ACTA Acta Sci. Pol., Administratio Locorum 22(3) 2023, 421–431.
https://czasopisma.uwm.edu.pl/index.php/aspal plISSN 1644-0749 eISSN 2450-0771 DOI: 10.31648/aspal.8979

ORIGINAL PAPER
Received: 08.05.2023 Accepted: 29.06.2023

WAYS TO IMPROVE LAND ASSESSMENT METHODS IN AZERBAIJAN

Akif Hamza Valiyev[1]✉, Natig Sarhad Mirzayev[2]✉

[1] ORCID: 0000-0003-1070-3802
[2] ORCID: 0000-0002-2520-3619
[1] Ministry of Agriculture of the Republic of Azerbaijan, Agricultural Economics Research Center
Nizami Street, 92, AZ1010 Baku, **Azerbaijan**
[2] Lankaran State University
Alley of General Hazi Aslanov, 50, AZ4200 Lankaran, **Azerbaijan**

ABSTRACT

Motives: The article examines various approaches to improving the assessment of agricultural land in Azerbaijan. The quality, potential productivity, and normative price (value in monetary terms) of farmland need to be determined to increase production and competitiveness of agricultural products, to establish favourable land relations that meet modern requirements, and to promote efficient land use. The existing methods of assessing the quality and economic value of farmland for the needs of the land cadastre and determining the normative prices of land do not fully correspond to reality. Different and often contradictory approaches to land assessment have been proposed.
Aim: The aim of this study was to optimize the methods of assessing the quality and economic value of agricultural land, determining the normative prices of land, and evaluating potential land productivity in view of modern requirements.
Results: Improvements in land valuation will promote reliable assessments of agricultural development and the establishment of efficient farming systems; they will improve agricultural land-use efficiency and reliable determination of normative prices in market transactions involving agricultural property. These methods can be widely used to plan agricultural production, evaluate the operations of various types of farms, improve remuneration policies in the farming sector, determine the optimal scope of farming operations in view of natural conditions and economic factors, and resolve other issues to promote the development of agricultural production.

Key words: land use, soil productivity, agriculture, soil quality, normative price of land, land evaluation, economic price of land, potential productivity

INTRODUCTION

Azerbaijan has very diverse natural and ecological conditions, even its small territory is characterized by its diversity and complexity. This requires more caution and making the right decision, whether in the use of natural resources or the organization of the general economic system.

Agriculture is considered one of the most important areas of the national economy, and its development reflects this diversity and complexity. Every corner of our country is sharply different

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

from the others and stands out with its specific characteristics. Here, it is very important to study the characteristics and quality of the soil cover, and the importance of the soil in agricultural production, to correctly determine the directions of agricultural development and to ensure the efficiency of the use of agricultural lands.

Usually, researchers, especially economists, in the matter of land use, pay more attention to which agricultural plant (ugodia) the land is used under and to what extent, that is, the structure of the land fund. Of course, it is necessary to study the structure of the land fund and it is one of the important conditions. However, it should not be forgotten that any plant cannot grow and produce high yields in any soil. There are specific soils that contain quality characteristics that can ensure each plant's development, and it is extremely important to consider this factor when using the soil. Because it is possible to evaluate the land both qualitatively and economically on this basis. Normative land prices (value in monetary terms) should be determined based on the quality characteristics and productivity of each land (Lal, 1989).

Efficient use of soil resources, protection, and increase of their fertility has always been considered urgent problems. The assessment of soil fertility in terms of productivity has been around since BC, from the time of ancient Chinese and Egyptian agriculture. Although this assessment has the characteristics of a criterion for collecting taxes, it is possible to find elements of certain regularity here. With the development of agriculture, land in many countries was assessed according to the ecological requirements of individual crops. However, evaluation methods for soil quality and ecological characteristics were formed much later, in the 18th-19th century in Western Europe. The main and general means of production of the soil for the national economy is determined by its fertility, which is considered an important quality. Fertility is the ability of the soil to provide the plants with the life factors that are available to one degree or another. Each soil has a certain limit as a natural body, and its quality, as well as productivity, is determined by the soil's fertility (Gavrilyuk, 1974).

Since soil fertility is a key indicator of its productive capacity, there are many methods for determining how much more fertile one soil is than another. Most of these methods have been used by scientists at different times, and the advantages and disadvantages of each method have been revealed. Finally, starting from the 70s of the last century, more priority was given to the evaluation of soils according to their quality characteristics (fertility indicators).

It is very important to know how good (productive) or inferior (less productive) any soil is in to use the land efficiently and correctly assess its productivity. This can be determined by evaluating the land according to its quality and economy.

Land valuation issues are particularly important in solving many problems, including the reformation of land-ownership relations, the establishment of a new and efficient farming system, determining the normative prices of land, buying, and selling and implementing other land-related transactions, as well as in the regulation of land relations in general. is important. Land valuation materials are used not only in solving the mentioned problems but also in planning the production of agricultural products, evaluating the production activity of different types of farms, improving the rules for the payment of wages for farm workers, in determining the optimal size of the farm, taking into account natural conditions and economic factors, as well as in determining the agricultural production. it is widely used in solving many issues that ensure its development (Godelman, 1981; Sobolev, 1968).

Land evaluation is a very complex process, which is of special importance in solving such important issues. On the one hand, factors affecting soil formation and factors shaping soil productivity increase this complexity even more. The regularity of these relationships also leads to repetitions in the assessment. Taking this into account, in our opinion, a more correct result can be obtained if we take the decisive factors as the main indicators in the evaluation.

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

Our goal in improving the methods of land evaluation is to manage farms, analyze economic activity, plan the development of its separate areas, prepare and implement measures to reduce the cost of agricultural plants and increase productivity, timely and correct application of necessary agrotechnical measures, and finally is to ensure efficient use.

It is known that the quality and productivity of the soil as a means of production are determined by the fertility of the soil. Soil fertility is formed as a result of natural processes and creates its consumption value. The productivity of agricultural plants is the main indicator of soil fertility (quality) (Nikitina, 2015; Thompson & Troeh, 1978). Taking this into account, different methods were used to determine how productive one soil is than another. In Azerbaijan, the method of qualitative assessment of land is called land evaluation, which is a part of the land cadastre.

Soil evaluation – is a special evaluation operation determined based on internal quality indicators and characteristics of the soil and checked by the productivity of agricultural plants grown on the soil. The main purpose of soil evaluation is to determine the comparative value of its quality based on the fertility of the soil. With this, it is possible to know how useful the soil is for the development and productivity of individual agricultural plants. Through this kind of assessment, all the positive and negative signs of the soil affecting the plant are taken into account. However, it should be noted that there are some flaws in this evaluation method.

MATERIALS AND METHODS

The methodology of soil evaluation was based on the idea of the "genetic unity of nature" of Dokuchaev (1951), who is considered the founder of soil science and was carried out according to the 100-point system proposed by Gavrilyuk (1974). According to this methodology, during soil evaluation, its internal quality, or rather its natural fertility indicators (humus, nitrogen, phosphorus, potassium, absorption capacity, carbonation, acidity, etc.) are taken as the main criteria. The land with high indicators are accepted as the "standard" and evaluated with 100 points, and the scores of the remaining soils are calculated according to the "standard" (Eck et al., 1967; Gavrilyuk, 1974). The following formula is used for this:

$$T_b = \frac{T_f}{Tm} \cdot 100 \quad (1)$$

where:

T_b – soil quality score;
T_f – any quality indicator of the soil (humus, nitrogen, phosphorus, etc.) actual amount;
T_m – is the upper limit of the soil quality indicator, which is taken as a "standard" (quantity).

Our researches show that this method, even though it has been used for a long time, does not correspond to reality, often soils with high scores for quality indicators have low productivity, or vice versa. In our opinion, some of the reasons for this are related to natural and economic factors, but the main reason is the acceptance of the high-quality indicators of the soil as a "standard".

It has been proven that plants can use (absorb) nutrients in the soil in a certain amount, not completely. As a result of the research conducted in this direction, the optimal limit of the quality (fertility) indicators of the soil under various agricultural crops that can satisfy the demand of the plants was determined, and accordingly, the soil fertility model for each plant was developed (Askerova, 1990; Jafarov, 1990; Kasimov, 1992). Based on this principle, we propose not to use high indicators during soil evaluation (qualitative evaluation), but to take the limit (optimal limit) that plants can absorb nutrients from the soil as a "benchmark" and evaluate it with 100 points. The following formula should be used for evaluation:

$$T_b = \frac{T_f}{T_o} \cdot 100; \quad (2)$$

where:

T_b – soil quality score;
T_f – any soil quality indicator (humus, nitrogen, phosphorus, etc.) actual amount;
T_o – the optimal limit of the soil quality indicator from which the "standard" is taken (quantity).

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

The application of mathematical methods also proves that with this method it is possible to more accurately determine (evaluate) the quality of soils and their productivity (productivity) (Valiyev, 2019). For comparison, using the mentioned methods, the main type and semi-type soils suitable for agriculture distributed in the republic were evaluated according to their quality indicators. It has been determined that there are sharp differences between the scores obtained by the half-type soils of the same type in the evaluation by the existing method (1). For example, the difference between the subtypes belonging to the gray-brown soil type is equal to 24 points. Based on the principles of natural zoning and soil formation conditions, it is impossible for the difference between soils of the same origin to be at this level. Of course, the main reason for this abnormality is the "standard" taking of the soil with the highest indicators. In the evaluation by our proposed method (2), the difference between the subtypes is equal to 8 points, which fully reflects reality.

Another shortcoming of land quality assessment with the previous method is also manifested in the determination of land normative prices. Thus, the normative prices of lands are determined according to the quality groups of lands in cadastral regions. Of course, this is correct, but it cannot be agreed that the normative price of land of the same quality, whose relations are regulated by the same legislative acts, and whose economic provision is based on the same source, should be different across cadastral regions. For example, in the Absheron-Gobustan cadastral region (this includes the Absheron region, the Navahi-Altbulag massif of the Hajigabul region, the flat lands of the Khizi region and the flat lands up to the Liman Lake Siyaza), the standard price of one hectare of arable land is 1240 AZN for quality group I and 980 AZN for quality group II quality group, 840 AZN for III quality group. In the Ganja-Gazakh cadastral region (this includes the flat lands of the Samukh, Shamkir, Khanlar, Tovuz, Agstafa, Gazakh and Goranboy regions), the standard land prices per hectare are by quality groups 860; 640; 540 AZN and in the Jalilabad cadastral region (meaning the flat lands of the Jalilabad region), these figures are 1040; 840; 660 AZN.

If we take into account that the formation of differential income depends on the quality of the land and also on the volume of the produced product, then according to this logic, the normative prices of land in Absheron-Gobustan cadastral region should be lower than the other mentioned cadastral regions. Because the productivity of agricultural crops here is lower than in other cadastral regions, and the quality of the land used in agricultural production is considered poor (less fertile).

Or the Shabran-Khachmaz cadastral region (which includes the plain lands of Khachmaz, Shabran, Siyazan, Guba and Gusar districts) and the Ganikh--Türyanchay cadastral region (which includes the plain lands of Sheki, Zagatala, Gakh, Oguz, Gabala and Balakan regions) have relatively similar natural it is also impossible for the normative price of both arable land and land under perennial crops to be drastically different (up to 25–30%) for all quality groups, even if they have the same geographical conditions and soil qualities.

It is impossible for the normative price per hectare of land belonging to the IV quality group under multi-year plantings to be 2080 AZN in Arazboyu cadastral district, 1460 AZN in Dag-Karabakh, 1420 AZN in Lankaran-Astara, 1300 AZN in Absheron-Gobustan, and 920 AZN in Dag-Shirvan. In general, perennial plantings cannot develop normally in soils belonging to the IV quality group (especially in mountainous areas under conditions of drought), and in this case, it is impossible to get income from them. As a result of such deficiencies, one of the citizens of the country with the same rights has to pay one price for the land of the same quality and the same productivity, and the other has to pay a different price.

All this once again shows that the soil quality assessment should take into account the nutrient requirements of the plants planted in the soil.

At the same time, it should be noted that the result obtained is more accurate when the assessment is carried out in relation to a specific area, administrative or cadastral district, or economic zone. With this

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

method, it is possible to evaluate not only the type and semi-type soils of large areas but also the soils of smaller areas, even a small farm, up to species diversity (Pylaeva, 2020).

FINDINGS AND DISCUSSIONS

The economic evaluation of the land means the assessment of the quality of the land as the main means of production according to economic indicators. The economic evaluation of land is necessary for solving many economic issues, and above all, it is important for the more efficient use of land resources with potential productivity opportunities.

One of the most important conditions during the economic evaluation of land is the justification and correct selection of indicators. The accuracy of the evaluation methodology and the practical significance of the results depend on the correct solution to these issues. In general, the economic evaluation of land is a very complex and difficult process. Therefore, opinions about it have always been controversial and varied.

According to Degtyarev (1951), the economic assessment of land should be carried out in two aspects: 1 – general assessment, 2 – special assessment, or assessment according to the effectiveness of the planted plant. In the general evaluation – the value of the total product (man/ha), payment of costs, and differential income; and in the special assessment – productivity (sen/ha), payment of costs, and differential income are taken as the main indicators (criteria). The author scientifically substantiates each of these indicators and notes that not only the quality of the soil and normal production conditions but also climatic factors should be taken into account to determine the economic value of the land. Because, the productivity of the plant can change due to the influence of this factor, and in the evaluation, typical and stable (stable) productivity should be used, and for this, multi-year data is needed. Of course, this opinion is reasonable and acceptable, but the author does not address the question of how climate factors are taken into account in the economic assessment (Degtyarev, 1979; Steele, 1951).

During the evaluation of lands in Azerbaijan, the climate factor was first taken into account by Mammadov (2007) and Valiyev (2006) in the form of "bioclimatic potential", defined by Eyyubov (1975).

In some literature, during the economic evaluation of the land, the average net income from 1 hectare over the years, the period of 10 years of rest (restoration) of the land, and the income lost during these 10 years were taken as the main indicator (criterion) (Bryanskikh, 1980).

Boruk (1972) proposes to carry out the economic evaluation of land in two directions: the first – with valid zonal prices, and the second – with total calculated prices. The author considers it acceptable to determine the economic price of the land based on the annual net income and capitalization rate. At the same time, he believes that the net income should be determined for general agriculture, i.e. crop and livestock products (Boruk, 1972).

Although there are many supporters of this idea, those who are against it are not few. For example Cheremushkin (1963) believes that the economic value of land should be calculated only based on plant products since livestock products are not directly connected to the land. Because livestock products include not only growing fodder plants but also additional fodder, the breed and breeding quality of the herd, the ability to efficiently use the fodder base, etc. can have an important effect (Cheremushkin, 1963; Demetris, 2016).

Approach to soil evaluation in the Republic of Azerbaijan

There is no unanimous opinion on the economic evaluation of land in our republic. Hashimov (1973), a scientist who was the first to deal with the economic evaluation of lands in Azerbaijan, noted that the evaluation should be carried out in the following three aspects:

1. General assessment of the land as a means of production in agriculture. Here gross product and conditional net income are taken as the main indicators.

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

2. Economic assessment in terms of the efficiency of planting various crops. Here productivity, conditional net income, and cost are taken as key indicators.

3. Assessment of the quality of the soil according to the result of the effective effect at the expense of additional cost. Here, the soil quality score is added to the indicators in the previous aspects.

Based on the unified cadastral data system, the researcher gave preference to the economic assessment of land on the first and second aspects and conducted an assessment on the example of some natural-economic regions as well as typical farms (Hashimov, 1973).

Mammadov and Guliyev (2002), when evaluating the lands of the north-eastern agricultural zone of Azerbaijan, consider it more acceptable to determine the economic value of the land according to the basic productivity, payment of expenses and differential income in the cadastral regions (Mammadov & Guliyev, 2002).

As you can see, there are different opinions on the issues of economic evaluation of land, and the indicators that are considered as the basics are also different. This is natural, because often the land of the same quality has different profitability as a result of the influence of economic factors, or on the contrary, the yield and income obtained in return for the same amount of labor and financial costs are different depending on the fertility of the land.

However, it should be noted that each assessment method has its strengths and weaknesses. However, we should know that the changes occurring in the economic system in general, including agriculture, the reconstruction of economic and social relations, and especially the reshaping of land-ownership relations, require the development of more advanced and realistic methods in the economic evaluation of lands. Therefore, it is not possible to approach the issue one-sidedly, it is not correct to equate agricultural lands with other lands in the assessment. If land acts as the main means of consumption in agriculture, in other cases, its function is different. In the first case, the result, i.e., the level of production, mainly depends on the joint (complex) effect of natural and economic factors, while in the second case, the effect of economic-social-technical factors is stronger (Valiyev & Mirzayev, 2020).

Considering all this, we believe that along with the quality (fertility) indicators of agricultural lands, the potential productivity of each agricultural plant, the volume of the produced product, production costs, and other economic indicators should form the theoretical-methodological basis of the economic evaluation of the land.

Improvement of land evaluation methods

To evaluate the land economically, first of all, the productivity of the land should be determined according to the quality indicators. For this, points should be calculated according to the potential productivity of each agricultural plant and the quality indicators of the soil under that plant. Based on this information, the potential productivity of the soil under each plant can be determined using the following formula:

$$Tmg = \frac{M_p \cdot \mathrm{T}_b}{100}, \tag{3}$$

where:

T_{mg} – potential productivity of soil, sen/ha;
M_p – potential productivity of agricultural plants, sen/ha;
T_b – is the quality score of the soil.

Using the formula, the productivity of agricultural soils was calculated by quality groups and it was determined that as the soil quality score decreases, the productivity of plants also decreases. If the potential productivity of the soil with a quality of 100 points is equal to 70 cents/ha, its amount decreases to 56 cents/ha in the soil with a quality of 80 points, and to 15 cents/ha in the soil with 21 points (Valiyev, 2019).

Our researches show that although the potential productivity of the soil under cereal crops is equal to 7.0 tons per hectare, 2.1 tons were actually produced in the soils belonging to the quality group I. Accordingly, under cotton this figure is 3.5–1.3 t/ha,

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

under potatoes – 30.0–8.8 t/ha, under vegetables and fruit crops – 40.0–2.3 t/ha, under tobacco – 3.5–1.5 t ha, under fruits – 15.0–4.5 t/ha, under grapes – 20.0–10.6 t/ha.

It should be noted that the potential productivity of the soil was calculated based on its existing quality scores. By applying high agrotechnical measures and various fertilizers at the required level, it is possible to increase the quality of the soil and, accordingly, productivity.

Researches show that even though the potential productivity of agricultural lands in the republic is quite high, the actual production is much lower than these capabilities. To prove this, using the formula we propose below, the limit of using the potential productivity of land is determined:

$$T_{ih} = \frac{M_f \cdot 100}{M_p} \quad (4)$$

where:

T_{ih} – the limit of using the potential opportunity of the land, in %;
M_f – actual product produced on a specific plot of land, tons/ha;
M_p – potential productivity of agricultural plants, sen/ha.

Calculations show that the limit of using the potential productivity of land for various crops fluctuates between 29–65%.

If we express the potential productivity of the land and the current level of use of these opportunities, we will see that per hectare under grain – 995 AZN, cotton – 525 AZN, potatoes – 8183 AZN, vegetables, and melons – 3379 AZN, fruit – 3008 AZN and grapes – 2429 AZN funds are lost.

Research shows that there are a number of objective and subjective reasons why actual production is significantly below the potential productivity of the land. One of the main reasons is the lack of water. It was determined that only 25.4% of the total irrigated land in the country has good water supply, the remaining 59.4% have difficulties with water supply, and 15.2% have very poor water supply. Another reason is the low level of material and technical resources. For example, in 2022, the provision of agriculture with machinery ranged from 45–70%, with mineral fertilizers within 2.0–30.0%.

Another reason is that farm managers and farm workers do not correctly follow the existing agrotechnical rules and relevant regulations officially approved. Observations show that up to 85% of farms producing agricultural products incorrectly apply the current agrotechnical norms and rules. One of the reasons is that some farm managers and farm workers do not know the relevant rules and normatives in depth.

Finally, after qualitatively evaluating the land and determining its potential productivity, its economic evaluation can be started. We believe that the economic value of land should be calculated separately for each plant within the quality (agro-production) groups of land in cadastral regions. In this case, the accuracy of the obtained data is high, and it is easy and safe to use.

The economic value of land can be calculated using the following formula:

$$Tig = \frac{(Mud - Um) \cdot 100}{Mpd} \quad (5)$$

where:

T_{ig} – the economic value of land, AZN/ha;
M_{ud} – the value of the total product produced from a single plot of land, AZN/ha;
Um – total costs, AZN/ha;
M_{pd} – the value of potential productivity calculated at actual prices, AZN/ha.

It should be noted that the efficiency of the production of agricultural products is based on a different factor category, the main economic factors affecting the production: for example, the level of equipment provision, the application of new technology, the level of investment, and lending, etc. should be taken into account separately in the assessment (Valiyev, 2019).

Either the economic price or the qualitative price of the land should not be understood as the normative price of the land in general. We believe that it is very important to determine the normative

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

price of land on the eve of the formation of economic relations for the efficient use of land after new land ownership relations are formed by the principles of the market economy upon gaining independence. Because, in the conditions of the market economy, without the normative price of the land, there is no land circulation, land market, mortgage of land, implementation of tax and investment policy, etc. it is impossible to speak.

Currently, the normative price of land is widely used in determining tax rates, buying and selling land, privatizing and evaluating real estate, determining compensation payments, concluding lease agreements, mortgage transactions, changing land, and bequeathing, and donating land. At the same time, the normative prices of land have an important effect on increasing the efficiency of land use in various fields.

It should be noted that political, socio-economic, and natural factors have had a great impact on the normative price of land in all periods and at different stages. Therefore, a specific opinion has not yet been formed on its definition, there are controversial and different opinions about it. Some deny the determination of its normative price because the land is not a product of labor. Others consider it important to determine its normative price, based on the fact that land is not a labor product but is a means of ownership in the market economy (Karnaukhova, 1977).

In several countries of the world (the Americas and European countries), market prices are preferred in the settlement of land relations. At the same time, the total value of the produced product and production costs are taken into account in determining the normative price of agricultural land.

In the socialist farming system, special importance was attached to the determination of the normative price of land, research was conducted and various opinions were put forward. Many scientists pointed out the impossibility of monetary valuation of the land under socialism and justified it by the lack of a "differential rent" category in the socialist system. However, they considered it important to pay a certain amount of compensation when agricultural land is used for non-agricultural purposes. The amount of compensation was different and was determined according to the volume of the product produced on that land. For example, in Estonia, when 1 hectare of arable land was used for non-agricultural purposes, 480 RUB in ex-USSR RUB were to be compensated, and in Latvia 350 RUB. In Kyrgyzstan, if 1 hectare of irrigated cropland was used for non-agricultural purposes, 2,800 RUB were paid, and 300 RUB were paid for 1 hectare of wheat cultivation. In Czechoslovakia (Czech Republic) in this case, the compensation limit was determined according to the value of the total product obtained from 1 hectare (Valiyev, 2019).

All this shows that the normative price of the land is equated with the economic value of the land as a constituent element of the state land cadastre. We believe that these two different concepts should not be equated in the assessment. Because, while the economic evaluation of land is based on local specific characteristics, production costs, labor consumption, and other natural-economic factors, completely different indicators should be taken into account when determining normative prices.

Borozdin (2002) considers it more correct to evaluate the land according to its purpose and to select the indicators considered as the basis in the evaluation according to the purpose. When determining the normative prices of agricultural land, the author uses the total income from a single plot of land, expenses, and capitalization coefficient as a criterion, and when determining the normative price of non-agricultural lands, the value balance of the engineering infrastructure areas falling on a single plot of land, its operation (depreciation) based on its level and planned (planned) capital investment for improvement, as well as the capitalization cost of repair and preventive works (Borozdin, 2002).

Although we agree with the approach of Borozdin (2002) on determining land prices according to their purpose and evaluating non-agricultural lands, we cannot agree with the method of evaluating agricultural lands. Because, if we are talking about determining the normative price (value in monetary terms) of a single piece of land, not the economic value,

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

it is not worth talking about any capital investment or labor, that is, only the land plot should be evaluated.

In our opinion, when determining the normative price of agricultural lands, soil-plant relations, more precisely, the potential yield potential depending on the quality of the soil and the type of the plant, as well as the location of the plot of land to the center, enterprise, market, related object, etc. proximity-distance should be taken as a basis. We assume that this approach will allow determining the real normative price of the land more correctly.

It is suggested to use the following formula to calculate the normative price of land suitable for agriculture (Valiyev, 2019):

$$T_n = \frac{M_{pd} \cdot \mathrm{T}_b}{100} \cdot \mathrm{Am} \qquad (6)$$

where:

T_n – the normative price of land, AZN/ha;
M_{pd} – the potential productivity of agricultural plants cost, AZN/ha;
T_b – is the soil quality score;
A_m – is the location coefficient of the plot of land by distance.

According to the proposed method, the normative prices of agricultural lands calculated by quality groups are closer to reality. A more correct price is obtained by multiplying the received prices by the location coefficient of the plot of land. The location coefficient of the plot of land according to the distance to the center, enterprise, facility, market, etc. is calculated by the ratio of the furthest distance to the next closest distance according to the gradation (distance degree) determined by its proximity. The final price is found by multiplying the normative prices calculated for the quality groups by the distance factor. Let's pay attention to some points below that justify this.

First of all, the evaluation by the proposed method is quite simple and easy to understand. By using the proposed method, and head of household or every citizen can easily determine the normative price of the land he owns or uses, or even wants to buy. This method takes into account the specialization of agriculture specific to our country. This makes it possible to determine the normative value of the land, regardless of which plant it is used for, both in the current situation and the future.

At the same time, normative prices fluctuate depending on the difference in scores for soil quality groups, and within this fluctuation, the normative price of land with any quality score can be calculated. Also, it is possible to use these normative prices in each administrative region, as well as in all economic regions. One of the advantages of this method is that it is possible to calculate the normative price of any plot of land that is not planted with any plants, but is suitable for agriculture, based on the final price.

Finally, we know that it is important to note that although the calculation of the normative price of land with the proposed method is closer to reality, this method can be improved as a result of the influence of various reasons depending on the current social--political and socio-economic conditions.

CONCLUSIONS

The conducted studies show that during the quality assessment of soils, the "standard" of the highest quality indicators was adopted based on the 100-point system, and the calculation of the quality scores of other soils does not fully reflect the real quality of the soil. Therefore, when evaluating the quality of the soil under any plant, it is suggested to take the limit of the plant's ability to absorb nutrients from the soil as a "standard" and calculate the quality scores of other soils corresponding to it.

We believe that to evaluate the land economically, it is necessary to first determine the productivity of the land according to the quality indicators. For this purpose, the potential yield potential of each agricultural plant and the quality indicators of the soil under that plant were calculated, and it was determined that as the quality score of the soil decreases, the productivity of different plants also decreases.

Studies have shown that even though the potential productivity of agricultural land in the republic is quite high, the actual production is much lower than this potential. It was calculated that the limit of using

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

the potential productivity of the land for various crops ranges from 29–65%.

When evaluating agricultural land economically, the changes in agriculture according to the new economic system, and the factors of the reshaping of land-ownership relations should be taken into account. We believe that when evaluating land economically, the value of the total product produced on a specific land area, along with economic indicators such as total costs, should also be based on the potential productivity of the land.

It has been determined that the price of land from an economic point of view and its normative price (value in monetary terms) are often equated, that is, the same indicators are used to determine both. We believe that this is not the right approach. While the influence of several important economic factors is considered when evaluating land economically, economic factors should not be considered when determining the normative price.

REFERENCES

Askerova, M.M. (1990). *Kompleksnaya agronomicheskaya kharakteristika i modeli plodorodiya pochv predgornykh rayonov Karabakhskoy stepi* [*Comprehensive agronomic characteristics and models of soil fertility in the foothill areas of the Karabakh steppe*] (The dissertation of the candidate of agricultural sciences). Baku State University. (in Russian)

Borozdin, S.V. (2002). *Zemel'nyye otnosheniya i agrarnyye reformy* [*Land relations and agrarian reforms*]. Moscow: Unity Publishing house. (in Russian)

Boruk, A.Y. (1972). *Bonitirovka i ekonomicheskaya otsenka zemel'* [*Valuation and economic evaluation of land*]. Moscow: Kolos Publishing house. (in Russian)

Bryanskikh, E.P. (1980). *Ekonomika sel'skogo khozyaystva* [*Economics of agriculture*]. 2nd edition. Moscow: Kolos Publishing house. (in Russian)

Cheremushkin, S.D. (1963). *Teoriya i praktika ekonomicheskoy otsenki zeml*i [*Theory and practice of economic evaluation of land*]. Moscow: Sotsegiz Publishing house. (in Russian)

Degtyarev, I.V. (1979). *Zemel'nyy kadastr.*[*Land Registry*]. Moscow: Kolos Publishing house. (in Russian)

Demetris, D. (2016). The assessment of land valuation in land consolidation schemes: The need for a new land valuation framework. *Journal of Land Use Policy*, *54*, 487–498 https://doi.org/10.1016/j.landusepol.2016.03.008

Dokuchaev, V.V. (1951). *Sobrannyye sochineniya* [*Collected writings*]. Moscow: AN SSSR Publishing house. (in Russian)

Eck, H.V., Ford, R.H., & Fanning, C.D. (1967). *Productivities of horizons of seven Benchmark soils of the Southern Great Plains*. Conser. Research Report, N11, Washington.

Eyyubov, A.D. (1975). *Bonitirovka klimata Azerbaydzhanskoy SSR* [*Assessment of the climate of the Azerbaijan SSR*]. Baku: Elm Publishing house. (in Russian)

Gavrilyuk, F.Ya. (1974). *Bonitirovka pochv* [*Soil grading*]. Moscow: Vysshaya shkola Publishing house. (in Russian)

Godelman, Ya.M. (1981). *Neodnokratnost' pochvennogo pokrova i ispol'zovaniye zemel'* [*Repeated soil cover and land use*]. Moscow: Nauka Publishing house. (in Russian)

Hashimov, R.M. (1973). Azerbaijan SSR-de torpaqin iqtisadi qiymetlendirilmesinin esas metodlari [Basic methods of economic evaluation of land in the Azerbaijan SSR]. *Thematic collection of works of AzETKTİ and TI (Journal)*, VIII, 31–36. (in Azerbaijan)

Jafarov, A.B. (1990). *Modeli plodorodiya pochv pod zernovyye kul'tury v severnoy chasti Lenkaranskoy oblasti* [*Models of soil fertility for grain crops in the northern part of the Lankaran region*] (The dissertation of the candidate of science agricultural). Institute of Soil Science and Agrochemistry of the Academy of Sciences of the Republic of Azerbaijan. (in Russian)

Karnaukhova, E.S. (1977). *Differentsial'naya renta i ekonomicheskaya otsenka zemli* [*Differential rent and economic valuation of land*]. Moscow: Ekonomika Publishing house. (in Russian)

Kasimov, L.J. (1992). *Razrabotka modeley plodorodiya pochv pod subtropicheskimi plodovymi kul'turami vlazhnykh subtropikov Azerbaydzhana* [*Development of models of soil fertility under subtropical fruit crops in the humid subtropics of Azerbaijan*] (The dissertation of the candidate of science agricultural). Institute of Soil Science and Agrochemistry of the Academy of Sciences of the Republic of Azerbaijan. (in Russian)

Lal, S. (*1989). Productivity evaluation* of *some benchmark soils* of I*ndia. Journal of the Indian Society of Soil Science*, *37*(*1*), *78–86.*

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru

Thompson, L.M., & Troeh, F.R. (1978). *Soils and soil fertility*. New York.

Mammadov, G.Sh. (2007). *Azerbaijanın torpaq ehtiyatlarindan semereli istifadenin sosial-iqtisadi və ekoloji əsaslari* [*Socio-economic and ecological bases of effective use of Azerbaijan's land resources*]. Baku: Elm Publishing house. (in Azerbaijan)

Mammadov, G.Sh., & Guliyev, V.A. (2002). *Azerbaijanin shimal-sherq ekincilik zonasi torpaqlarinin qiymetlendirilmesi* [*Evaluation of the lands of the north-eastern agricultural zone of Azerbaijan*]. Baku: Elm Publishing house. (in Azerbaijan)

Nikitina, E.N. (2015). *Development of cadastral valuation methods for subsoil use land plots* (The dissertation of the candidate of science Economics). Financial University under the Government of the Russian Federation.

Pylaeva, A.V. (2020). *Cadastral land valuation in the system of organizational and economic measures regulating land and property relations*. IOP Conference Series: Earth and Environmental Science (Volume 579, Issue 1, pp. 012133). DOI: 10.1088/1755-1315/579/1/012133.

Sobolev, S.S. (1968). *Bonitirovka pochv (instruktsiya)* [*Soil appraisal (instruction)*]. Moscow: Politizdat Publishing house. (Russian)

Steele, J.G. (1951). *Soil scientist, soil Conservation service. The measure of our Land*. Washington: Department of Agriculture.

Valiyev, A.H. (2006). Torpaqlarin tebii-iqtisadi amillere qyore qiymetlendirilmesi [Evaluation of lands according to natural-economic factors]. *Azerbaijan Agrarian Science journal*, 5–6, 8–10. Retrieved from: https://ia601702.us.archive.org/2/items/2006-5-6-split-8/2006%20%285-6%29_split%20%282%29.pdf (in Azerbaijan)

Valiyev, A.H. (2019). *Torpaqlardan səmərəli istifadənin ve torpaq munasibtələrinin tənzimlənməsinin huquqi-iqtisadi aspektləri* [*Legal and economic aspects of efficient use of land and regulation of land relations*]. Baku: AVROPA Publishing house. (in Azerbaijan)

Valiyev, A., & Mirzayev, N. (2020). Evaluation of the Efficient Level of Useful Agricultural Soils. *Baltıc Surveyıng*, *12*, 53–58. DOI: 10.22616/j.balticsurveying.2020.008.

✉akif.valiyev@atm.gov.az, ✉mirzoev.n@mail.ru