

AGRICULTURAL PRODUCTION AND ITS ROLE IN THE DEVELOPMENT OF THE NATIONAL AND INFORMATIONAL ECONOMY

*Natroskhvili S.G., Doctor of Economics, Professor,
Kiev National University of Technology and Design*

Abstract. The article analyzes the essence of agricultural production and its branches. A general description of the conceptual apparatus between the branches, subdivisions on which the agricultural production is divided, is carried out. The connection of agricultural production with many other branches of economy is noted. The main natural factors of placing and specialization of agriculture are investigated. The role of agricultural production as a catalyst for the development of a market economy is highlighted. The essence of the information economy is presented and its sectors are considered. The role of agricultural production in the development of the national and informational economy is revealed. The role of using modern information technologies in the agro-sphere has been highlighted. The research of main clusters of information technologies in the agrarian sector, namely, in agricultural production, was conducted.

Keywords: agricultural production, plant growing, animal husbandry, national economy, information economy, market economy, agrarian sector of Ukraine, information technologies.

In each state, in any society, agriculture is a vital branch of the national economy, since it affects the interests of every person, because the production of food is the first condition of life of the population. Agricultural production is fundamentally different from all other spheres and is a special field of the economy, a central component of the agrarian sector of the country, and it forms the basis of the food industry and some branches of light industry (textile, leather, fur). The closest human contact with the environment occurs precisely in the field of human activity, such as agriculture. The earth was, is, and, apparently, for very long, and maybe always it will be the main means of production in agriculture. While all other means of production gradually become obsolete physically and morally, replaced by others, the land not only does not lose its basic and most valuable quality - fertility, but can even increase it even with rational use. Ukrainian soils, especially black soil, are characterized by high natural and economic fertility. One third of the world's black soil fund is concentrated in Ukraine, which covers more than half of the soil of its territory. At the same time, land is both a means of production and a subject of labor. Plants and animals also act as a means of production. Land is not directly involved in the creation of a product in other branches (in industry, transport). It actually is only the space on which one or another production is placed. An important feature of agricultural production is seasonality, which is due to changes in weather and climatic conditions throughout the year. It causes unevenness in the use of manpower, production, consumption and use of material and financial resources during the year.

In comparison to other branches of the economic complex, the agricultural production is most affected by the natural conditions of the territory - climate, soil,

water. In the majority of cases, they determine the level of development and features of the industry.

The land fund of Ukraine is 60.4 million hectares, about 70% are agricultural lands, which include arable land, pastures, hayfields and perennial plantations (Fig. 1). Consequently, agricultural land is part of the land fund of a country used in agriculture¹.

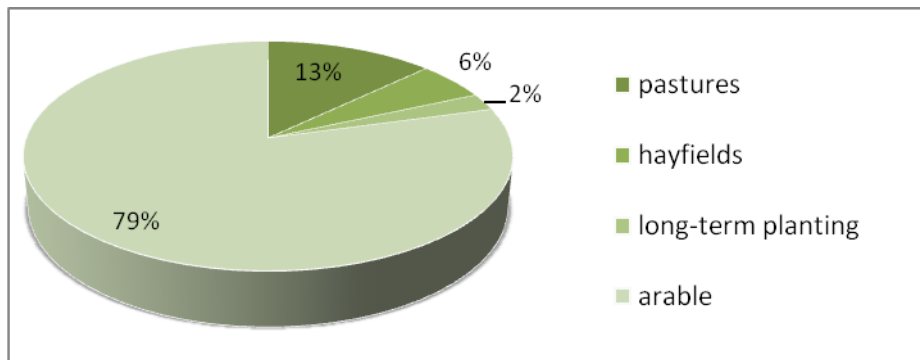


Fig. 1. Structure of agricultural lands, %

Agriculture is associated with many other sectors of the economy. Such as mechanical engineering, engaged in the production of agricultural machinery and equipment, the chemical industry, which produces mineral fertilizers, pesticides and plant protection products, and the light and food industry, which process raw materials.

Agriculture (agricultural production) - a branch of material production that deals with the cultivation of agricultural crops and the cultivation of farm animals to provide food to the population, and the industry - raw materials. It includes two interconnected large industries - crop production (also called agriculture) and animal husbandry, which are divided into smaller industries, sub-sectors, production.

Plant growing - is an agricultural sector that grows cultivated plants and produces 60% of gross agricultural output. Plant growing production is divided into arable farming (cultivating plants on arable land), growing fruit (growing perennial plantations - gardens, vineyards, patch of berries) and mowing (using and improving natural grass, creating artificial grasslands and pastures).

The cultivation is engaged in the cultivation of various agricultural plants, which by convention combine into the following groups: cereals, technical, barley, vegetable melons and fodder. In recent years, crop areas have been reduced. This is the result of the fact that a portion of the arable land is not cultivated, part of it is transferred to other agricultural lands (pasture and hayfields). Or part of the arable land is removed from agricultural use for housing construction, for the needs of industry, transport, etc. A serious problem is the transformation of fertile land into non-agricultural land, while the change in the structure of agricultural land in the direction of reducing the share of arable land is a necessary and progressive phenomenon.

¹ Географія: підруч. для 9 класу загальноосвіт. навч. закладів / Й. Р. Гілецький, Р. Р. Сливка, Я. Д. Атаманюк, Р. Д. Чобан. – Харків : Видавництво «Ранок», 2017. – 208 с.

The main branch of agriculture is the grain economy - the cultivation of food grain (wheat, rye), cereals (buckwheat, rice, millet), fodder (barley, oats, corn), legumes (peas, beans) cultivated plants. The key place belongs to the plants, which are called "three breads of mankind": wheat (giving over 40% grain), rice (almost 28%) and corn (almost 25%). However, bearing in mind the important food value, rice and corn conventionally called "bread".

Wheat is the most important grain crop, which occupies 2/5 of the area of grain crops. Winter wheat is usually grown mainly in the forest-steppe and steppe zones. In the east of these zones, where winter is mostly a small snow cover, crops of spring wheat prevail. The leaders in gross collections of wheat in Ukraine are Kharkiv, Dnipropetrovsk, Zaporozhye, Odessa, Kherson, Vinnytsia regions.

Rye is mostly grown in woodland and in the Carpathian region, where humidity is excessive, the soils are not very fertile. Rye gives lower harvests than other grains, but it is a valuable food crop.

Barley, corn and oats are used as fodder crops, but they also have important food value. Barley is grown most in the southern regions. The leading producers of barley are Odessa, Nikolaev, Dnipropetrovsk, Kherson regions. Corn - a heat-loving culture. The largest areas of corn crops are concentrated in the northern and central parts of the Steppe, in the south of the forest-steppe, where it is produced the highest yields. The country's leaders in its gross collections are Poltava, Chernihiv, Sumy, Cherkasy, Kirovograd regions. An important fodder crop is oats, its crops are mostly distributed in the woodland, because the plant is moist and is unpretentious to the soil. Areas of springberry barley and oats increase if in spring they are cropped over winter plants, destroyed during harsh winters (severe frost, lack of snow cover).

Peas (chickpeas, peas, forage lupines) are grown in the forest steppe and in woodland.

Technical cultivated plants are raw materials for industry: they are divided into fibrous fruits - flax, cotton, hemp; oil - sunflower, flax, rape, soybean; Eyelashes - cumin, mint, rose; Sugar cane - sugar beet.

The main fiber culture in Ukraine is long-stalk flax. Long-stalk flax is cold-resistant and well developed on acid soils, therefore it is considered unpretentious to the conditions of growth and is the main fibrous culture of non-black earth strip of Europe. The main crops of long-stalk flax are concentrated in woodland and in the Carpathian region (Chernihiv, Zhytomyr, Rivne, Volyn, Lviv regions), where the summer is chill and humid. In recent years, cotton growth has been restored in the southern regions of Ukraine, whose crops occupied significant areas at the beginning of the last century.

The largest areas among technical crops cultivated plants in Ukraine take sunflower and sugar beet. The largest gross collections of sunflower seeds are produced in Kharkiv, Kirovograd, Dnipropetrovsk, Zaporozhzhya, Mykolayiv and Odessa regions. Two other crop areas of export oilseeds - rape and soya - have significantly increased in Ukraine. Rape is grown in the west of the country, in woodland and in the forest-steppe. More than 50% of oil is contained in its seeds, which is used in paintwork, soap and margarine industries. Makukh (squash) is fed

to cattle. Ukraine is in top three of the world's leading exporters of rape. The main crop area of soy is concentrated in Poltava, Kirovograd, Vinnitsa, Khmelnytsky, Kiev regions, as soy needs sufficient heat and moisture. Ukraine has become the top ten world leaders in its production. More than 2/3 of the crop grown finds consumers on the foreign market, and the rest produce feed and oil in Ukraine. ²

Potato growing and vegetable growing play an important role in plant growing. The potato is a food, feed and technical culture, it produces starch and alcohol. Potatoes are grown throughout Ukraine, and its highest yields are in woodland and in the forest-steppe. For the gross collection, Vinnitsa, Lviv, Chernihiv, Kiev, Rivne regions receive the championship. Vegetable cultivation is developed everywhere, most crops - in farms of forest-steppe and steppe zones. Vegetable crops like cabbage, carrots, table beets, cucumbers, in the south - tomatoes, peppers, eggplants, onions predominate in the north and in the central regions of the country. Large areas of Ukraine are found in melon crops: pumpkins, watermelons, melons, zucchini, palisons, which are valuable food. The main area of their cultivation is the steppe (Kherson, Nikolaev, Zaporozhzhya regions). Among them, the highest proportion of annual and perennial grasses, corn, and also grow fodder root crops.

Ukraine has vast gardens thanks to its mild climate and the presence of fertile soils. Grain breeds of trees (apples, pears) are best fetched in the forest steppe and in woodland, and stone (cherry, plum, apricot etc.) are mostly in the steppe. Across Ukraine, berries are spreading, in which the currant, roes, raspberries, gooseberries and others grow. Vinnitsa, Poltava, Ternopil, Zaporozhzhya and Transcarpathia have the largest areas of gardens and berries.

Vinery grows is developed in the southern and central parts of the steppe, in the foothills of Crimea and in Transcarpathia. Grapes - heat-loving and labor-intensive culture. In the Transcarpathian, Odessa, Mykolayiv and Kherson regions, there are largest areas under vineyards are concentrated.

More than a third of the country's sown areas occupy feed crops. Fodder crops (annual and perennial grasses, fodder beets, maize on green mass, etc.) are grown in many regions of the country, but mostly - in the forest-steppe.

Ukraine is one of the world leaders in the production of walnuts (6th place). In 2017 volumes of walnuts accounted for 3% of the total world production.

Husbandry is another important agricultural sector. Husbandry is a branch of agriculture, which deals with breeding of cattle, pigs, sheep breeding, poultry farming, etc. In the structure of gross agricultural production, it is 46%. In general, the livestock task consists in the production of high-calorie foods (meat, milk, butter, cheese, eggs, fish, honey) and valuable raw materials for the food and light industry (meat, leather, wool, fur raw materials, raw silk, wax, fluff, etc.).

The development of husbandry depends on crop production, primarily on fodder production. Modern fodder production consists of field, meadow-grazing and industrial production of forages. Forage fodder production involves the cultivation

² Сільське господарство України: криза та відновлення/ За редакцією Штефана фон Крамона-Таубаделя, Сергія Дем'яненка, Арніма Куна. – К.: ГарантСервіс, 2004.- 207 с.

of forage crops, as well as the use of waste and by-products of grain, technical and other crops (straw, beetles, etc.). Meadow-grazing feed production is associated with the use of natural forage land - grassland and pastures. The industrial production of combined feed is used in the mixed feed industry. Combined feed - a mixture balanced by the content of nutrients and minerals, vitamins. On feed mills, grain and products of its processing are used as raw materials, as well as oil, sugar, meat, fish industry waste.

As a feed for animals, waste is used by the enterprises of the food industry (pulp, molasses, whey), public catering, and also food waste of the population without additional processing. In each region feed resources have their own characteristics and it is important to use them more rationally.

The most important industries include cattle breeding (breeding of cattle). Cattle breeding is a leading livestock sector and is widespread in all regions of Ukraine, most notably in Polissya and Lisostep. It gives the largest volume of livestock products - milk and meat. According to the ratio of produced products, there are several areas of specialization of cattle breeding: milk, meat, meat and milk, milk and meat.

Farms in woodland, western and forest-steppe regions produce the most milk, where there is a forage base or around big cities where there is a significant consumer of fresh milk.

Dairy and meat cattle breeding prevails in areas of intensive farming with a high proportion of crop areas of forage crops, as well as hayfields and pastures.

The meat and dairy specialization of animal husbandry has been preserved in those regions where feed calories are dominated by high-calorie feeds. These are the farms of the south-eastern parts of the arid regions (Mykolayiv, Kherson).

Meat breeds of cattle are grown in all natural areas around large centers of the food industry, the waste of which is a feed for cattle. Compared to Western European countries with similar natural and climatic conditions, the productivity of husbandry is low.

Swine breeding is on the second place after cattle breeding. The share of pork in the production of meat exceeds 40%, as well as fat, skins, bristles. It covers areas of production of sugar beet and sunflower, highly developed grains and potatoes, and in the areas of processing agricultural products and food industries, where waste of the corresponding production are used to feed pigs. In Polissya and Forest-Steppe, especially in Rivne, Cherkassy, Kyiv, Khmelnytsky, Vinnytsia regions, there are the largest concentration of pigs. The pigs have a specialty of meat-and-fat and sebum. In farms of Polissya and Forest-steppe, based on potato-and beet-condensed feeding types, meat-and-fat specialization predominates. The pronounced features of the oily direction of pig breeding in the steppe, where the high proportion of concentrates in feed is predominant.

Among other husbandry sectors we distinguish pond fish farming, silkworm, rabbit breeding, animal husbandry, and especially beekeeping. Predominantly, pond fish are engaged everywhere, breeding crucian carp, cowpea, white amur, bream, carp, and in the mountain rivers - trout.

Silkworm (breeding ravil and oak silkworms) is well developed in the steppe and partly in the forest-steppe areas.

Animal husbandry is developing in Ukraine. Fur animal husbandry is the breeding of fur animals on special farms. On specialized farms and wildlife farms, fur-fest animals breed silvery-black fox, mink, blue fox, and sodium.

Cartilage is widespread in the forest-steppe and woodland regions, which gives twice as much meat as sheep breeding.

Beekeeping begins from ancient traditions in Ukraine, which gives valuable products - honey, wax, propolis, pollen, royal jelly. By exporting honey, Ukraine ranks first in Europe and fifth in the world. However, intensive deforestation, plowing of land, the use of cheap artificial wax, and later the use of pesticides led to the decline of this industry. Now beekeeping is widespread in all regions, and most of all - in Polissya and in the forest-steppe.

The most important natural factors of the placement and specialization of agriculture are the quality of soils, the duration of free frost period, the sum of active temperatures (heat supply), total solar radiation (light supply), humidity conditions, rainfall, probability of recurrence of unfavorable meteorological conditions (drought, frost, wind and water erosion), water availability, topographical conditions of the terrain, and, to a greater extent, natural factors affect the placement of crop sectors, with one by measure, by determining the areas of their cultivation. For a number of crops (mostly heat-loving), these areas are extremely limited, for example, grapes, tea, citrus, etc. As for others – they are much wider (barley, spring wheat, potato, etc.). For husbandry placement, natural factors have less significant effects, through the feed base. The most dependent on natural and climatic conditions is pasture livestock breeding (some areas of sheep breeding, cattle breeding, reindeer husbandry, horse breeding, etc.). Here you can distinguish such factors as the presence of pastures, their size, composition of vegetation and the duration of their use.

The Polissya area occupies a zone of mixed forests and nearby areas of the forest-steppe natural zone. The Polissya agro-industrial zone has favorable conditions for the development of dairy and meat cattle breeding, meat-and-fat swine breeding, rough sheep breeding, flax growing, potato growing and grain farming.

Almost identical to the same natural zone as an agricultural area are such ones as Forest-steppe. Fertile, mostly black soil, soils and sufficient moisture contribute to the beet-and-corn line with meat and dairy cattle breeding and meat-and-fat pigs. Gardening is developed as well.

In the Steppe zone, which is almost identical to the same natural zone, fertile black soils and insufficient humidification have led to the development of the grain industry (wheat, rice, corn) and the cultivation of oilseeds, the development of vegetable growing, melons, viticulture, meat cattle breeding, pig farming and sheep breeding, as well as poultry farming.

Mountain and foothill areas have original natural conditions that affect the peculiarities of farming. In the Carpathian region, cereal crops, flax, hops, potatoes,

developed cattle and swine breeding farming are grown. In the Carpathians, sheep are grazed on the mountain valleys. Husbandry, viticulture and tobacco production prevail in Transcarpathia.

Suburban agricultural areas of Ukraine that have emerged around large cities and industrial centers specialize in growing vegetables and fruits, production of milk, meat and eggs. Specialization of suburban areas does not depend on the natural zone. Their education determines the needs of the urban population in fruit and vegetable and livestock products. Suburban agricultural areas around large cities with specialization in the production of poorly transported products were formed - milk, meat, eggs, vegetables, potatoes, and fruits.

As a result of the land reform in Ukraine in recent years, agricultural production is going through significant changes. It has been long overdue since the collective ownership of land in Ukraine has led to low productivity, depletion of soils, and so on.

A tangible fall in agricultural production volumes occurred at the end of 20th century. In the state there was an irrational structure of land and agricultural lands with a large predominance of arable land as a result of extensive farming (involving new land in circulation, raising amount of cattle, etc.).

The most important sector of the Ukrainian national economy is agriculture, which provides Ukraine with food independence and gives a significant part of the rural population jobs that is equally important. It also serves as a raw material base for the light and food industry. Demand for agricultural products is constantly increasing, as the number of urban population increases. In agriculture, as well as in other branches of social production, there is a constant development, and on this basis the efficiency of agricultural labor increases, which allows a smaller number of labor to produce more agricultural products.

Our state has a part of the world's reserves of black earth and 27% of arable land in Europe (one person in Ukraine has 0.68 hectares of arable land, while in Europe this indicator is 0.25 hectares).

Significant structural changes have taken place during the years of independence in agriculture in Ukraine, land and property relations have been rebuilt. As a result of land plots, about 7 million peasants became owners of certificates for land parcels (shares), the average size of which is 4 hectares.

Normal functioning of the entire economy of the country and the welfare of people depends on development of agricultural production. Today, more than 80% of the consumption fund is formed at the expense of agricultural products. Therefore, production of it is the very first condition for the existence of mankind.

By the beginning of 2019, the rural population of Ukraine was 30% of the total population, is also evidenced by the place of the industry in the national economy. This is not the case anywhere in Europe, as Germany, the Netherlands, France and other countries have only 5-7% of the population living in rural areas. In our country there are regions where more than 50% of citizens live in rural areas. And the largest number of rural population in the Lviv region.

In agriculture, 3.3 million people are employed, meaning 25.0% of all employed. Consumers are now spending the major part of their incomes on the purchase of food products and consumer goods made from agricultural raw materials.

For Ukraine, agriculture is especially important because it is one of the largest sectors of the national economy. This is proved by a number of important macroeconomic parameters. The most important among them is the share of agriculture in the gross domestic product of the state (GDP).

Of particular importance is the agrarian sector of Ukraine. It produces 35% of the gross product, employs 25% of the employed population in the national economy, uses 33% of fixed assets. Consequently, the development of the state economy in general largely depends on the agrarian sector and its main component - agriculture.

Ukraine has enormous potential for the development of the agrarian sector of the national economy. The harvest of grain in Ukraine in 2018 exceeded the historical maximum in 2016. The 2018 grain production record is due to a high yield of corn, which is expected at the historical maximum. In addition, for the first time recorded record figures for gross crops and yields of soybeans and sunflowers. Ukraine has cut grain exports for the first time in five years. Note that the value of goods depends heavily on the degree of their processing. Therefore, it is more profitable for the country to sell finished branded products, rather than raw materials that will be exported after processing in other countries.

An important role is played by agriculture as a catalyst for the development of a market economy. Market economy - this is one of the greatest achievements of world civilization, it is a natural environment of humanity and the interaction of commodity producers, an environment that has a certain order and self-regulation due to the action of the main law - demand and supply. In the formation of a market economy in Ukraine, this industry, given its scale, can play (and already partially plays) an extremely important role due to its specific properties:

1) As agriculture has many independent enterprises that produce the same goods, agriculture is a highly competitive industry. In the long run, the number of agricultural enterprises such as economic partnerships, agricultural production cooperatives, private enterprises, peasant (farmer) enterprises, and peasant private households may change due to the conversion of some of their types to other (for example, agricultural cooperatives in private enterprises), as well as due to the emergence of new farms. In such a large number of enterprises, each of them markets only a small share of a certain type of agricultural production from its total sales. This leads to the emergence of high competition among rural producers and at the same time puts a blindfold on any monopoly in the agrarian sector. As a result, a market environment that stimulates development in other sectors of the economy as well is created.

2) Agriculture of Ukraine in the short term may become the main source of export. This is facilitated by large-scale agricultural land use and fertile land. In conjunction with the hard work of the Ukrainian people, this brings Ukraine to one

of the leading places in the agricultural potential. In the long run, Ukraine can not only fully meet its own needs for agricultural products but also substantially increase its export potential. Thus, agriculture can and should become an industry that will play an extremely important role in the process of Ukraine's entry into the world market.

The level of development of the agrarian sector makes a significant impact on people's well-being both through providing high-quality food products to the population, and by generating income and, consequently, market demand. There is a need to use the achievements of scientific and technological progress - the transition to new methods of information provision and management of agriculture, the widespread use of automated systems and information technology to minimize costs and optimize the processes of agricultural production.

The degree of reduction of the total labor consumed per unit of production is measured by the economic efficiency of automation. More than 50 branches of the economy are connected to the agrarian sector. Information components make up to 70% of the cost of agricultural products. These components include: information processing, software development and implementation, automation of technological processes, automated control and control, implementation of scientifically based production technologies, creation of a unified information and communication infrastructure at agricultural enterprises, etc.

Modern economy is characterized by tendencies of global informatization of society. In the emerging information society, a historically new phenomenon - information economy, a science that explores information and economic activity of a person, which involves the widespread use of electronic (information and communication) technologies - is emerging. At this stage, the information economy is noticeably developed only in several countries, but some of its elements are found everywhere. So far, at the stage of development, there is the concept of the development of the information economy, as well as its main features are formed.

The following sectors of the information economy are singled out: 1) service and humanitarian; 2) informational and technological; 3) scientific and industrial.

The service-humanitarian sector is a set of industries, sub-sectors and activities whose functional purpose in the system of the national economy consists in the production, realization of services and spiritual goods for members of society. The service and humanitarian sector plays a decisive role in the formation of human capital, and also has an impact on its growth through the creation of comfortable living conditions of man.

Information technology - a set of industries, which creates a fundamentally new information (for a specific time period), as well as fundamentally new information and telecommunication technologies. The production and transformation of information as a source (from the idea in the model, technology, prototypes of the future product) takes place in the information and technology sector of the information economy. Within this sector there is the development of

technologies for structural changes in information, resulting in an increased impact on human livelihoods.

In modern conditions, science and industrial production are integrated, undergoing the process of intellectualization and cybernetization of industrial technologies. Agriculture has become a kind of industrial production, which uses scientific and industrial methods. The scientific and industrial sector creates artificial conditions for the crop production, provides production and information services. For example, special sensors for agricultural machinery, combined with software, increase the speed and quality of signal processing, turning them into information. The use of databases allows not only to find the right sort, but also to determine the sort to be created by the necessary indicators. Increasingly, within the framework of resource-saving technologies, tools for the automation of sowing complexes, which include quality control of sowing, spraying, etc., are introduced.

The information allows to economically manage all kinds of production resources. Its intensive use reduces material and energy intensity of products. Agricultural production, based on new knowledge, accurate information, turns into economically efficient, and non-waste production.

In the future, Ukraine can not only fully satisfy its own needs for agricultural products but also substantially increase its export potential.

Thus, scientific research into the field of material production allows us to conclude that Ukraine has enormous potential opportunities for the development of the agrarian sector of the national economy, as evidenced by a number of important macroeconomic parameters. Agriculture can and should become an industry that will play an extremely important role in the process of Ukraine's entry into the world market.

References

1. Географія: підруч. для 9 класу загальноосвіт. навч. закладів / Й. Р. Гілецький, Р. Р. Сливка, Я. Д. Атаманюк, Р. Д. Чобан. – Харків : Видавництво «Ранок», 2017. – 208 с.
2. Сільське господарство України: криза та відновлення/ За редакцією Штефана фон Крамона-Таубаделя, Сергія Дем'яненка, Арніма Куна. – К.: ГарантСервіс, 2004.- 207 с.
3. Sabluk P. T. Directions of reforms and innovative processes in the agroindustrial complex. Economy of agroindustrial complex. 2003. № 5. С. 150–155.
4. Ekonomika znaniy [Economy of knowledge]: [monograph] Ed. V.P.Kolesov. M.: ИНФРА-М, 2008. 432 p.