економіки, зокрема значення продукції для суспільства; характер конкуренції та кількість підприємств у галузі – як наявних, так і потенційно можливих; прибутковість галузі; темпи зростання/спаду галузі; потужність галузі; технічний рівень виробництва; технології; стандартність продукції в галузі; канали розподілу та специфіка системи збуту; оптимальний розмір конкурентоспроможного виробництва; фінансова система і вимоги до рівня кваліфікації та досвіду персоналу і можливості їх досягнення.

Загальною рисою більшості підходів, що мають на меті оцінку інвестиційної привабливості галузей, є визначення показника рівня прибутковості використовуваних активів. Як критерії інвестиційної привабливості галузей використовуються рівень їхнього розвитку, значущість для потреб національної економіки, регіональне використання.

Водночас, галузь насінництва має специфічні особливості, які також необхідно брати до уваги при оцінці ефективності майбутніх вкладень. Насамперед, насінництво – це досить ризикований вид діяльності, оскільки воно пов'язане із живими організмами та значною мірою залежить від погодних умов та стихійних явищ природи. Також існують додаткові ризики, пов'язані із впливом шкідників та хвороб, що теж слід враховувати потенційним інвесторам.

Отже, методика оцінювання інвестиційної привабливості галузі насінництва є об'ємною та багатогранною. Вона охоплює чимало розрахункових процедур, що базуються на широкому колі факторів та елементів. Тому для оцінки даної характеристики галузі варто підходити з чітким розумінням всіх аналітичних та оціночних нюансів.

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Kucher L. I., PhD
Kucher T. R., student
Voitsekhivskyi V. I., PhD
Beregniak E. M., PhD
National University of Life and Environmental Sciences of Ukraine, Kiev,
E-mail: lora_kucher@ukr.net

ELEMENTS OF PLANT NUTRITION IN ROCKS OF MINE DUMPS

During the two-hundred-year period of development of coal deposits in Ukraine, in the process of storage of the rock mass exposed to the surface, more than one and a half thousand rock dumps were formed, in which about 4 billion tons of «empty» rock mass accumulated. The process of landfilling continues to this day – about 40 million m^3 of rock is dumped annually. The problem of mine dumps is especially acute for large and small settlements of Donbas, where high dumps (tericons) have become an integral part of the landscape. Subsoil exploitation has a significant impact on the environment. Large areas of agricultural land are taken out of use, soil and forests are damaged, the hydrological regime of large areas changes and their productivity decreases, even the topography of the area and the movement of air currents change. Man-made ecotopes are characterized by the extreme degree of violation of the interrelationships of these properties and refer to specific objects on which the settlement and growth of plants depends on many factors, one of which is the state of the edaphotope. The speed of overgrowth and soil formation on rocks depends on climatic factors, on the properties of the rocks and on the nature of the vegetation.

The emergence of rock dumps is connected with the need for the development of minerals (coal) in an underground way to release and store a large amount of «empty» rock on the surface. Rock dumps of mines differ according to the type of dump formation, the method of rock transportation and taking into account the configuration of the site allocated for the dumps, the properties and composition of the rocks, and their tendency to self-ignite. A feature of the operation of rock dumps is that they are located in populated areas.

In a radius of up to 0.5 km around most rock dumps, soils and groundwater are salty and polluted, plant and animal life suffers. Burning rock dumps emit a large amount of harmful gases (CO, CO_2, SO_2, H_2S and others) and dust into the atmosphere, which exceed sanitary standards by ten times.

In Donbas, during the year, almost 4 million tons of pollutants are emitted into the atmosphere, and the dust alone contains from 2.5 to 100 mg/m^3 in the air, then from 1 to 50 mg/s of dust is blown off the unfixed surface of the tericons. Many of the dumps are burning, and this contributes to significant changes in the composition of the atmosphere and the fall of acid rain, because up to 4–5 tons of CO and up to 0.6–1.1 tons of SO_2 are released from a burning dump per day.

The ingress of water on the surface of dumps during natural phenomena (rain, melt water) leads to the migration of chemicals and compounds. For example, the conical shape of the dumps and the steepness of their slopes contribute to intensive erosion processes. From 100 to 1000 m^3 is washed off from 1 hectare of tericony surface every year. The leached rock is very toxic because pyrite oxidation increases acidity. Sulfuric acid, formed as a result of pyrite oxidation, dissolves various metals, including uranium, and they

migrate to the surrounding area. In unaltered and burned rocks, toxic elements were found, the content of which many times exceeds the MPC for soils.

The composition of substances and compounds in the surface layer of the rock dump is practically uniform and contains: manganese, copper, zinc, lead, nickel, cobalt, etc. The composition and content of elements may vary depending on the 11 geological features of the mining region. Water filtration washes out mineral compounds from the surface of dumps, gets into ground and surface waters, changing their chemical composition. At the same time, the concentration of chemical components increases relative to the background values due to their constant accumulation.

Mountain rocks have a large supply of elements of mineral nutrition of plants. This is evidenced by the gross chemical composition of coal mine waste rock: potassium 1.0–5.5%, phosphorus – 0.1–0.5%, nitrogen – 0.3–0.6%. Not all of these elements are available to plants. Available forms are formed in the process of weathering of rocks.

The soils of the adjacent territories are ordinary chernozems with medium humus on loess-like loam. The amount of absorbed bases in the rock of coal mine dumps varies between 2.75 – 13.8 mg-equiv/100 g, of dissection dumps – 4.3–18.0 mg-equiv/100 g. In all rocks, the absorbing complex is dominated by Ca^{2}+ cations , less Mg^{2}+ and a very small amount of monovalent cations (Na+ , K+, H+).

The absorption capacity of soil is almost twice as high as that of coal mine rock. The ratio of absorbed bases in the soil also differs from their ratio in the man-made substrates studied. Calcium cations in the soil exceed magnesium cations by 7 times and monovalent cations by 34 times. In coal mine dumps, this ratio varies widely. In the substrate of all investigated industrial dumps, Ca^{2}+ cations predominate in the absorbing complex (53–86%). Nutrient content: NO_3 – 0.2–1.1 mg/100 g of rock; P_2O_5 – 1.3 – 32.8 mg/100 g of rock; K_2O – 8.1 – 22.7 mg/100 g of rock, which indicates the passage of weathering processes.

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Kucher L. I., PhD
Kucher T. R., student
Voitsekhivskyi V. I., PhD
Beregniak E. M., PhD
National University of Life and Environmental Sciences of Ukraine, Kiev,
E-mail: lora_kucher@ukr.net

FORMS OF POTASSIUM IN A TYPICAL MEDIUM-HUMUS BLACK SOIL

All chernozem soils of Ukraine contain a sufficiently large total potassium reserve of 2.1–2.9%, but the main part of it is in the potential reserve, which is inaccessible to plants, but can be removed from the soil under certain conditions.

Potassium in the soil is represented by various minerals and salts. The content of total potassium in the soil depends on its mineralogical composition. Thanks to biological and chemical processes, the process of decay of primary and formation of secondary minerals takes place in the soil. With the weathering of these minerals, potassium enters the solution. But this process takes place very slowly. Therefore, in order to sufficiently provide plants with this element, it is necessary to create conditions for accelerating the release of potassium from non-exchangeable forms. Such conditions provide soil protection technologies, changing the acidity of the soil solution.

Exchangeable and non-exchangeable forms of potassium are in a certain mobile equilibrium in the soil. During the use of readily available exchangeable forms of potassium by plants, a part of non-exchangeable potassium is mobilized into exchangeable forms during weathering, as well as under the action of root secretions, which are acidic in nature.

Solving the problem of stabilizing and increasing fertility requires the development and improvement of rational systems of soil use. The latter are based on modern methodological principles of fertility management and provide, first of all, the creation of optimal parameters of soil properties and regimes.

Providing plants with potassium nutrition can be achieved by optimizing soil moisture, regulating the reaction of the soil solution, and the content of organic matter in the soil. These and other factors of availability of potassium for plants are achieved by the use of rational agricultural techniques and the optimal amount of organic and mineral fertilizers. One of the agrotechnical measures aimed at mobilizing potential soil fertility is tillage.

The study of the effect of an acid solution on the mobility of potassium in a typical medium-humus chernozem shows that H^+ (H_3O^+) are able to displace potassium cations (K^+) from the absorbing complex. In a typical chernozem with an acidity of the soil solution of 7.1, the content of exchangeable potassium is 36 mg/kg, and with the same acidification it increases by 0.07 mg/kg.

The upper genetic horizon H contained 2.30% of gross potassium, which is related to the content of dusty fractions, the composition of which is dominated by algae. The underlying carbonate loess, typical chernozem, has a slightly smaller amount of it in its composition – 1.97%.