

## The determinants forming prices for mechanized agricultural services for the households

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*Abstract.* The article deals with the practical aspects of the prices formation of the mechanized services for households. The volumes of production of agricultural products by households in the dynamics were presented in the article. The manners of processing of land and the ratio of their shares were represented. The data used by the authors of the sociological survey were received to identify trends in price changes for mechanized agricultural services. On the basis of the conducted questionnaire survey, the analysis of changes in the price and cost of the main types of mechanized services consumed by households in the process of agricultural activity, the approaches and motives of service providers to the formation of their prices were studied, the reasons for the deviations of actual prices for mechanized services against substantiated. The factors of choice of buyers of agricultural agricultural services were filed. The calculation of prices for agricultural agricultural services according to the complexity of their implementation was carried out. The determinants of the price of production mechanized agricultural services were analyzed. The dynamics of the presence of tractors and combine harvesters in the farms of the rural population of the Lviv region is shown in this study.

*Key words:* households, agriculture, production mechanized services, services market.

### INTRODUCTION

The increase in the share of services in the gross domestic product and the increase in the number of employed in services market in recent years has led to an increase in the interests of scientists to this area and explains relevance of of the selected topic. For the participants in the market of agricultural services in Ukraine, the practical solution to many problems is due both to the feature of the service as a commodity and the peculiarities of agricultural production. Since the provision (sale) of production services is mostly commercial, it is important that the price is given as a key factor in the formation of the results of economic activity [1;2].

The process of price formation for mechanized agricultural services, as well as the process of its provision, has some differences from the generally accepted pricing process for services, which requires a more detailed consideration.

To determine the level and reasonableness of prices for mechanized services a direct survey of managers and specialists of agricultural enterprises, farms, entrepreneurs and owners of households of Busky, Brodivsky and Zolochivsky districts of Lviv Oblast, who are active in the market of agricultural agricultural services, was conducted. The study was realized in 2014.

### THE ANALYSIS OF RECENT RESEARCHES AND PUBLICATIONS

The questions of the development of the market of services were investigated by K.Grenros, S. Gavrilyshyn, L.Ticotsky, R.Malery, K.Lavlock, O. Lange, V. Bazylevych, D.Koul, R.Malery, V. Semenov, A.Vasiliev, A. Sidorova, O. Pashchuk, O. Lyubitseva, P. Zavialov, V. Rudelius, T. Hill, O. Morgulec and many others scientifics. However, their studies mainly concern the scope of services in the economic system as a whole. In the economic scholarly space, one can see the separate works of economists-agrarians, in particular V. Andriychuk, N. Bondaruk, Y. Gubeni, I. Kadirus [3], Y. Samoilyk [4], O. Ulyanchenko, G. Cherevko and others. However, the problems of the activity of agricultural producers in the market of services are practically not investigated. In particular, studies concerning households as a sufficiently powerful market participant, their roles and places in this segment of the economy are practically absent. The number of publications on the formation of prices for mechanized services is not sufficient, which requires further careful study of this topic.

### OBJECTIVES

This research is aimed at studying the features, regularities of the level and determinants of price formation for mechanized services for households.

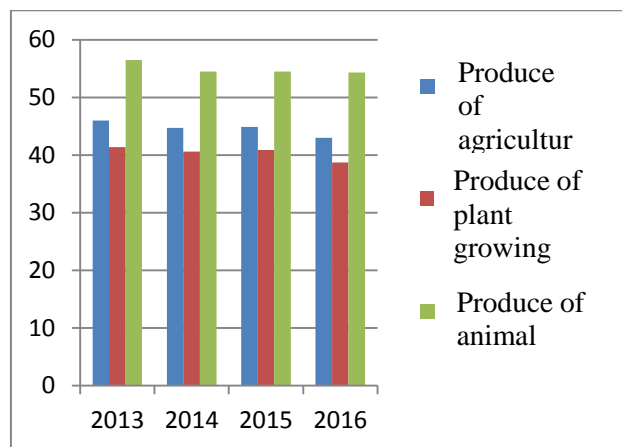
### THE MAIN RESULTS OF THE RESEARCH

Households, playing an important role in the agricultural market, act as both its consumers (buyers) in the process of ensuring their needs in food products and producers (sellers) of agricultural products for the purpose of obtaining income. Evidence of this is the volume of agricultural products produced by them, which make up a significant part in its total quantity (Fig. 1).

Despite the considerable absolute and relative decrease in the participation of households in the market of agricultural products in recent years, they continue to produce more than half of agricultural products in Ukraine, and more than 80% of its individual species (potatoes, vegetables).

The feature of the production process in agriculture is the use of a number of technological operations, the need for which can be provided independently or by engaging them from the side.

Since the law interprets the interaction of the seller and the consumer with the sale of the non-material form to meet the needs of the latter as a service, it is logical to interpret the technological operations that are carried out with the involvement of both parties - the supplier and the recipient as production services.



**Fig. 1.** Share of households in the production of agricultural products, % \*

\* Source: formed on the basis of statistics data [5, p. 131; 6]

The following table (Table 1) provides information on how the land is processed by households producing agricultural products.

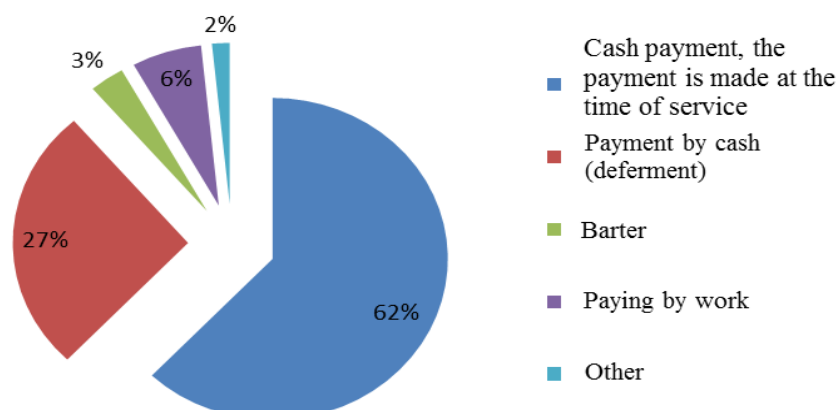
**Table 1.** Land treatment in rural households in 2016 (as a percentage of households that cultivated land \*)

	All households	Incl households with the area of the earth		
		0,5 hectare and less	0,51–1,00 hectare	1,01 hectare and more
Households used to process land:				
manual labor	94,0	95,0	93,7	92,0
horses, wills	27,7	18,2	35,4	40,5
Tractors	79,2	74,1	84,5	84,0
The households processing the land:				
only by hand	7,9	14,2	1,6	1,2
only by horses and wills	0,8	0,5	0,8	1,5
only by tractors	4,9	4,4	5,1	5,7
by hand and by horses and wills	12,1	11,2	13,1	13,3
by hand and tractors	59,5	63,2	57,9	52,6
і кіньми, волами і трактором	0,3	0,1		0,8
by hand, horses and wills, tractors	14,5	6,4	21,1	24,9
For reference: the share of households that did not process land, %	0,3	0,5		0,1

\* Source: official data of the Main Department of Statistics of Ukraine [5; 6; 7; 8; 9]

The one of the varieties of agricultural production services is mechanized agricultural services. The data in Table 1 indicate that most households use machinery for land cultivation, that is, they provide their needs in production works and services in a mechanized way.

In any case (ie consumption or provision of production services), the conditions under which it occurs, such as payment for services, play an important role. According to the data obtained during the conduct of the sociological survey, most settlements in the market of production services in the field of agriculture are carried out in cash (Figure 2). In 62% of cases payment is made directly during the provision of services.



**Fig. 2.** The structure of respondents' responses about the payment method for consumed agricultural production services \*

\* Source: formed on the basis of the survey conducted

The formation of the price of agricultural services in a market environment is similar to the pricing of both services and material goods. On the one hand, it is the expected cost of the service received, the state of competition in the market and the material costs of the service, and, on the other hand, the state and fluctuations

of the market situation. The characteristics of agricultural production, the traditions of the Ukrainian village, the mentality of the peasants, which allows identifying the factors that influence the demand and supply of agricultural services, and therefore the price (Table 2).

**Table 2.** The factors for price formation for production agricultural mechanized services \*

<i>Factors for price formation</i>		
<i>Economic factors</i>		<i>Non-economic factors</i>
<i>Market opportunities</i>	Demand: Physical characteristics of the land plot: - area; - relief; - location.  Supply: the purpose of the use of the technical means: - purchased solely for income; - for own use; - the goal is not clearly defined.	<i>Relationships between people Family and neighborly relations</i>
<i>Type of service</i>		
<i>Territorial placement of the supplier and the production capacities of the consumer</i>		<i>Prestige (image)</i>
<i>Properties and expectations from received production services</i>	Quality	
<i>Costs</i>	Costs of funds Costs of time	
<i>Operating costs</i>		
<i>Profit</i>		
<i>The level and dynamics of prices of sellers-competitors</i>		

\* Source: own development of the authors

The ratio of demand and supply is a "classic factor" in the formation of prices for any product in the market environment, and since the service is a kind of product, then this factor is inherent in the process of setting the price of production mechanized service. Features of the law of demand and supply in the market of mechanized agricultural production services depend primarily on the scale of production of agricultural products in one or another territory.

The effect of the general factor of demand on the price of mechanized services is determined by a system of complementary factors, which can be attributed:

- 1) the demand of consumers of services - producers of agricultural products;
- 2) the level of income of the population as a determinant of the platoonability of demand .;
- 3) the total amount of mechanized services the consumer can purchase at the existing level of prices and the level of his income, taking into account the use of

available land for the cultivation of land and unused land; 4) the consumer properties of the mechanized service as a commodity, in particular its qualitative characteristics;

5) advertising activity of the provider of mechanized services and its reputation among potential consumers;

6) changes in the demographic situation (number and structure of consumers);

7) the degree of consumer awareness about the availability and possibilities of using mechanized services directly from this provider;

8) the market situation and directions of its change; in the long term the long-term cooperation on crop rotation. The owner of the sown area may not be available at the time of the provision of the service on the territory of its provision, but the seller can execute it and by agreement with the first to receive payment for it. This method greatly increases the efficiency of receiving the service, so it is more profitable for consumers to receive mechanized services from one vendor, even if the price is somewhat higher than that of competitors.

Since production in the agricultural sector is tied to a specific territory that is embodied in the price of mechanized services, this factor, on the one hand, limits the number of potential service providers, since the attraction of technology from more remote areas involves an increase in material costs (primarily transport), but on the other, - creates the opportunity for individual sellers to speculate on the price of mechanized services.

Important in the pricing process is the factor in the peculiarities of the mechanized service as a product and consumer expectations of the services received, which forms the cost of the service for it. The service itself is a specific commodity, since it is not possible to assess exactly what it will be and fully predict its quality, by the time it is consumed, primarily because of the lack of standardization of the service. In agriculture, this factor becomes even more "specific", since the quality of production mechanized services depends on the final result of the consumer's activity - ready-made agricultural products. That is why the market in production mechanized services is quite popular when providers of better quality services can set a price different from market (quite often higher than competitors), while the demand for this service will remain at a constant level.

The key factor in the formation of each product, including services, is operating costs, since mechanized services are compulsorily provided using agricultural machinery, for the maintenance and servicing of which the seller must use certain funds, which in turn are

9) degree of monopolization of the market.

Important in the formation of prices for mechanized services has an assortment of services from one or another seller (provider), which is due to the presence of the appropriate power and working machines and their condition. Since the process of providing such services is tied to a specific territory, it is beneficial for consumers to receive mechanized services from already verified providers, since the latter have information about the territorial placement of the site, previously carried out technological operations on it, the cultivated culture an

included in the price of the mechanized service. That is, in the formation of the price of mechanized services, first of all, material costs should be taken into account [9;10].

As for commodities, for a mechanized service, a pricing approach can be applied, based on future economic benefits, in particular from expected profits, which is also quite popular among service providers.

Since households, like other agricultural producers as well as mechanized service providers, operate in a market environment, the important factor in determining the price of this product is the presence of competitors in a separate local market and prices for the same types of services in them. We note that the farms are small enough in size, which greatly limits the economic possibilities of providing mechanized services with high-tech equipment owned by agrohholdings and other large-sized agricultural enterprises.

As for non-economic factors affecting the price level of mechanized services in agriculture, they are in some way intertwined with economic ones. These factors include the reputation of providers, the socio-political state of the environment in which activities are carried out. Specific in the market of mechanized agricultural services is the presence of family and neighboring ties that directly affect the provision of the needs of mechanized services.

Sellers of agricultural production services do not always set prices for "their goods" at their market value. Often, the usual pricing on the market of agricultural services is overpricing of them. Since not all agricultural operations (which in essence are production services) are equally labor-intensive and material-intensive and have different technological complexity, it is expedient to determine the level of prices for agricultural agricultural services according to the complexity of their implementation (Table 3.).

**Table 2.** Calculation of prices for agricultural agricultural services according to the complexity of their implementation (in 2014 prices) \*

Kind of services	Price, UAH / are	Coefficient of transfer*	Price according to the coefficient of transfer **, UAH/are	Divergence, +/-
1	2	3	4	5
Ploughing	16,00	1,0	16,00	0,00
Cultivation	13,50	0,8	10,80	-2,70
Disking	13,04	0,7	9,13	-3,91
Interrow tillage	9,00	0,5	4,50	-4,50

Continuation of Table 2

1	2	3	4	5
Mechanized planting of grain crops	13,00	0,7	9,10	-3,90
Planting of potatoes	10,02	0,6	6,01	-4,01
Harvesting of grain crops	16,00	0,7	11,20	-4,80
Mowing of grass	11,04	0,5	5,52	-5,52
Mechanized digging of potatoes	9,53	0,7	6,67	-2,86
Spraying	8,60	0,4	3,44	-5,16
Application of organic fertilizers	8,40	0,5	4,20	-4,20
Application of mineral fertilizers	8,15	0,4	3,26	-4,89

\* Source: calculated using the prices of services received on the basis of a questionnaire survey and transfer rates determined in accordance with the rules of performance of mechanized agricultural work

\*\* the indicator was calculated as the product of the actual prices for the transfer coefficient

Data tab 3 indicate the inconsistency of the complexity of technology delivery of production services and the actual level of prices for them. This indicates that the formation of the price of agricultural production services has a turning point in the factors of inflation, the establishment of prices as other sellers, or the banal overstatement of prices, and the technological aspect in this case has fallen into the background.

On the basis of conducted research, it becomes obvious that agricultural agricultural services are a "special commodity" not only among the totality of material goods, but also among the services themselves. Therefore, the formation of prices for them should be carried out differently.

The pricing process in the services market provides:

- maintaining a stable position in the market;
- expansion of the market share;
- achieving the maximum possible level of profitability;
- creation of the image of the manufacturer of "high-quality" services.

The method of formation of prices for mechanized agricultural agricultural services consists of two stages. In the first stage, the actual volume of mechanized production services is translated into standard reference units, according to the type of work. Next - the volume of a particular type of work, expressed in conventional units, is multiplied by the price of the service [11;12;13].

When making a decision on the choice of the buyer (for a monopoly enterprise in the local market of production services), the providers of this "special product" take into account a number of factors (Fig. 3).

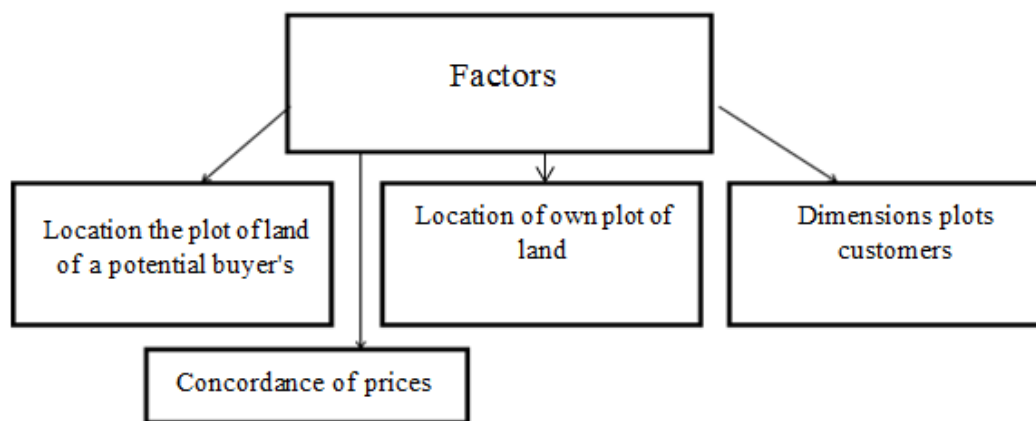


Fig. 3. The factors of choice of buyers of agricultural agricultural services. \*

\* Source: own development

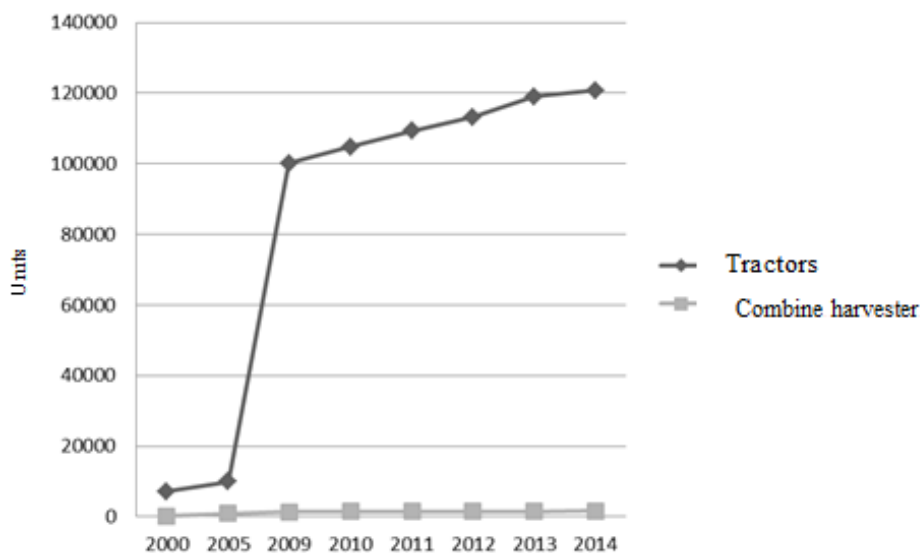
At first glance, the situation with the fact that the seller chooses who to render services looks strange, but it takes place in the market of agricultural agricultural services (in separate local markets). It primarily relates to the economic benefits for the service provider and is due to a number of features:

- a large number of buyers - peasant farms, mainly with small areas of land (gardens, plots, plots under private peasant farming, land shares);
- limited technical resources for the provision of production services;

- the established time interval, during which it is necessary to perform one or another operation in accordance with the technological process;

- various expenses borne by the seller to perform the same work on different characteristics of the sites (relief, length of the race, quality of soils, etc.).

The proposal for mechanized services is primarily determined by the technical capabilities associated with the availability of appropriate facilities. The dynamics of the availability of tractors and combine harvesters in households is shown in Figure 4.



**Fig. 4** Availability of tractors and combine harvesters in rural households in the Lviv region \*

\* Source: formed on the basis of indicators [14; 15; 16; 17; 18; 19]

The data show that in the last decade the number of agricultural machinery in households, in particular tractors and combines, has increased significantly. Such trends indicate that the rural population of the Lviv region can produce, consume or sell significantly more productive services. A particularly significant increase in the technical equipment of the peasant farms shows the period of 2005-2009. This is due to the fact that under certain economic stability at that time, there were good customs conditions for the import of technical means, which are predominantly a technical park of households. The financial crisis of 2008 simultaneously with the complication of the requirements for the import of technical means, the lack of funding programs for the purchase of technical equipment for individual producers and entrepreneurs led to a sharp decline in the rates of technical saturation of households.

The presented tendencies indicate that the rural population of the Lviv region, in particular taking into account its localization in the border zone, the peculiarities of the regional agricultural market, can both consume and sell a much larger volume of production mechanized services.

The problem outlined is rather relevant, as farms are the main competitor of agricultural enterprises in the field of providing production, primarily mechanized services to households [20]. It should be noted that such services are never accounted for, which forms here "black market". It is characteristic that owners of technical means in the village do not formally act as entrepreneurs, a kind of "shadow farmers" who, in addition to their own land holdings, use dozens of hectares in cultivation without concluding any land lease agreements, but they receive significant amounts of profits.

#### CONCLUSIONS

Transformational changes in agriculture provoked an increase in the volume of mechanized services in households. They were accompanied by a simultaneous increase in their price, which is not sufficiently reasoned.

Providers of mechanized services to the main pricing factors of mechanized services include increase in the cost of fuel and technology, inflation processes, price setting based on a competitive average market price. However, this is their subjective opinion, rather the justification of the dictates of prices.

Significant differentiation of prices for various mechanized services weakly correlates with their cost, and to a greater extent depends on the importance of a particular type of service, the possibilities of manual way of agricultural work and its volumes. It is the price of mechanized services, in combination with the timing and quality of its provision, should be the basis for making a decision on how to get it.

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