

<https://srdcovky.nadaciavub.sk/slovaci-chceli-zmenit-banictvo-vynasli-pritom-unikatne-biohnojivo-testuju-ho-po-europe-v-dubaji-ci-na-sri-lanke-a-aj-v-strazskom/>

Slovaks wanted to change the mining industry, they invented a unique biofertilizer. They are testing it in Europe, in Dubai or in Sri Lanka and also in Strážské



September 20, 2022, Author: [Zuzana Kupcová](#), Photos: [Maja Bodnárová](#)

Slovak scientists discovered by chance that their bioleaching technology has a useful by-product: an effective biofertilizer. For the second year, they are actively testing it in various places around the world. We went to the farm in Strážský to see how fertilizer affects plants.

We walk along a hot dusty road, leading past family houses, to a farm in Strážský na Zemplín. The instructions were clear, meet at the end of the dirt road by the blueberry bushes.

Farmer Patrik Magdoško has been testing biofertilizer from Ekolive here for the second year. At the farm, we also meet Darina Štyriaková, an energetic young scientist who runs the family company Ekolive.

During last year's testing, Patrik Magdoško verified the functionality of Ekolive fertilizer on strawberries. This year, he is confidently experimenting with other crops.



We visited the farm during the melon harvest. Patrik Magdoško sells them at a self-service stand in front of his own house and uses them to make a special melon drink that is unique in the world. Even before we start the conversation, we have time to check the state of the melons in the field. The farmer praises the beneficial effects of biofertilizer on their size and sugar content.

Innovation came about by chance

The fertilizer that Patrik Magdoško buys from Darina Štyriaková's company came about by chance. Originally, the family company Ekolive dealt with bioleaching. They improved soils and minerals: extracted precious metals, removed waste, cleaned the soil. They experimented with bacteria that break down minerals and rocks and liquefy them.

They had no idea that they were producing biofertilizer. The innovation came about by accident. "Wherever we poured the liquid residue from bioleaching, tall grass started to grow and everything was green," describes Darina Štyriaková.



"We investigated what was actually happening. Our research began to be cited by agricultural journals. We realized that we can make a difference in this area."

Bioleaching is used for both gold and nickel extraction

Bioleaching is a well-known concept – not so much in agriculture yet, but rather in the mining world. It refers to the method by which approximately 20% of copper and gold are mined today outside the European Union, for example in South America and Africa. There is a bioleach plant in Finland for the extraction of nickel.

Classic bioleaching, however, takes place with the help of a type of bacteria that produces sulphuric acid. It is an ecological hazard for the environment. Although it is an economic, but definitely not an ecological mining method.



Slovaks have found bacteria that support the growth of crops

Thirty-five years ago, scientists in Slovakia began experimenting with other types of bacteria suitable for bioleaching. From the experiments of Darina's parents Iveta Štyriaková and microbiologist Igor Štyriak, a new ecological type of bioleaching was created. Darina graduated in biotechnology and geology and today runs a family business. The entire research team is composed of Slovak scientists. The company's commercial team focused on the business side is from Germany and Austria.

In the bioleaching process, bacteria are used, which release the elements and bring them into liquid form. Low-quality minerals can be upgraded and purified so that they can be used in industry. A by-product is leachate from dissolved minerals. Coincidentally, it contains important elements for agriculture, such as iron, manganese, zinc and magnesium.



The bacteria that Ekolive uses in bioleaching also support the growth of crops. About a billion of these bacteria live in one litre of biofertilizer. During bioleaching, they produce various organic acids. They have been found to have a strong biostimulatory effect on plants.

Policemen and firefighters in a bubbling operation

“People started to fear the operation of bioleaching in Slovenia. It was bubbling with growing bacteria everywhere. Suddenly we had the police, people from the Ministry of the Environment and the fire department. We were told by the ministry that we must have some paper to prove that what we are doing there is safe. Well, that's why we proceeded to register our fertilizer.”

Today, Ekolive holds the ETV certificate from the European Commission for its innovative bioleaching method, which currently only 15 companies from the entire European Union have. This means that their technology has a green guarantee and is eco-innovative. Thanks to the production of biofertilizers as a by-product of bioleaching, the company was nominated for the VÚB Foundation's Atlas environmental prize in the ECO startups category.



Fertilizer also works in Strážský

After the first large bioleaching operation in Slovenia, locations in Germany, Croatia and Dubai were added. They are testing the effect of the fertilizer in several places around the world.

"We have experienced that anyone who tries our product switches to production with our biofertilizer because they see the results right away," says Darina.

The good results of testing at the farm in Strážský can also be seen in the obviously cordial and friendly relationship with the farmer. "We have known each other since last year. I found this farm on Facebook and contacted them to see if they wanted to test. Biofertilizer has proven itself mainly on strawberries. The result was obvious, there were an average of five fruits on the control strawberries and twelve on the fertilized ones. The sugar content has increased by 150%, they haven't had anything like that here yet," boasts Darina Štyriaková.

Today, the fertilizer is tested on a wide variety of crops – from potatoes to melons, trees to various types of vegetables. The results convinced Patrik Magdošek so much that he is thinking of becoming a distributor of biofertilizer and selling it on the farm.



Vegetables, grass and cacti

"We are currently looking for sales points in Slovakia where biofertilizer can be purchased locally. We want it to be sold in stores as fresh tap fertilizer as our product is very live. The whole bottle inflates, it still works and bubbles," describes Darina Štyriaková. Sales for small consumers have already been tested and work in Croatia, where the company's partner has an e-shop.

Launching a distribution network for small consumers is not the only goal of the company. It is mainly aimed at larger farmers who grow fruit and vegetables, because the greatest effects can be seen on them. However, biofertilizer also helps cereals, flowers, lawns, even cacti.



Even though biofertilizer was only a side product in the beginning, today it is more important for Ekolive than mineral purification itself. The motivation is the chance to change agriculture, to lean towards organic crop cultivation and to minimize the use of agrochemicals.

Farmers are cautious

There are many companies on the market that are trying to produce innovative biofertilizers. Farmers say that almost every two weeks someone offers them new products, but most of them don't really work. Fertilizers must be tested first, they cannot be applied to the entire field immediately. Constantly trying new products costs them a lot of time, effort and energy. After a few bad experiences, it is difficult to convince them to innovate further.

"The life of farmers is difficult. It's hard to find someone you can convince to sacrifice their crops for some experiment that might not work. If it doesn't work out, you will lose your livelihood for the whole year," says Patrik Magdoško about the pitfalls of testing innovations.



However, he believed in the idea from the beginning. Personal experience also contributed to his desire to experiment with organic farming: "For a year and a half, my four-year-old son had all kinds of allergies and was often sick. For two and a half years, we have only been growing organically, and at home we switched to our own food. We know what we eat. Now the son can eat bread, meat, dairy products and even strawberries, which are a strong allergen. He can eat two or three kilos of them and he is fine. I see a significant difference in that."

Patrik Magdoško emphasizes the need to raise awareness that we are only as healthy as what we eat. "If our food is medicine, we won't need medicine. If food is poison, we will need medicine as our food," he concludes.