (KIIS).

7.0 Accessibility

Access Authority is the World Bank

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