

The Formation of Effective Usage of Land Resources in Accounting, Analysis and Management of Agricultural Enterprises in the Market Conditions

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Abstract:

The article is dedicated to the study of the need to intensify the state influences upon the efficiency of land resources usage. The technology of the rational land resources usage is advanced by way of reducing straw as organic fertilizer under direct contribution in the ground that provides spare facilities, raises the level to the efficiency of production, influences upon increasing of the fertility of the ground. Offences such as unauthorized seizure and misuse of land, removal of a fertile layer without permission, pollution of land, non-implementation of land reclamation cause significant damage to the state and owners of land, which leads to irreversible loss of land, quality and fertility. A methodical approach to assessing the improvement of information and analytical support for agricultural development is to create an effective system of formation, processing and transmission of analytical data of the accounting for the timely adoption of effective decisions at all levels of the agricultural sector. The result of this improved method of assessing include the issue of land conservation and rational use for the purpose of sustainable domestic land use. That is what caused the selection of research topics, defined goals, objectives and building its structure and trends.

Keywords: accounting, activity, analysis, audit, enterprise, fixed assets, land resources, management, production, taxation.

JEL Classification: M 11, M 41, M 42, P 17, Q 00.

Introduction

The purpose of the study is to substantiate the theoretical and methodological provisions and practical approaches to improve the existing technologies of rational and efficient use of land resources by agricultural enterprises. The theoretical and methodological bases of the research were the scientific developments in the field of management of the use of land resources by agricultural enterprises. Questions of the search for ways to improve the existing technologies of rational and efficient use of land resources, their accounting, analysis and management of agricultural enterprises in the market conditions were researched in the works of such scientists as Y. Abraham, I. Balanyuk, M. Becker, M. Bogira, V. Boklag, A. Bordyuzha, G. Bryk, G. Brunschwig, E. Casl, N. Cic'ka, D. Dobryak, D. Elizondo, O. Gutorov, I. Khadzhynov, S. Kozlovskiy, L. Marynchak, A. Nelson, L. Novakovskiy, E. Palomo, T. Poverlyak, F. Ruslan, D. Semenda, O. Semenda, E. Serova, Y. Tkal, V. Tkachenko, A. Tretyak, I. Vlasenko, O. Voronovskaya, M. Fedorov and

others. Scientists argue that effective counteraction to violations of land legislation and non-adherence to the rules of rational land use is a key guarantee of preserving the useful properties of the land for future generations, ensuring high quality of the environment and living conditions for people. The issue of rational and efficient use of land resources by agricultural enterprises is constantly relevant. Outdated material and technical base, low quality of machinery, imperfect technologies of cultivating land, non-compliance with established environmental requirements for land use became the result of the spread of erosion, the rapid decline of soil fertility. The current system of land use is in critical condition.

1. Literature Review

Scientists point to the infinite value of land resources inherent in their natural origin, as well as the limited space. Land in agriculture has the following characteristics, in particular: it is not considered to be the result of human labour, because land precedes labour because it is an integral condition; all the means of production can be renewed and land is irreplaceable, that is, it is impossible to carry out the agricultural production process without it; impossible to increase the size of the land, that is, it is limited in space, and the process of using land resources entail the development of their productive forces; land is an unsustainable means of production, and vice versa, when used effectively, it can be improved.

Gutorov (2002) states that land «... includes the economic system where the relevant land, in particular, the environment, features of the production process (in complex), providing conditions for growth and further development of plants, especially the use of land resources».

The American scientist Casl (1991) notes that land is «... part of the earth's surface to which the right to own and use». At the same time point that the earth, in general, is «... the gift of nature for the purpose of man's production processes».

In our understanding, land is a part of the natural environment consisting of economic resources, into which resources are channeled in order to obtain the desired result (effect), and which, in turn, requires the creation of appropriate institutional, organizational and economic conditions that will facilitate effective its use.

Land resources are the aggregate resources of the natural environment, consisting of soils of economic purpose, are the basis of economic activity and the main means of production, which requires efficient use and are the basis and consequence of biological productivity and environmental safety of society.

This clarification emphasizes the need to solve the problem of managing the efficiency of land resources, especially in the context of market land relations. The lack of a systematic approach to the process of reforming domestic land relations is the cause of complications in the formation of a system of efficient use of land resources.

Academician Novakovsky (2001) states that «... the process of managing land resources is the greatest». Thus, the management of the efficiency of land use by agricultural enterprises is an activity aimed at achieving the main goal, and in particular to significantly improve the efficiency of land use.

There are now ongoing changes in legislation. The opportunities and obstacles to the formation of the land market, the development of the mechanism for its involvement in the economic circulation are quite relevant. However, this problem is not limited to making legal decisions of a legal nature. The expected consequences of their application need to be analyzed, in particular the institutional support for the land use efficiency management system.

The legislation is being amended and the agricultural sector infrastructure is being adapted to current conditions. There was a need for land reform aimed at eliminating cause and effect processes of contradictions in industrial relations. The turnover of agricultural land, that is, the land market, should be based on clearly defined requirements of the current legislation, the infrastructure that should be their institutional support.

Land reform, according to Serova's (1999) definition, is «... the main effective instrument of state policy aimed at solving the problem of economic inefficiency of the agrarian sector and social atmosphere in society».

According to some sources, Ukraine has a 30% supply of black earth relative to the global total. However, the area of domestic black soil is only about 9% (Bordyuzha 2014). In addition, there is excessive ploughing, extensive use of land resources. And the consequences of these processes are soil degradation.

However, with appropriate efficient use of land resources, Ukraine is able to produce food for 140 million people (Bogira 2008).

By definition Balaniuk (1999) «... agrarian reform is clearly coordinated by stages and mechanisms of their implementation, subordinated to the strategic goal, and in particular the combination of socio-economic, organizational, legislative and regulatory measures that will help the food sector to reach the level of agrarian developed countries subject to mandatory ensuring a reliable standard of living for the population».

In the Land Code of Ukraine, it is stated that «... the constituents of ownership of land plots are the disposal, possession and use of them».

Fedorov (2014) argues notes that «... the land market is the basis for the formation of purchase and sale of land (rights to land plots), the recognition of land commodity, the calculation of price for it, the creation of a competitive environment that stimulates the effective use of land resources» and that «... all factors of production must operate in a

single natural environment. The absence of at least one of them directly leads to a violation of the laws of the economy, and as a consequence - an imbalance of this process».

Rules that impose restrictions on the sale and purchase of agricultural land are common in foreign practice. For example, in Belgium, France, and the Netherlands, the right to buy land is primarily owned by tenants of land. In Italy, land for sale is offered to neighbours. To preserve agricultural land in agricultural production, the state which resells its farmer, which is most interested in the efficient use and expansion of its own production, has the right to purchase a plot in Germany.

In Sweden, strict requirements are imposed on the person who is granted the right to own the land. A prerequisite is higher education in the relevant field of training, skills in working with agricultural machinery (the presence of driving licenses for driving a car, tractor), excellent knowledge of economics and more. In Ukraine, the current Land Code prohibits the acquisition of agricultural land by foreign citizens. This regulation is valid in Canada. Legal restrictions on related transactions are found in Japan and the United States. However, European Union law provides for equal rights for citizens of participating countries to purchase land (Tkali, Chub 2017).

For the purpose of motivation, as a component of stimulation, for efficient use of land resources, «... it is not important who owns them, the individual, who uses the land, the state or the landowner» (Semenda 2018).

This thesis is a confirmation that the formation of the land market is not an incentive for efficient use of land resources, in particular, agricultural enterprises, but an instrument of economic circulation. A special place in this process belongs to the lease.

Currently, the rent is relatively low. Of course, domestic producers are not able to significantly increase the level of rent. Because there is a loss of livestock, so most farms receive losses at the end of the reporting period. However, in Ukraine, the rent is much lower than abroad. For example, in the United States, this figure is 10% of the market value of the land.

It should be emphasized that, despite the existing problems, when concluding a lease, it should be clearly agreed on this issue. Increasing the rent is possible due to state support for agriculture. Otherwise, the possibility is that in the future the number of persons willing to sell the land share will increase.

The scientist Casl (1991) notes that «... the main disadvantage of rent is the insecurity of the tenants themselves».

Of course, a tenant is a temporary user of land resources and is not interested in using them with maximum efficiency, but works to maximize profits. But there is no guarantee that the landowner is interested in using the land in question more effectively. In most countries, tenants are preferred. For example, France has approved a minimum lease term of 12 years, in Japan - 20 years, in Denmark - 30 years. The aim is to organize long-term leasehold rights (Tkali, Chub 2017).

A comparative analysis of the reforms that have taken place in different countries of the world confirms that the productivity of land use depends not only on the level of provision of land plots per capita but also on the level of efficiency of their use.

State ownership of land is extended in Kazakhstan. The main objective of rational state support is to increase the competitiveness of agricultural products in the domestic and foreign agricultural markets, as well as the development of rural territories, the protection of the economic interests of the agricultural sector by subsidizing prices and income, as well as improving the efficiency of agricultural production.

In China, land is also state-owned. Thanks to clearly planned reforms, the country has increased its agricultural production by several times in recent years. After all, the experimental verification of certain elements of the reform lasts from four to seven years, and only after the positive results are obtained the state adopts the relevant laws and the reform becomes effective in the country. In addition, Chinese reforms are starting from below, where property is separated from land use, and land use rights are sold, or rented out.

In China, there is a lease-based land-based payment system that guarantees complete freedom and autonomy of land management. The lease, in turn, ensures the development of the business entity, forms independent landowners and land users. But it should be noted that land in China is competitively leased. And the money received for the use of land resources comes to improve the social standards of life of the peasants. In the UK and the US, the Chinese economic model has been favourably evaluated.

We agree with the opinion of Doctor of Economics, Professor Fedorov (2014), that reform can lead to positive consequences if: it occurs on a voluntary basis, on a democratic basis, with obligatory participation in this process of peasants in order to take into account their interests; it is provided at the expense of state, political, regulatory, organizational, material, moral support; it is based on justice; an appropriate psychological climate is ensured; carried out simultaneously with social bodies - committees, commissions, working groups, etc.; leads to the stability of existing public policy in the relevant field; ensures clear and effective regulatory framework of the country.

World experience shows that the implementation of effective legislation on the agricultural land market in foreign countries is a long and complicated process. A civilized land market is the only way to select an effective owner and

attract investments that will bring the most successful agricultural technologies to Ukrainian lands and provide all peasants with a decent standard of living (Tkal, Chub, Tkachenko 2016).

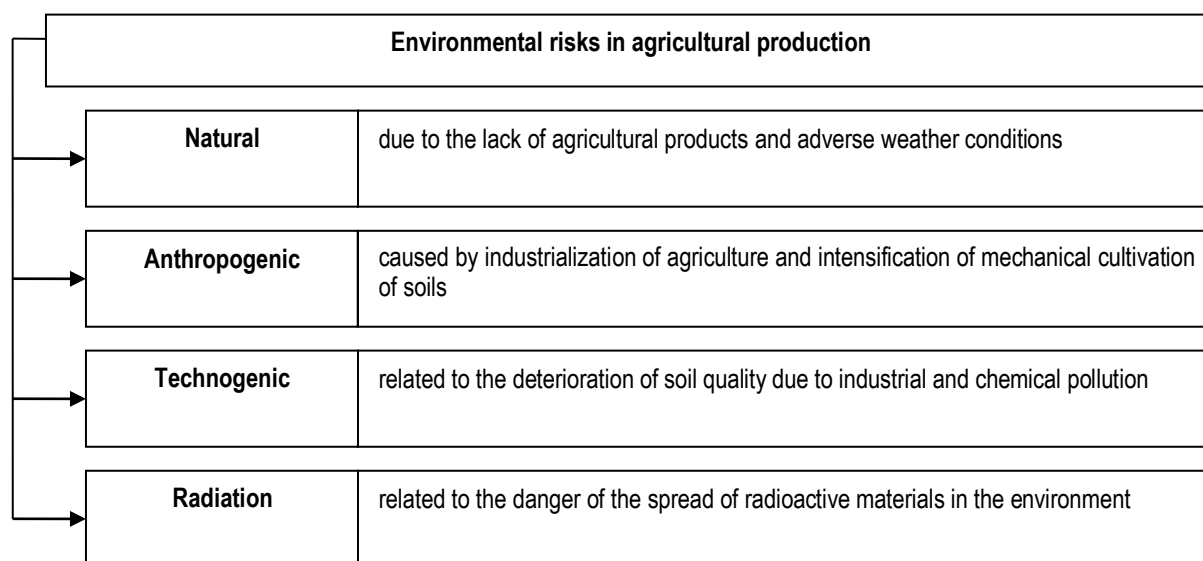
The ecological and economic state of agriculture is determined by two factors: natural (climate, meteorological conditions, relief) and anthropogenic (human economic activity, machines and mechanisms, melioration, agrotechnics of growing crops), in which disharmony they pass into negative.

It was established that the ecological status of agricultural lands, considered "... as a deciding factor for obtaining high-quality agricultural raw materials, feed and products, is unsatisfactory due to the intensive nature of their economic use and anthropogenic and man-made loading of progressive erosion, increased acidity, overflow, radiation pollution and development other negative processes» (Tkal, Abraham 2019).

Traditional technologies of agrarian production are aimed at increasing gross collections and neglecting the quality of the crop and the safety of its further use.

Research has established that agricultural production is characterized by a high degree of environmental risk (Fig. 1).

Figure 1. Ecological risks in agricultural production



Source: *generalized by source (Voronovskaya 2009).*

As a result of the land reform, conditions have emerged that make it urgent to solve the problem of environmentally safe and efficient use of land resources. After all, the number of subjects of land use has increased, organizational and legal forms of management have expanded, which in turn prevents the implementation of qualitative control over land use.

It would seem that the transfer of land to private property should increase the owner's interest in using it effectively. But on the contrary, the owners are not particularly interested in the observance of all principles of environmental standards. The reason is the difficult financial situation of agricultural enterprises, resulting in a reduction in the cost of reproduction of soil fertility.

The fact is that a significant proportion of productive land resources are leased. Although the contract officially fixed the tenants' responsibilities for the implementation of a system of measures relating specifically to the protection of land (protection of land from erosion, overgrown with shrubs, reclamation), but the owner of the land parcel is not able to affect the condition of soil reproduction.

2. Methodology

At present, the important and topical issue is the observance by the domestic owners of their commitments on the introduction of mineral and organic fertilizers during the period of use of land resources.

It is known that the formation of the level and quality of the crop yields have both natural soil fertility and the amount, ratio and timing of the use of fertilizers (especially nitrogen, phosphorus, potassium, calcium, magnesium and certain trace elements), plant protection products, technology collection of products.

Soil is the most important component of ecosystems, and its fertility due to efficient use depends, first of all, on the content and composition of humus, the amount, the flow and transformation of organic matter.

For example, in the early 80's of the twentieth century humus losses were offset by applying up to 6 tons of organic fertilizers per hectare. However, at the beginning of the 21st century, the reduction of organic fertilizer rates led

to an increase in the humus deficit almost fivefold, and its annual loss amounts to 600-700 kg/ha. Therefore, the most effective is the control of the introduction of fertilizers for agricultural crops in agricultural enterprises, since, in most cases, landowners do not foresee costs for the restoration of soil fertility.

A rather interesting reason is not the attempt by land users to maximize profits, but the lack of funding sources. Confirmation of the given situation is insufficient, and even quite low level of use by agricultural enterprises of mineral and organic fertilizers (Table 1).

Table 1. Fertilizing of agricultural crops in agricultural enterprises of the Sumy region, Ukraine

| Indicator | Years | | | | | | | | | | | | | | 2017 to 2000, % |
|--|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-----------------|
| | 2000 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | |
| Total sown area, ths. ha | 889,5 | 696,4 | 650,1 | 702,6 | 799,1 | 785,9 | 798,5 | 862,5 | 891,6 | 905,6 | 888,7 | 910,6 | 916,2 | 927,3 | 104,2 |
| Mineral fertilizers | | | | | | | | | | | | | | | |
| Entered in nutrients, ths quintals | 136,1 | 159,1 | 211,0 | 322,6 | 525,2 | 6,7 | 501,9 | 672,9 | 707,5 | 823,2 | 866,4 | 996,9 | 1133,7 | 1177,3 | 8 times |
| Fertilized area under crop, ths. ha | 248,6 | 257,5 | 291,4 | 417,2 | 600,0 | 55,5 | 541,7 | 665,2 | 731,7 | 803,9 | 790,6 | 822,2 | 844,5 | 854,2 | 3 times |
| The share of fertilized area, % | 28 | 37 | 45 | 59 | 75 | 58 | 68 | 77 | 82 | 89 | 89 | 90 | 92,2 | 93,1 | 3 times |
| Made in nutritious substances per 1 ha | | | | | | | | | | | | | | | |
| sown area, kg | 15 | 23 | 33 | 46 | 66 | 56 | 63 | 78 | 79 | 91 | 97 | 109 | 124 | 127 | 8 times |
| fertilized area, kg | 55 | 62 | 72 | 77 | 88 | 96 | 93 | 101 | 97 | 102 | 110 | 121 | 134 | 140 | 2,5 times |
| Organic fertilizers | | | | | | | | | | | | | | | |
| Entered, ths. tons | 1447,6 | 924,3 | 939,5 | 872,8 | 716,6 | 669,4 | 432,7 | 460,6 | 369,0 | 384,5 | 385,4 | 420,8 | 441,1 | 449,2 | 31,0 |
| Fertilized area, ths. ha | 57,2 | 44,2 | 51,6 | 49,0 | 39,8 | 32,8 | 24,2 | 27,7 | 14,6 | 17,7 | 18,5 | 14,0 | 14,4 | 14,7 | 25,7 |
| The share of fertilized area, % | 6 | 6 | 8 | 7 | 5 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 1,6 | 1,7 | 28,3 |
| Added on 1 ha | | | | | | | | | | | | | | | |
| sown area, tons | 1,6 | 1,3 | 1,4 | 1,2 | 0,9 | 0,9 | 0,5 | 0,5 | 0,4 | 0,4 | 0,4 | 0,5 | 0,5 | 0,5 | 31,3 |
| fertilized area, tons | 25,3 | 20,9 | 18,2 | 17,8 | 18,0 | 20,4 | 17,8 | 16,5 | 25,2 | 21,7 | 20,8 | 30,1 | 30,7 | 30,9 | 122,1 |

Source: calculated according to the data of the Main Department of Statistics in the Sumy region, consolidated forms of reporting of agricultural enterprises of the Sumy region.

Agricultural enterprises of Sumy region in 2017 brought mineral fertilizers to 93,1% of the sown area. From the calculation per hectare of sown area, 127 kg of mineral fertilizers were added in terms of 100% of nutrients.

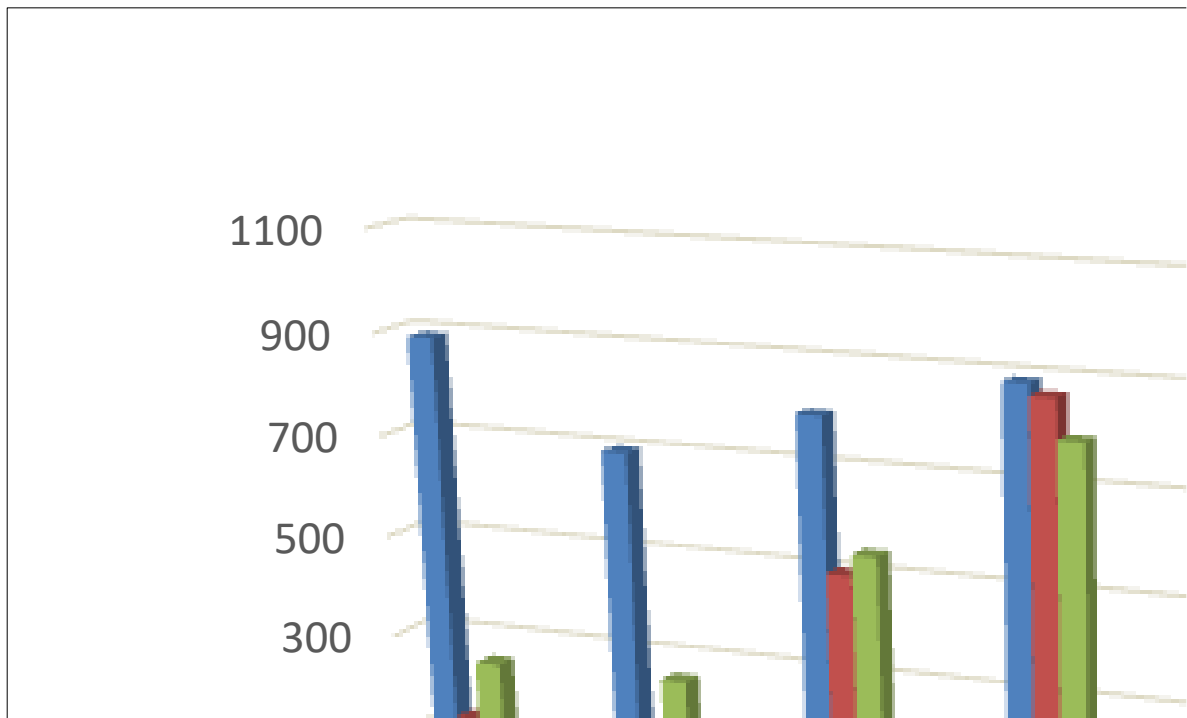
In the general dynamics of fertilizer application for agricultural crops in agricultural enterprises, there is a tendency to gradually increase their use.

Although mineral fertilizers are the most effective and effective means of improving crop yields, the current situation cannot be considered satisfactory.

After all, their widespread use leads to intense destruction of the humus layer, namely changes in its natural microbiological composition and mineralization, which in turn leads to a non-recurrent deterioration in the quality of cultivated land.

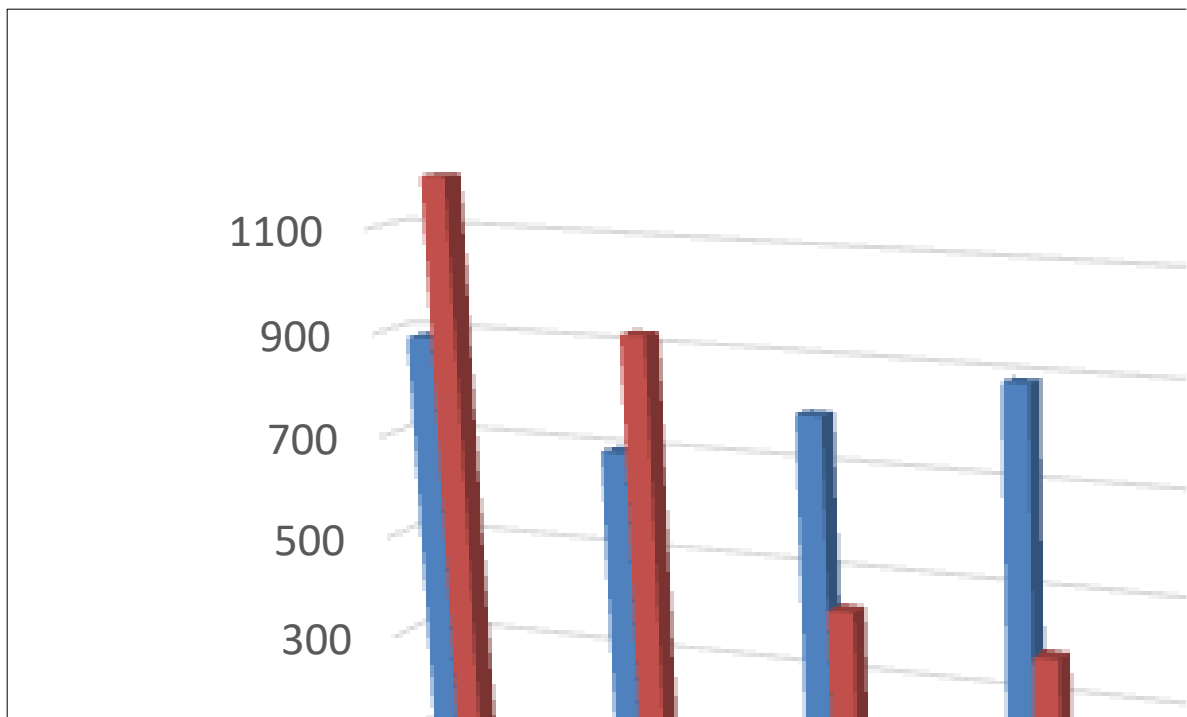
Let's illustrate the initial data in the form of diagrams for the introduction of mineral fertilizers for agricultural crops (Fig. 2) and the introduction of organic fertilizers for agricultural crops (Fig. 3) in agricultural enterprises of Sumy region.

Figure 2. Incorporation of mineral fertilizers for agricultural crops at agricultural enterprises of Sumy region, Ukraine



Source: calculated according to the data of the Main Department of Statistics in the Sumy region, consolidated forms of reporting of agricultural enterprises of the Sumy region.

Figure 3. Introduction of organic fertilizers to agricultural crops in agricultural enterprises of the Sumy region, Ukraine



Source: calculated according to the data of the Main Department of Statistics in the Sumy region, consolidated forms of reporting of agricultural enterprises of the Sumy region.

The leading role in suspending tendency to reduce the humus content in the soil and gradually achieve its balance belongs to organic fertilizers. In practice, agriculture widely uses organic fertilizers – such as litter manure hnoyivka, compost from manure, bird droppings, secondary plant products, green manure, straw, peat, sludge ponds, various organic-mineral mixes and more.

Fertilizer system must meet the optimal ratio of nutrients with regard to the requirements of a particular culture and presence in soil nutrients.

According to the FAO, entering into a ground of 1 kg of fertilizer (N + P₂O₅ + K₂O) increases the yield of wheat by an average of 7,3 kg of rice – 8,6 kg, maize – 8,8 kg respectively. Assessing the impact of various factors on the yield of crops yielded the following results: fertilizers – 41%, herbicides – 15-20%, rich soil – 15%, hybrid seeds – 8%, soil irrigation – 5%, other factors – 11-16%.

The struggle for environmental safety must be considered as one of the most important challenges facing specialists in various fields of national economy.

In 2010, studied farms Sumy region, show about 69% mineral fertilizer material that they are made, accounted for nitrogen. It is known that disturbances in fertilization technology, and their poor quality can cause a decrease in soil fertility, so that it will influence the quality of agricultural products. Quite disappointing domestic enterprises are state of organic fertilizers, particularly when only 3% of the acreage in 2017 were made. According to the research, in a ratio of 1 ha acreage major crop species accounted for 0,5 tons of organics. If we compare this figure, it is the same for 1990, it amounted to 8,8 tons, which is significantly lower, particularly at 94,3%. The reason for the low use of organic fertilizers – reduction in livestock farms.

In the world of organic agricultural production is becoming increasingly popular, with the trend towards an increase in acreage and number of farms (farms) are observed in all regions (Table 2).

Table 2. The development of organic agriculture in some countries for 2012-2017

| Country | Indicator | Years | | | | | | 2017 to 2012,% |
|-----------|--|--------|--------|--------|--------|--------|--------|----------------|
| | | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | |
| Australia | Organic land area, thous. ha | 561,61 | 558,62 | 551,06 | 553,57 | 571,58 | 620,76 | 110,5 |
| | Number of organic farms | 2177 | 2177 | 1707 | 1999 | 2075 | 1998 | 91,8 |
| | The share of organic land in total area, % | 20,75 | 21,12 | 20,99 | 21,25 | 21,94 | 24,0 | 115,7 |
| Argentina | Organic land area, thous. ha | 3637,5 | 3281,2 | 3062,0 | 3073,4 | 3011,8 | 3385,8 | 93,1 |
| | Number of organic farms | 1446 | 1018 | 1018 | 1074 | 1148 | 1157 | 80,0 |
| | The share of organic land in total area, % | 2,59 | 2,34 | 2,06 | 2,07 | 2,03 | 2,28 | 88,0 |
| UK | Organic land area, thous. ha | 590,01 | 558,72 | 521,48 | 495,93 | 490,21 | 497,74 | 84,4 |
| | Number of organic farms | 4281 | 3918 | 3526 | 3434 | 3402 | 3479 | 81,3 |
| | The share of organic land in total area, % | 3,43 | 3,25 | 3,03 | 2,88 | 2,85 | 2,90 | 84,5 |
| USA | Organic land area, thous. ha | 2178,5 | 2178,5 | 1554,5 | 2029,3 | 2031,3 | 2031,3 | 93,2 |
| | Number of organic farms | 12880 | 12880 | 13282 | 14871 | 14217 | 14217 | 110,4 |
| | The share of organic land in total area, % | 0,64 | 0,64 | 0,46 | 0,59 | 0,59 | 0,59 | 92,2 |
| Ukraine | Organic land area, thous. ha | 272,85 | 343,4 | 400,76 | 410,55 | 381,17 | 289,0 | 105,9 |
| | Number of organic farms | 164 | 175 | 182 | 210 | 294 | 304 | 185,4 |
| | The share of organic land in total area, % | 0,66 | 0,95 | 0,97 | 0,99 | 0,89 | 0,68 | 103,0 |

Source: calculated according to the *World of Organic Agriculture*.

Period 2012-2017. Magnifying characterized popularity of organic farming among small land. Meanwhile, in countries such as Australia and Argentina, typical of organic farms have large land holdings. This category includes Ukraine, where in 2010 the average size of households was 1,903 hectares, but the share of organic land to the total area of our country than the current level in the world.

Despite the popularity of organic farming systems, we note that among the scientific community there is no agreement in the superiority of one system or another.

Therefore, none of the options that lead to a certain system of "clean" farming for all cases where agricultural products are grown despite climatic and natural conditions, economic and financial support for households, and without gradual transition that takes time development of technology in the economy and technology growing crops, can not be.

3. Results

One way to improve the situation may be growing green manure. Because of high yields of green mass of green manure to the soil per 1 ha receives nitrogen, phosphorus and potassium. The benefits of growing sideral crops is obvious (to improve the water regime of soil, reducing its acidity, etc.) and thus costs low.

However, this type of fertilizer is somewhat difficult to adjust the humus content of the planned harvest. This can be explained by the fact that now grown green manure as all other cultures, and it is associated with a specific list of technologically necessary work (preparing the soil for sowing, planting, fertilization, seed costs, etc.). Generally, all the

green mass of plants plowed because it is the primary carrier of nitrogen and unchallenged substance. Thus, when the humification ratio of 0,15 to 1 ha can be formed in the first two years of 3,6 / ha humus.

Option replenish humus soil through manure application we considered possible, but not essential in the modern world. Without the state support for livestock industry in the near future to increase the production of manure is impossible.

The actual is the use of organic residues straw to replenish soil organic matter. After all, this sideline products traditionally used for the needs of the livestock industry (mainly in bedding). Some of the straw is used for fodder. This large volumes of harvested straw in the fields remained unused.

First, the question was raised: how and thereby may provide a rational application of fertilizers in the soil, which in turn increases the efficiency of land use? Because of rising prices constantly rising cost of fertilizer, which makes agricultural producers to make them smaller. Currently, the average price of 1 ton of fertilizer active ingredient than 9,1 thousand. UAH., whereas in 2017 it was 3,3 thousand. UAH.

So the answer is as follows: a large amount of fertilizer can replace organic, including the leaders manure. There is a limit: the production of by-products of livestock depends on the number of livestock animals. But this industry, most domestic enterprises are declining. It is necessary to look for another alternative solution.

Straw also used as fertilizer directly by introducing organic residues in the soil after harvesting crops. Therefore plowing straw and stubble is a means of maintaining soil fertility. However, due to irresponsible attitude towards land protection, carried out mass firing of this valuable fertilizer.

The calculations of efficiency of alternative use of organic residues chopped straw after harvesting of grain and leaving it on the field as organic fertilizer (Table 3).

Per 1 ton of straw the efficacy of its use in making direct it into the ground, which was determined equivalent to the cost of fertilizers.

Table 3. The efficiency of organic residues chopped straw as organic fertilizer directly making it to the ground

| Indexes | Units of measurement | The calculation results |
|--|----------------------|-------------------------|
| Cost obtained from 1 ton of straw nutrients | USD. | 55,0 |
| It is planned to obtain fertilizers from 1 ton of straw Only NPK: | | |
| - nitrogen | kg | 5 |
| - phosphorus | kg | 2 |
| - potassium | kg | 10 |
| Total NPK | kg | 17 |
| The price of 1 kg NPK | USD. | 11,0 |
| The total cost of fertilizers obtained | USD. | 187,0 |
| Saving | USD. | 132 |
| The level of efficiency of straw as organic fertilizer | % | 240 (2,4 times) |

Source: calculated by authors.

The results of these calculations can be argued that the proposed use and in particular making 1 ton of chopped straw directly into the soil to produce organic fertilizer saves money in the amount of 88,8 USD and increases production efficiency, particularly cereals, by 5%, and therefore a positive impact on the efficiency of land use in general.

As already noted, ground cover is a major area of valuable natural resources, so it is necessary to strengthen the protection against the negative impact of erosion, pollution and other forms of degradation.

Within Sumy region, allocated 70 types of soil, which in turn, texture and other characteristics divided into 250 soil differences. The reason for this variety and diversity of soil is primarily the presence in the region two main soil-climatic zones – Polesie, steppe and clearly defined transition zone between them.

In the soil surface Polessie area dominated by sod-podzol soils of light texture on water-glacial deposits (10.2% of the patients arable land), and the forest-steppe – typical black soil humus and their deep slaborodovani discontinuation (56%), ashed at weakened rocks and their discontinuation (22.3%).

The most fertile soil typical black areas include medium and deep heavyhumus content 3,5-5,0% of humus horizon depth of 100-120 cm, on a scale that growth class with 54 evaluation points. By soils with low fertility include sand sod-podzolic humus content of 1% and a depth of humus horizon 18-20 cm, estimate they have 9 points.

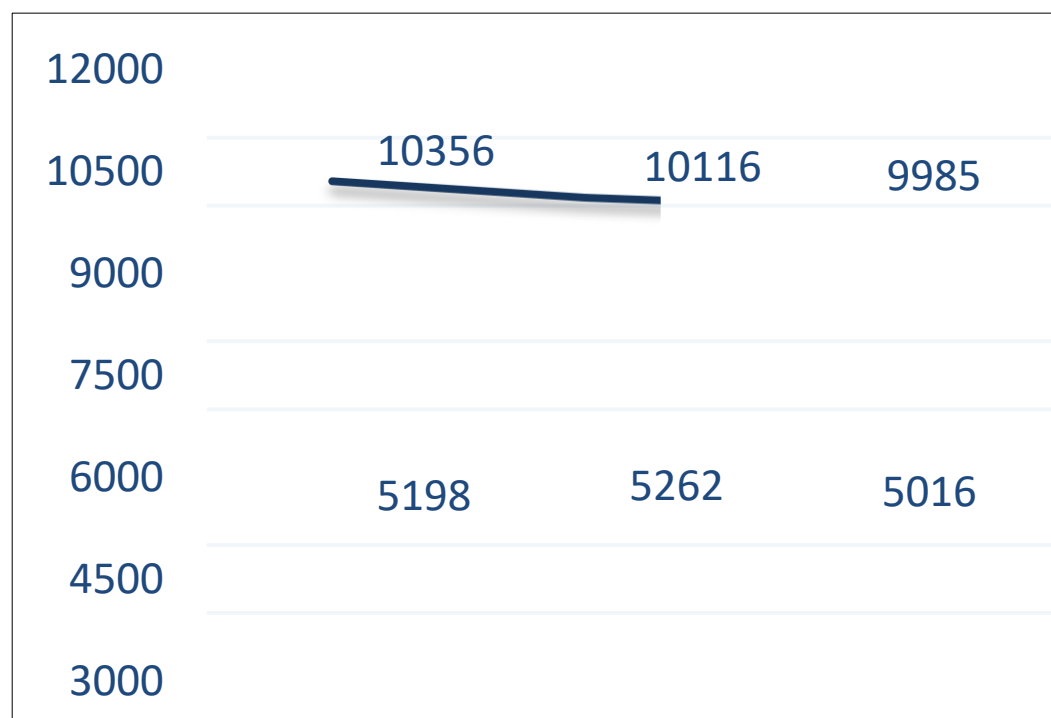
Average score soil area growth class is 39, the average for Ukraine – 41. One of the main indicators of soil fertility is the content of humus. According to the content of the earth farmland divided into groups, which areas are: 2% – 184 thousand. ha (16%); 2-3% – 215 thousand. ha (19%); 3-4% – 343 thousand. ha (30%); 4-5% – 345 thousand. ha (30%).

Thus, natural factors for agricultural production are visible. But one of the main problems is that there is no protection of land resources in the reduction of nutrients in the soil, water erosion of soil and inadequate reclamation of disturbed lands.

One reason for the low rate of this type of work is the lack of funding. In order to address the issue of reclamation should be proper allocation of funds from the state budget. It should be noted that the owners of the units need to monitor changes in the structure of sown areas through strict control over the implementation of all obligations of the tenant relating to the preservation of land fertility usage.

Reduced acreage, primarily due to the acute shortage of agricultural equipment (Figure 2).

Figure 2. Dynamics of the availability of grain harvesters and tractors of all brands agriculture in Sumy region



Source: calculated according to the data of the Main Department of Statistics in the Sumy region, consolidated forms of reporting of agricultural enterprises of the Sumy region.

Extensive farming is the main cause of erosion, deflation dehumification, wetlands and other forms of land degradation and landscapes. Most new land users have the appropriate experience and skills of agricultural activities and often appropriate education (Ruslan 2018).

The consequences of the imperfect use of equipment during work on the production of crops may be root layer of soil compaction, slow growth and development of plant roots, reducing yield by 20-30%, violation lumpy, granular soil structure, reducing their permeability. Therefore, the use of modern techniques and technologies that provide a reduction in the number of passes agricultural field and preventing the deterioration of physical and chemical properties of soils.

Modern technologies of agricultural production must ensure the fullest use of land resources as possible to reduce costs per unit of human energy yield and reduce the negative impact of crops on the environment.

Ancient Chinese farmers have come up with such an accurate statement: "mediocrities grow weeds, crop gets smart and wise cherishes earth".

The issue of effective land usage is that agricultural enterprises need to be addressed with regard to political, economic and social constituents of land relations. Indeed, depending on the conditions and results of the use of land is changing the standard of living of citizens, the future prosperity of society.

In world practice, the state's role in the efficient use of land resources and improving the quality of agricultural land is significant. In the European Union, the farmer gets 242 euros annually per 1 hectare, provided that the criteria of environmental land use is met.

The problem of land management and registration in Ukraine is made actual due to formation of the agricultural land market. The low level of land records management today does not provide accurate and reliable information for external and internal users.

The system of accounting and analytical support of the agrarian sector includes a set of information, analytical, consulting, control, and forecasting means, which are focused on the main goal – to increase the effective development of business entities in the agrarian sector.

Complex system of accounting and analytical support leads to the expansion of functional tasks in the following areas: 1) monitoring (constant analysis and assessment of the achieved level of the effective use of agricultural land); 2) development of sectoral programs, projects for the restoration of land, rural areas and assistance in their practical implementation; 3) consulting support for management processes; 4) organizational, regulatory, audit, image and other assistance in attracting investments necessary to increase the efficient land use in the agrarian sector of the economy.

Today, the total agricultural land in Ukraine is 42 million hectares. More than 50% of the total area is at temporary disposal of economic partnerships, private agricultural enterprises, agricultural cooperatives, etc. The level of efficient use of agricultural land by agrarian enterprises shows that in recent years, the agrarian sector has positive growth dynamics by most economic indicators, from the level of productivity of the main crops to the final financial performance of the industry. In 2017, the level of agrarian enterprises profitability amounted to 31,6%, while the average indicator for the Ukrainian economy is 7,4%. The share of profitable agricultural enterprises in recent years also turned out to be higher than the average for the country's economy – 88,4% (Table 4).

Table 4. Indicators of land use efficiency in the agrarian sector of Ukraine for the period 2013–2017

| Indicat or | 2013 | 2014 | 2015 | 2016 | 2017 | 2013 to 2017, % |
|---|----------|----------|----------|----------|----------|--------------------|
| Number of agrarian business entities | 47,656 | 49,848 | 46,012 | 46,744 | 45,045 | 94,5 |
| Total share in the economy, % | 13,0 | 12,6 | 13,5 | 13,6 | 14,7 | – |
| Agricultural area, thousand hectares | 41536,3 | 41525,8 | 41511,7 | 42726,4 | 42726,4 | 102,8 |
| Agricultural area of an agricultural enterprise, thousand hectares | 20499,3 | 20665,5 | 20437,2 | 20548,9 | 20746,9 | 101,2 |
| Gross value added, UAH mln | 113245 | 132354 | 161145 | 239806 | 277197 | 2,4 times |
| Gross product, UAH mln (all categories of enterprises) | 223254,8 | 252859,0 | 251427,2 | 239467,3 | 254640,5 | 114,0 |
| Net profit, UAH mln | 26787,2 | 14984,5 | 21481,3 | 102849,1 | 90160,4 | 3,4 times |
| Average net profit per 1 agricultural enterprise, UAH mln | 562,1 | 300,6 | 466,8 | 2200,3 | 2000,1 | 3,6 times |
| Share of profit-making agricultural enterprises, % | 78,2 | 79,8 | 84,1 | 88,4 | 87,7 | – |
| Average share of profit-making enterprises in the economy, total, % | 63,0 | 65,0 | 65,5 | 73,3 | 73,0 | – |
| Net profit per 1 hectare of agricultural land, UAH thous. | 1306,7 | 725,1 | 1051,1 | 5005,1 | 4345,7 | 3,3 times |
| Level of agricultural enterprises performance, % | 21,7 | 11,3 | 20,6 | 41,7 | 31,6 | – |
| Level of enterprises performance on the average in the economy, % | 5,0 | 3,9 | –4,1 | 1,0 | 7,4 | – |

Source: State Statistics Service of Ukraine.

The status of accounting in agricultural business entities indicates that land management in farms reduces to the definition and analysis of the dynamics of individual natural indicators of the agricultural land efficient use, in particular: yields of agricultural crops, coefficients of return (payback) of mineral fertilizers and costs for improving quality parameters of agricultural lands. The system of cost indicators, in particular those of value-oriented land management, remains out of sight at the present stage.

Based on the above, one should highlight the main problems that result in significant limitation of the accounting and analytical support towards full information provision of value agrarian management, namely: incompleteness of the land reform and the lack of transparent and clear mechanisms for the agricultural land value, which hinders the systematic assessment of the agrarian business value; low level of the concepts and tools of value-oriented management among the top management of agrarian entities; imperfect financial reporting in Ukraine in the context of displaying information about the status, availability and valuation of agricultural lands in the report on financial condition, which leads to a low level of analytical work in agribusinesses, lack of experts in planning, economic and analytical support of agrarian management.

Cost assessment of agricultural land remains the main problem of accounting and analytical support for land management. Establishing a full-fledged land market will promote prosperity through improved wealth status and long-term investment. In addition to the fact that the land market is a prerequisite for investments that contribute to increasing labor productivity and increasing farm incomes, investors' interest in agricultural land is increasing. According to scientists, land ownership rights increase productivity, consumer spending and land users' incomes.

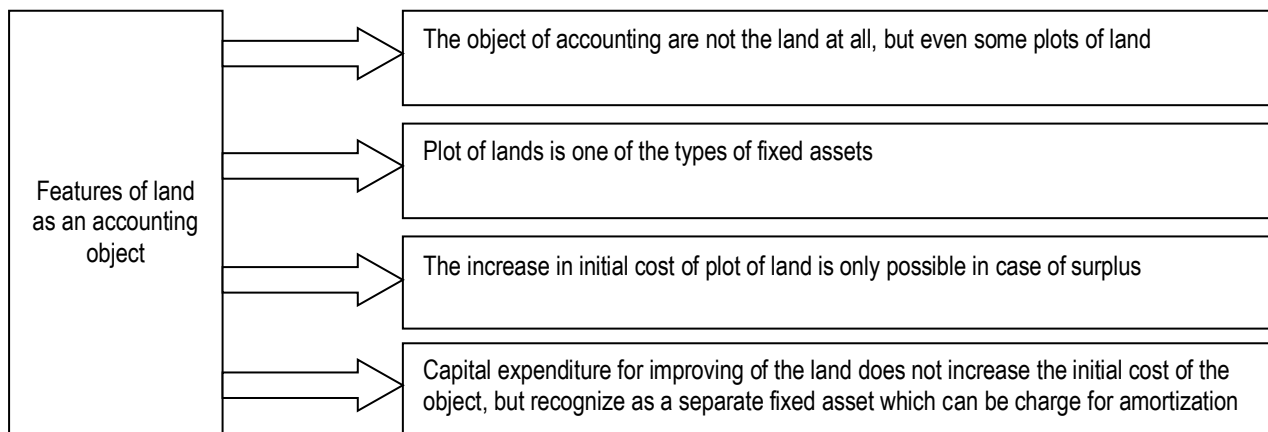
The basic law, which forms the legal framework in land relations in Ukraine, is the Constitution of Ukraine. Article 14 of the Constitution establishes that the land is the main national wealth, which is under the special protection of the state. Land ownership is guaranteed. Thus, the Constitution of Ukraine enshrines the main constitutional provisions concerning land, which are the basis for sectoral land legislation. The main legal acts regulating land accounting are the Regulations (Standards) of Accounting, which are developed by the Methodological Council for Accounting at the state level.

Accounting as a powerful information system can increase the land management efficiency at the state, region, community, and enterprise level. Solving these problems can only be provided through the recognition of the land as a specific asset and object of accounting, the implementation of legislative norms and the introduction of effective accounting and information provision of land relations. Adequate land registration at an enterprise should be carried out for multi-vector reflection of the land potential of an enterprise, which is important for its mission in attracting investments, obtaining loans, etc.

According to regulations (standards) of accounting of Ukraine, the land owned by the enterprise relates to fixed assets. As a part of the fixed assets of Ukrainian enterprises, the land appeared after the entry into force of Regulations (Standards) of Accounting 7 "Fixed assets" and IAS 16 "Fixed assets", where it was classified into two separate elements: land and capital expenditures for land improvement (Bryk, Cic'ka, Poverlyak 2017).

The Ukrainian legislation made a significant emphasis on the legal consolidation of land ownership, however, it did not ensure proper accounting of using agricultural land. This, in turn, has created significant problems for agricultural business. After analyzing the status of the legal regulation of agricultural land accounting in accordance with Ukrainian and international legal norms, the basic normative documents should be distinguished (Figure 3).

Figure 3. Features of land as an object accounting



Source: *generalized by source (Ruslan 2018).*

Based on the experience of developed countries, most scientists consider land reform as a part of Ukraine's transition to a civilized market economy. It will allow to form a transparent market of agricultural land, which will provide an opportunity to realize the constitutional rights of land owners and improve the welfare of rural residents; stop the shadow movement of agricultural land and put it in the legal framework; improve lending and investment climate in the sector; to protect soil and civilized land usage.

Conclusions

Land is the fundamental national wealth that is under special state protection. In agriculture, land is the most important economic resources, which is essential for the production process. Organizing accounting of land in enterprises should consider the main features of the land as an object of accounting. A very important issue, which appears to land accounting and land relations is improvement of the regulatory framework of the areas of accounting, which would have to be clear, understandable and accessible, especially for farmers practicing. However, neither International Standards of Accounting and Reporting, not domestic accounting standards does not have clear legislative regulation of land account with a different purpose, as well as rights to use them, refer them to the balance of businesses and organizations of different ownership. Today there are two ways of creating effective accounting methodology that would allow to attract agricultural land for economic exchange and provided coverage of priority capital value of land of companies of agricultural sector: amendments to IFRS; to develop its own industry standard.

Despite the fact that Ukraine has a moratorium on sale of agricultural land, which once again extended, the land, like any other economic asset should be reliably estimated. Land valuation is reflected in the accounting not only for the immediate implementation of civil law contracts connected with land in a market sector (purchase and sale, lease, inheritance, admission to the share capital, compulsory withdrawal), but when time calculating of land tax, in determining

the total value of the property – buildings on land, in the case of formation of investment policy and restructuring of agricultural enterprises, if economic justification for effective and efficient use of land, for insurance real estate and more. That is why monetary evaluation should be the final stage of the complex technical and economic measures to assess the assets of the company, which will allow a sufficient degree of probability to set the price of land of a certain quality. Estimated value of the land today is determined by a prescribed method of valuation of land subject coefficients of functional use. This evaluation estimated by experts of land evaluation.

Thus, the implementation set priorities to achieve development will enable efficient use of land resources, and in particular to increase their investment attractiveness; in ecological plane – to ensure environmental safety of society and social – to improve social standards.

The Ukrainian legislation has made a significant emphasis on the issue of legal consolidation of land ownership, but the level of land registration in Ukraine is low due to imperfect regulatory framework, which causes inadequate reflection of business operations in accounting and reduces the ability to reflect the entire information required for external and internal users. Depending on the way of acquiring property rights and the use, it is expedient to consider land resources in the modern accounting system of Ukraine as: the basic asset as a property; the intangible asset for use rights; the object of lease relations; the investment property. To increase analytic property and information reliability to the synthetic accounts used for land registration, it is expedient to open additional subaccounts of the second, third and fourth levels. To increase the investment attractiveness of land resources, it is necessary, firstly, to form the main promising investment objectives that would specify the strategic and tactical actions of owners and land users in attracting investment, and secondly, to build an effective management system at agricultural enterprises. This will facilitate the expansion and prosperity, as well as attracting investors and providing increased opportunities and investment inflows.

Improvement of information and analytical support for agricultural development is to create an effective system of formation, processing and transmission (receipt) of accounting and analytical data of the accounting for the timely adoption of effective decisions at all levels of the development of the agricultural sector. A specific object of accounting is agricultural land and land relations arising in the course of its use. Information base that exists today is not completely perfect and not worked; not developed primary documents reflecting the peculiarities of accounting of land, of their assessment and subsequent display on the accounts. Features of agricultural land requires to classifying them as a separate group of fixed assets and the development of specific methods of accounting and evaluation of assets and rights to use them. To ensure this requirement, it is advisable to carry out their quantitative and qualitative display by accounting regulation of agricultural land through the introduction of a separate national industry standard of accounting.

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