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Research Article

Improving Methods for Determining the Normative Value of Agricultural Land in Cadastral Assessment

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Abstract
The article examines existing methods for determining the normative value of agricultural land and proposes approaches for their improvement. Current methodologies are characterized by excessive consideration of factors that should be included in the calculation of normative value, as well as by the complexity and multi-stage nature of the calculation process, which reduces their practical applicability. In addition, the article discusses issues related to the periodic recalculation of the normative value of agricultural land, given its role as a key indicator in the calculation of land tax under current conditions. Particular attention is paid to the problems arising from outdated valuation results and to possible solutions aimed at improving the accuracy, efficiency, and relevance of normative land valuation in agricultural land cadastre systems.

Keywords: *normative value; normative yield; normative productivity; cultivated area; land categories; profit rate; rent-forming factors; main agricultural crops.*

INTRODUCTION

Land is one of the most important natural resources of humanity, serving as the primary source of material life and a fundamental condition for socio-economic development. All aspects of human life and activity are closely connected with land, including food production, housing construction, industrial development, and the creation of transport infrastructure—all of which are realized through the use of land resources. In agriculture, land functions as the main and indispensable means of production. Land productivity and its effective management are among the key factors determining a country's economic development. As noted, *"the protection and efficient management of land resources constitute the foundation of food security, while land degradation and declining fertility pose a serious threat to sustainable human activity"* [1].

Thus, in agriculture, land fertility plays a decisive role and necessitates the efficient organization of land-related resource use, comprehensive protection of land, and continuous improvement of its productive capacity. These measures contribute to enhancing the potential for sustainable and repeated use of agricultural land.

Agricultural land, through the benefits and income generated from its use and its capacity to participate in economic relations, reveals its essence as an economic category within agriculture. Consequently, land occupies a central position in the formation of economic value. The recognition of land as an economic category creates the need for its valuation. The valuation of agricultural land is carried out through cadastral assessment, which determines the normative value based on land quality, fertility characteristics, and the value of agricultural output obtained from its use.

The need for agricultural land valuation arises from various land-use processes, including taxation, lease relations, incentives for land use, compensation mechanisms, and investment assessment. Therefore, the cadastral value of agricultural land serves as a key indicator in transforming land into an economic asset, as well as in regulating taxation, leasing, and broader economic relations.

LITERATURE REVIEW

It is well established that the cadastral valuation of agricultural land constitutes an integral component of the land cadastre system. Land valuation, as part of the state land cadastre, represents a broader framework for the comprehensive assessment of natural resources utilized across various sectors of the economy. Within this framework, the valuation of agricultural land—considered the primary means of production in agriculture—holds particular importance.

The valuation of agricultural land has existed since ancient times and has played a central role in public financial administration, taxation, and resource allocation. The concept of the cadastre can be traced back to the land registers of Ancient Rome, known as *Tabula Cadastrorum*, dating to the second century BCE. However, the systematic valuation and cadastral registration of land as a scientific and methodological discipline began to develop during the eighteenth and nineteenth centuries [2].

In France, the introduction of the modern cadastral system occurred during the Napoleonic period with the establishment of the Napoleonic Cadastre in 1807. This system aimed to ensure equitable land taxation by determining taxes based on the quantity and quality of land. In Germany, during the nineteenth century, methodologies for cadastral valuation were developed that integrated agronomic and economic factors, as reflected in the works of Karsten (1840) and Sprengel (1839). In Russia, the foundations of cadastral valuation began to form following the land reforms of 1861. By the late nineteenth and early twentieth centuries, valuation methodologies based on land quality indicators—referred to as "valuation categories"—were introduced (Olshanskiy & Petrov, 1911).

In Uzbekistan, contemporary mechanisms for the cadastral valuation of land have been implemented primarily after independence, and land valuation calculations are currently conducted according to established regulatory procedures [4].

In the cadastral valuation of agricultural land, two main types of work are performed: soil bonitation and determination of normative value. Soil bonitation is carried out in accordance with procedures prescribed by legislation, and the resulting data form the informational basis for land valuation [5]. The normative value of land represents the monetary expression of the economic value of agricultural land, corresponding to its cadastral or market value. This valuation stage is conducted after soil bonitation.

In calculating the normative value, several factors are taken into account, including the results of soil bonitation (soil quality and productivity), economic and market conditions, crop yields and prices, geographical location and infrastructure, as well as the legal status of land and the degree of freedom in land use. Consequently, the determination of normative value represents a process of transforming agro-economic potential into an economically measurable value.

MATERIALS AND METHODS

The amount of crop yield obtained from land is directly related to the soil bonitation score. On the basis of bonitation scores, crop productivity varies; at the same time, productivity may further increase due to the human factor, provided that agrotechnical measures are implemented at a high level and water shortages do not occur.

Pursuant to Resolution No. 235 of the Cabinet of Ministers of the Republic of Uzbekistan (2014) *"On Improving the System for Determining the Normative Value of Agricultural Crop Areas"*, standards for determining crop yields based on the natural fertility of soil have been established.

When determining the normative value, individual rent-forming factors of agricultural land are taken into account, including the intensity of agricultural production, soil quality, crop structure, and irrigation methods (gravity irrigation or mechanical irrigation).

The calculation of the normative value of irrigated agricultural land is carried out in accordance with Appendix 1 to Resolution No. 235 of the Cabinet of Ministers (2014) [20].

The normative yield of major agricultural crops is calculated as the product of the average soil bonitation score and the normative yield per one bonitation point for agricultural crops, orchards, and vineyards. Normative yield indicators are defined for specific crop types.

According to the existing methodology, the normative productivity per hectare of agricultural crops is calculated using the following expression:

$$\text{М}_{\text{уқхэ}} = \text{М}_{\text{ҳ}} \times \text{Н}_{\text{ўйқхэ}}$$

Where:

$\text{М}_{\text{уқхэ}}$ – normative productivity of agricultural crops per 1 ha, thousand UZS;
$\text{М}_{\text{ҳ}}$ – normative crop yield, centners/ha;
$\text{Н}_{\text{ўйқхэ}}$ – average annual price of agricultural products sold in farmers' markets, thousand UZS/centner; for raw cotton and cereals, the state procurement price, thousand UZS/centner.

For agricultural land, the key determining factor is the normative yield (Nu). According to Appendix 2 of Resolution No. 235, the normative yield per hectare is calculated by multiplying the crop-specific normative yield by the soil bonitation score:

$$M_{ҳ} = Б \times M_{ҳ}$$

Where:
$M_{ҳ}$ – normative yield per hectare;
Б – soil bonitation score;
$M_{ҳ}$ – normative yield per one bonitation point.

The normative yield per one bonitation point varies by crop type. According to Appendix 2 of the Regulation, the values are as follows: cotton – 0.4; cereals – 0.6; tobacco – 0.45; rice – 0.7; etc. Thus, multiplying the bonitation score by the normative yield determines the expected yield per hectare (Table 1).

Table 1. Normative yield per one bonitation points for major agricultural crops, orchards, and vineyards (irrigated land)

Agricultural crops and perennial plantations	Normative yield per one bonitation point (centners/ha)
Cotton	0.4
Cereals	0.6
Tobacco	0.45
Rice	0.7
Annual fodder crops (green fodder)	3.0
Vegetables	3.0
Melon crops	2.7
Alfalfa (previous years)	2.0
Grain maize	0.75
Fodder root crops	9.0
Potatoes	2.0
Orchards (average)	0.6
Vineyards (average)	0.8

However, no standards are defined for yield increases resulting from land users' additional investments, such as tillage, fertilization, and other expenditures.

As a result of planning excessively high yields, negative consequences such as soil salinization, declining soil fertility, and withdrawal of land from agricultural production are observed. Based on this, the expected yields for agricultural crops were analyzed using the following tables.

Table 2. Yield of cotton fields in the Republic of Karakalpakstan and regions in 2021 calculated based on average soil bonitation scores

T/r	Region	Area (ha)	Average bonitation score	Normative yield per bonitation point	Yield (thousand tons)
1.	Republic of Karakalpakstan	86 291	42,4	0,4	146,3
2.	Andijan	79 391	57,6	0,4	182,9
3.	Bukhara	97 900	52,0	0,4	203,6
4.	Jizzakh	78 100	52,3	0,4	163,3
5.	Kashkadarya	135 900	52,8	0,4	287,0
6.	Navoi	32 588	53,7	0,4	69,9
7.	Namangan	63 406	58,0	0,4	147,1
8.	Samarkand	75 580	60,3	0,4	182,2
9.	Surkhandarya	74 078	52,5	0,4	155,5
10.	Syrdarya	72 557	53,9	0,4	156,4
11.	Tashkent	73 001	59,9	0,4	174,9
12.	Fergana	82 080	55,1	0,4	180,9
13.	Khorezm	82 757	54,1	0,4	179,0
	Total	**1 033 629**	**53,8**	**0,4**	**2224,3**

Based on Table 2, the highest cotton yield is observed in Kashkadarya region, while the lowest is recorded in Navoi region. Nationwide, cotton production is projected at 2,224.3 thousand tons based on average soil bonitation. Using similar calculations, wheat production was estimated.

Table 3. Yield of wheat fields in the Republic of Karakalpakstan and regions in 2021 calculated based on average soil bonitation scores

T/r	Region	Area (ha)	Average bonitation score	Normative yield per bonitation point	Yield (thousand tons)
1.	Republic of Karakalpakstan	53 000	42,4	0,6	134,8
2.	Andijan	75 200	57,6	0,6	259,8
3.	Bukhara	60 100	52,0	0,6	187,5
4.	Jizzakh	98 500	52,3	0,6	309,0
5.	Kashkadarya	138 500	52,8	0,6	438,7
6.	Navoi	37 039	53,7	0,6	119,3
7.	Namangan	72 100	58,0	0,6	250,9
8.	Samarkand	100 230	60,3	0,6	362,6
9.	Surkhandarya	92 000	52,5	0,6	289,8
10.	Syrdarya	84 000	53,9	0,6	271,6
11.	Tashkent	115 100	59,9	0,6	413,6
12.	Fergana	104 200	55,1	0,6	344,4
13.	Khorezm	33 200	54,1	0,6	107,7
	Total	**1063 169**	**53,8**	**0,6**	**3431,9**

According to the data presented in Table 3, the highest wheat yield is observed in Kashkadarya region, whereas the lowest yield is recorded in Khorezm region.

Next, the calculated yield results for both cotton and wheat were compared with the officially established production targets (fixed plans). Below, the differences between the calculated cotton yields and the state-set plan indicators are presented and compared at both the regional (viloyat) and national levels.

Table 4. Comparative analysis of cotton yields calculated based on average soil bonitation scores and state-established production targets in the Republic of Karakalpakstan and the regions in 2021

T/r	Region	Yield calculated based on the average soil bonitation score, thousand tons	Yield according to the state-established fixed plan, thousand tons	Difference (+/−), thousand tons
1.	Republic of Karakalpakstan	146,3	196,0	49,7
2.	Andijan	182,9	251,7	68,8
3.	Bukhara	203,6	331,8	128,2
4.	Jizzakh	163,3	219,4	56,1
5.	Kashkadarya	287,0	400,2	113,2
6.	Navoi	699,9	99,1	29,2
7.	Namangan	147,1	201,3	54,2
8.	Samarkand	182,2	215,5	33,3
9.	Surkhandarya	155,5	244,8	89,3
10.	Syrdarya	156,4	203,7	47,3
11.	Tashkent	174,9	229,6	54,7
12.	Fergana	180,9	250,0	69,1
13.	Khorezm	179,0	258,0	79
	Total	**2224,3**	**3 101**	**876,7**

Based on the data presented in the above table, a significant discrepancy is observed between the normative cotton yield determined by soil bonitation scores and the state-established production targets. A regional comparison shows that the largest difference is recorded in Kashkadarya region, amounting to 113.2 thousand tons, while the smallest difference is observed in Navoi region, at 29.2 thousand tons. At the national level, the total discrepancy reaches 876.7 thousand tons.

It is possible that crop yields could increase to some extent as a result of the human factor, particularly through the implementation of improved agrotechnical measures and the application of fertilizers. However, there is currently no empirical evidence quantifying the extent to which such measures increase crop yields after their implementation.

A similar comparative analysis was conducted for wheat production based on the available data. The results of this analysis are presented in the following table.

Table 5. Comparative analysis of wheat yields calculated based on average soil bonitation scores and state-established production targets in the Republic of Karakalpakstan and the regions in 2021

T/r	Region	Yield calculated based on the average soil bonitation score, thousand tons	Yield according to the state-established fixed plan, thousand tons	Difference
1.	Republic of Karakalpakstan	134,8	323,3	188,5
2.	Andijan	259,8	559,7	299,9
3.	Bukhara	187,5	437,9	250,4
4.	Jizzakh	309,0	695,5	386,5
5.	Kashkadarya	438,7	992,1	553,4
6.	Navoi	119,3	261,8	142,5
7.	Namangan	250,9	505,8	254,9
8.	Samarkand	362,6	717,5	354,9
9.	Surkhandarya	289,8	645,5	355,7
10.	Syrdarya	271,6	590,6	319
11.	Tashkent	413,6	848,2	434,6
12.	Fergana	344,4	767,2	422,8
13.	Khorezm	107,7	223,6	115,9
	Total	**3431,9**	**7 568,7**	**4136,8**

According to the data presented in the above table, there are significant differences between the wheat production targets established by the state and the yields calculated based on the average soil bonitation score. At the national level, the total discrepancy amounts to 4,136.8 thousand tons. This indicates that there are substantial gaps between the officially established production plans for both cotton and wheat and the yields that could realistically be obtained based on the natural fertility of the land.

Naturally, the gap between natural soil fertility and state-established production targets may be partially compensated through additional expenditures and labor inputs. However, based on the calculations presented above, it can be concluded that crop placement and yield planning should be determined primarily on the basis of natural soil fertility indicators. This approach is considered appropriate, given that the agricultural sector of the republic is largely represented by farms specializing in cotton and wheat production.

Such a strategy would allow producers to freely market surplus output, strengthen their financial capacity, and reinvest in reproduction processes, while simultaneously increasing the financial opportunities for improving soil fertility. Moreover, this approach would serve as an important incentive for agricultural enterprises to produce higher-quality and more efficient products.

The main indicators of agricultural land efficiency are determined by soil fertility and the volume of agricultural output produced from it. At present, agricultural enterprises are located across different regions and operate within diverse soil zones. In the Republic of Uzbekistan, the use and regulation of irrigated agricultural land largely depend on the normative value of agricultural crop fields, which plays a crucial role in land taxation, the organization of efficient land use, and the stimulation of land users, among other purposes. The determination of the normative value of agricultural land is carried out by taking into account a number of interrelated factors.

The results of our research indicate that calculating normative values based on average annual prices for each crop type is not an optimal approach, since agricultural product prices in farmers' markets are not constant but fluctuate throughout the year. According to current regulations, the normative value of agricultural crop fields is determined based on the normative productivity per hectare, calculated as follows:

$$Нск = Ну \times Црк,$$

Where:
Нпск — normative productivity of agricultural crops per 1 hectare, thousand UZS;
Ну — normative crop yield, centners per hectare (c/ha);
Црк — average annual price of the corresponding type of agricultural product sold in farmers' markets, thousand UZS per centner; for raw cotton and cereal crops, the state procurement price, thousand UZS per centner.

The calculated amount of profit obtained from 1 hectare of irrigated arable land of varying quality is determined using the following formula:

$$Рпр = \frac{\frac{Нпск_1 \times Пк_1}{100} \times Рн_1 + \ldots + \frac{Нпск_н \times Пк_н}{100} \times Рн_н}{Пк_1 + \ldots + Пк_н}$$

Рпр — calculated profit obtained from 1 hectare of irrigated arable land, thousand UZS;
$Нпск_1$-$Нпск_н$ — normative productivity of agricultural crops, thousand UZS per hectare;
$Пк_1$-$Пк_н$ — crop area, hectares;
$Рн_1$-$Рн_н$ — calculated amount of agricultural production profit obtained from different crops on land of varying soil quality, expressed as a percentage.

The normative value of 1 hectare of irrigated arable land is determined using the following formula:

$$Sn = \frac{Rpr \times К_1 \times К_2 \times К_3}{P} \times 100,$$

Where:
Sn – normative value of irrigated arable land, thousand UZS per hectare;
Rpr – calculated profit obtained from irrigated arable land, thousand UZS per hectare;
P – capitalization rate of the calculated profit;
K1 – regional coefficient reflecting the level of farm management and agricultural production intensity;
K2 – coefficient accounting for the irrigation water delivery method;
K3 – coefficient accounting for crop loss percentage.
The capitalization rate of the calculated profit is assumed to be **5%**.

RESULTS

The calculation of the normative value of agricultural crop land using the existing methodology involves a number of inconveniences and practical difficulties. This is primarily due to the fact that prices of agricultural products are highly volatile, while the normative value is calculated only once a year, which is not appropriate under conditions of a dynamic market economy. In this regard, it is proposed that the normative value of agricultural land be linked to a base calculation unit, which is considered a more effective approach. Using a base calculation unit derived from soil bonitation scores ensures greater fairness and a more realistic estimation of normative land value.

During the determination of the normative value of agricultural land, calculations are currently based on previous-year data, resulting in tax assessments that do not reflect real-time market conditions. This, in turn, affects tax revenues. From this perspective, calculating the normative value relative to a base calculation unit would allow the valuation to be aligned with current conditions. Therefore, it is proposed that the method for calculating normative value should be based on a base calculation unit, which may be expressed as follows.

When determining the normative value of agricultural land, the soil fertility (bonitation score) of each land contour is first identified. In calculating the base normative value, the bonitation score of agricultural land and the yield per one bonitation point are used to determine the monetary value of one bonitation point.

The normative yield of major agricultural land is determined as the sum of the average soil bonitation score multiplied by the normative yield corresponding to one bonitation point for agricultural crops, orchards, and vineyards.

Based on the productivity of cotton- and wheat-oriented agricultural enterprises and the revenue generated from their sale, the normative value of agricultural land per bonitation point is calculated for each land contour and expressed in monetary terms (UZS) using the base calculation unit.

In addition, the availability of irrigation and land reclamation infrastructure necessary for agricultural land use is assessed. The base normative value of agricultural land is determined using the following formula:

$$S_n = B_B \times O‘_B \times M_K \times S_K \times X_N \times 0{,}1 \times 30$$

Where:
Sn – normative value of irrigated agricultural land, UZS;
BB – land bonitation score (ranging from 0 to 100);
OB – price of one bonitation point based on the base calculation unit, determined through calculations;
0.1 – annual profit (profitability rate), equal to 10%;
MK – regional coefficient;
SK – water supply (irrigation availability) coefficient;
XN – coefficient accounting for crop loss; applied when agricultural crop areas are located within protected zones where the use of chemical substances is prohibited;
30 – duration of the lease agreement (long-term period according to the contract, in years).

The normative value of agricultural land by land contours is expressed in monetary terms using the base calculation unit (UZS).

During the research process, calculations of the normative value of agricultural crop fields were carried out using both the current methodology and the proposed updated method, followed by a comparative analysis.

The comparison of normative land values calculated using the existing and the proposed methodologies for agricultural crop fields was conducted based on actual production data for the years 2022 and 2023. The results of this comparison are presented in the following table.

As part of the study, a detailed comparative analysis was conducted for agricultural crop fields specialized in vegetable growing and horticulture located in Qibray district of Tashkent region. The normative values of these agricultural lands were calculated using both the current and the proposed updated methodologies based on crop production data for 2022 and 2023. The results of this analysis are presented in Tables 6 and 7.

Table 6. Comparative analysis of the normative value of agricultural crop land calculated using the current and proposed methodologies for vegetable- and horticulture-specialized farms in Qibray District, Tashkent Region, in 2022

Farm name	Specialization	Area (ha)	Bonitation score	Normative value per 1 hectare, thousand UZS (current method)	Normative value per 1 hectare, thousand UZS (author's proposal)	Difference (+/−), thousand UZS
"Jomiy–Yusubakhmedov Fayz" Farm	Horticulture	10.17	47.0	30,750,907	50,760,000	20,009,092
"Jomiy-Agro Baraka Fayz" Farm	Horticulture	15.39	47.0	45,815,483	50,760,000	4,944,516
"Imomnazar-Agro" Farm	Vegetable production	5.00	55.0	10,333,176	59,400,000	49,066,823
"Baytqorgon–Sayram Fayz Agro" Farm	Horticulture	1.05	67.5	2,350,260	72,900,000	70,549,739
"Baytqorgon–Nodirbek" Farm	Horticulture	4.70	62.7	26,828,437	67,676,148	40,847,710
"Baytqorgon–Abduvokhit Agro" Farm	Horticulture	9.25	68.4	46,320,727	73,872,000	27,551,272
"Qibray–Dilmurod Agro" Farm	Vegetable production	7.00	67.5	50,980,140	72,900,000	21,919,859
"Qibray Impex" Farm	Horticulture	1.84	62.7	9,077,947	67,676,148	58,598,200
"Qibray–Agro Hosil" Farm	Vegetable production	7.63	68.4	29,518,001	73,872,000	44,353,998
"Madaniyat–Nigmat Ota" Farm	Vegetable production	7.63	70.4	16,838,602	75,982,536	59,143,933

In 2022, a total of 1,077 agricultural land-use entities operated in Qibray District of Tashkent Region. The normative values of land plots used by these entities were calculated using different approaches. In Table 6, data from 10 selected entities were analyzed. The analysis shows that, despite having the same specialization, similar bonitation scores, and identical crop or tree compositions, there are substantial discrepancies in the normative land values calculated under the current system.

The fact that agricultural enterprises located within the same area, with identical soil bonitation scores and similar plantation structures, have significantly different normative values per hectare clearly indicates the presence of systemic shortcomings in the existing valuation methodology.

For example, in 2022, the horticulture-specialized farms “Jomiy–Yusubakhmedov Fayz” and “Jomiy-Agro Baraka Fayz” were assigned different normative land values per hectare, despite operating under comparable conditions. Similarly, among horticulture farms, the “Baytqorgon–Sayram Fayz Agro” farm, with a bonitation score of 67.5, was assigned a normative value of 2,350,260 UZS per hectare, whereas the “Baytqorgon–Nodirbek” farm, with a slightly lower bonitation score of 62.7, was assigned a substantially higher normative value of 26,828,437 UZS per hectare. This illustrates that two land users operating in nearly identical locations were assigned markedly different normative values.

Comparable inconsistencies were also observed among vegetable-specialized farms. The land plots of “Qibray–Dilmurod Agro” and “Qibray–Agro Hosil” farms had bonitation scores of 67.5 and 68.4, respectively; however, the normative values per hectare were calculated as 50,980,140 UZS and 29,518,001 UZS, respectively.

By contrast, when the proposed valuation formula was applied, the differences between normative land values for such comparable farms were significantly reduced. This indicates that improving the valuation formula and fully digitalizing the normative value calculation system could address several existing problems and enhance consistency and fairness in land valuation.

Finally, the results obtained from the 2022 data are further examined through comparison with data collected in 2023, allowing for a dynamic assessment of the proposed methodology.

Table 7. Comparative analysis of the normative value of agricultural crop land calculated using the current and proposed methodologies for vegetable- and horticulture-specialized farms in Qibray District, Tashkent Region, in 2023

No.ss	Farm name	Specialization	Area (ha)	Bonitation score	Normative value (current method), thousand UZS	Normative value (author’s proposal), thousand UZS	Difference (+/–), thousand UZS
1	“Jomiy–Yusubakhmedov Fayz” Farm	Horticulture	10.17	47	37,784,922	57,528,000	19,743,077
2	“Jomiy-Agro Baraka Fayz” Farm	Horticulture	13.40	47	48,442,096	57,528,000	9,085,903
3	“Imomnazar-Agro” Farm	Vegetable production	4.60	55	31,818,375	67,320,000	35,501,624
4	“Baytqorgon–Sayram Fayz Agro” Farm	Horticulture	0.95	67.5	7,670,653	82,620,000	74,949,346
5	“Baytqorgon–Nodirbek” Farm	Horticulture	5.34	81	77,609,883	99,144,000	21,534,116
6	“Baytqorgon–Abduvokhit Agro” Farm	Horticulture	9.25	60	53,920,355	73,440,000	19,519,644
7	“Qibray–Dilmurod Agro” Farm	Vegetable production	7.00	68	57,037,094	83,232,000	26,194,905
8	“Qibray Impex” Farm	Horticulture	2.12	55	14,664,120	67,320,000	52,655,879
9	“Qibray–Agro Hosil” Farm	Vegetable production	7.75	73	106,726,754	89,352,000	−17,374,754
10	“Madaniyat–Nigmat Ota” Farm	Vegetable production	21.25	55	146,641,208	67,320,000	−79,321,208

According to the data presented in Table 6, in 2022, the horticulture-specialized “Jomiy–Yusubakhmedov Fayz” farm was assigned a normative value of 30,750,907 UZS per hectare, while the “Jomiy-Agro Baraka Fayz” farm was assigned a normative value of 45,815,483 UZS per hectare. In 2023, based on the data presented in Table 7, the normative value per hectare for the “Jomiy–Yusubakhmedov Fayz” farm increased to 37,784,922 UZS, whereas the “Jomiy-Agro Baraka Fayz” farm was assigned a value of 48,442,096 UZS per hectare.

These results indicate that, due to the lack of full digitalization of the normative valuation system, farms with identical bonitation scores and comparable characteristics are assigned different normative land values.

Furthermore, the difference between the normative land values calculated for the “Jomiy–Yusubakhmedov Fayz” farm in 2022 and 2023 amounted to 7,034,015 UZS, while the corresponding difference for the “Jomiy-Agro Baraka Fayz” farm was 2,626,613 UZS.

Similar patterns were also observed among vegetable-specialized farms. For the “Qibray–Dilmurod Agro” farm, the difference between the normative values calculated in 2022 and 2023 amounted to 6,056,954 UZS, whereas for the “Qibray–Agro Hosil” farm, the difference reached 77,208,753 UZS.

DISCUSSION

This study aimed to improve the methodology for determining the normative value of agricultural land by addressing inconsistencies observed in the current cadastral valuation system. The empirical results obtained from agricultural land users in Qibray District of Tashkent Region reveal significant methodological shortcomings in the existing approach to normative land valuation.

The analysis demonstrates that under the current valuation system, agricultural land plots with identical bonitation scores, similar specializations, and comparable crop structures are assigned substantially different normative values. This finding indicates that the existing methodology lacks sufficient standardization and is not fully adapted to digital processing. Such inconsistencies reduce the transparency and fairness of land valuation and may negatively affect taxation, leasing relations, and investment decisions in the agricultural sector.

The comparison of data for 2022 and 2023 further confirms the instability of normative values over time. Even in cases where land quality and specialization remained unchanged, notable year-to-year fluctuations in normative values were observed. These variations cannot be fully explained by changes in soil fertility or production conditions, suggesting that the current system is overly sensitive to short-term market price fluctuations and administrative adjustments.

By contrast, the application of the proposed valuation formula, which is based on a base calculation unit linked to soil bonitation scores, significantly reduces discrepancies between comparable land plots. The results indicate that the proposed method ensures greater consistency and equity in normative land valuation. Moreover, by minimizing dependence on volatile market prices, the proposed approach better reflects the intrinsic productive potential of agricultural land.

From a practical perspective, the findings highlight the importance of fully digitalizing the normative land valuation process and standardizing calculation procedures. Implementing the proposed methodology could enhance the reliability of cadastral data, improve the accuracy of land taxation, and provide clearer economic signals for land users. In the broader context, this approach may contribute to more sustainable land use, improved soil fertility management, and increased efficiency in agricultural production.

Overall, the results support the hypothesis that improving the methodological framework for determining the normative value of agricultural land—particularly through the use of soil-based base calculation units—can address existing valuation inconsistencies and strengthen the role of land cadastre as a tool for effective land resource management.

Xulosa: Taklif etilayotgan takomillashtirilgan uslubda esa aynan bugungi holatga nisbatan hisoblash imkonini beradi va samarali ekanligi bilan ajralib turadi.

Yuqoridagilardan xulosa qilib shuni aytish lozimki, qishloq xo‘jaligi ekin yerlarining me’yoriy qiymatini bonitet balini har birini bazaviy hisoblash miqdoriga asosan hisoblanishi aynan bugungi xolatga asosan real baholash hamda bir muncha ishonchli va shu bilan birga soddaroq ko‘rinishda mehnat va harajat sarfini kamayishiga xizmat qiladi.

CONCLUSION

This study addressed the problem of improving methods for determining the normative value of agricultural land within the cadastral valuation system. The empirical analysis conducted on agricultural land users in Qibray District of Tashkent Region revealed significant inconsistencies in the existing approach to normative land valuation. Specifically, the results demonstrated that land plots with identical soil bonitation scores, similar specializations, and comparable crop structures were assigned substantially different normative values under the current methodology.

The comparison of normative land values across 2022 and 2023 further highlighted the instability of the existing system. Year-to-year fluctuations in normative values were observed even in cases where land quality and production characteristics remained unchanged. These variations indicate that the current valuation method is overly dependent on volatile market prices and administrative adjustments, which undermines the objectivity and reliability of cadastral valuation outcomes.

The application of the proposed valuation methodology, which links the normative value of agricultural land to a base calculation unit derived from soil bonitation scores, significantly reduced discrepancies between comparable land plots. This confirms that the proposed approach provides a more consistent, transparent, and equitable framework for determining normative land values. By focusing on the intrinsic productive potential of land rather than short-term price fluctuations, the methodology enhances the economic justification of cadastral assessments.

From a practical standpoint, the findings suggest that full digitalization and standardization of normative land valuation procedures are essential for improving the efficiency of land administration. Implementing the proposed methodology could strengthen the accuracy of land taxation, improve land-use incentives, and support sustainable agricultural development. Furthermore, the proposed approach may facilitate better investment planning and contribute to the long-term preservation of soil fertility.

In conclusion, the study confirms that improving the methodological framework for determining the normative value of agricultural land—particularly through the use of soil-based base calculation units—can address existing deficiencies in the cadastral valuation system. The results provide both theoretical and practical contributions to land valuation research and offer actionable recommendations for policymakers and land management authorities seeking to enhance the effectiveness and fairness of agricultural land governance.

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