Contenido Automatizado

Medio Ambiente

SUSCRIPTORES COP16: These are three methods of regenerative agriculture being developed in the fields of Boyacá

Pilar Rodríguez oversees the harvest of 430 tons of potatoes in Toca, Boyacá.

FOTO: Juan Alejandro Motato Soto. EL TIEMPO

The project is located in the community of Toca and is led by women. The initiative comes from the World Economic Forum and aims to make life on the land more profitable and sustainable by using data science and changing traditional practices.

JUAN ALEJANDRO MOTATO SOTO
04 de octubre 2024, 11:51 A.M.
Actualizado:04.10.2024 12:09

Like a golden sheet threatening to fly away at any moment, acres of barley stretch across the low hills of Toca, Boyacá. This steep farm at the foot of a mountain is home to Colombia's first Agrifood Innovation Center. It is an initiative coordinated by the World Economic Forum to innovate agricultural practices and involves 20 farming families led by women.

Temas Relacionados

EDUCACIÓN 12:00 A.M.

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CIENCIA OCTUBRE 5 DE 2024

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(Lea esta historia en español)

María del Pilar Rodríguez, 46, is one of them. She is a mother and head of a household that grows potatoes and barley to sell to large companies in the country and to multinationals. She is the director of Asoagrotoca, a company that uses agricultural practices that combat climate change by regenerating organic matter and restoring biodiversity to degraded soils; in other words, regenerative agriculture.

The project is being developed 30 kilometers from Tunja and is being carried out in partnership with international companies and organizations. It also extends to several countries in Africa, Europe and South America. The goal is to transform agri-food systems while increasing profitability for food producers and protecting the health of soils and ecosystems using information analyzed by Bayer and Microsoft engineers.

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Regenerative agriculture can produce up to 25 percent more barley than conventional methods.

FOTO: Juan Alejandro Motato Soto. EL TIEMPO

For a community that has grown potatoes and barley in their own way all their lives, changing farming habits without the right knowledge can be challenging.

The project with these families began in 2017, when PepsiCo gave them a hectare to grow R12 potatoes - the variety used for industrial frying - and an irrigation system. In addition, the women were provided with soil data and information on how to change traditional practices. Over time, the impact was seen as soil biodiversity began to recover and soil erosion decreased. For Rodríguez and her partners, the program is about improving their quality of life and the quality of nature and the land on which they live.

COP16: The natural wealth of Valle del Cauca, a region that shines for its biodiversity

The science behind it

Amelia Willits-Smith, Ph.D. in Nutrition and Public Health, published in The Lancet that "the agricultural sector produces about a quarter of the world's greenhouse gas emissions. According to the Food and Agriculture Organization of the United Nations (FAO), these could be reduced by 48 to 66 percent with organic farming systems, which, unlike conventional systems, do not rely on synthetic fertilizers and pesticides.

For agronomist Beatriz Arrieta, Bayer's regional manager for the food value chain, the key is to "produce enough quality food" while restoring the natural elements that make it possible. She explains that regenerative agriculture starts with restoring the soil and takes off when the farmer gets more value from working the land.

To understand why the environmental impact is reduced, Arrieta points to three practices that contribute to soil health: the first is to till the soil as little as possible, which can be done with a chisel plow to replace aggressive plowing with heavy machinery. The second is to rotate crops after each harvest so that the field maintains its fertility and the microflora of bacteria and fungi that help the plants. And the third has to do with the use of agricultural bio-inputs that better nourish the crops and control pests on their own. Repeating this three-step formula produces a constant that allows engineers to analyze weather and pH data more accurately.

With the aeroclimatic station it is possible to measure temperature, wind direction and precipitation.

FOTO: Juan Alejandro Motato Soto. EL TIEMPO

It is worth noting that this type of agriculture has an impact not only on crops, but also on other sectors such as livestock, as crop residues become animal feed, and in this cycle, livestock residues end up being a reliable source of organic fertilizer. A kind of symbiotic relationship.

In addition, the impact on the health of the producers and the people who consume the final product is improved. By eliminating pesticides, both farmers and consumers are less likely to develop diseases such as asthma, cancer and Parkinson's. In her research, Willits-Smith found that healthier diets are also associated with lower greenhouse gas emissions from agricultural activities.

The land ages

Juan Sebastián Rodríguez, son of María del Pilar Rodríguez, director of regenerative agriculture, gets up every day at five in the morning to milk the cows and work on the farm. The 26-year-old has a strawberry crop that bears fruit twice a week. She is one of the 37 percent of agricultural workers in Colombia under the age of 36, according to DANE. But women make up only 16 percent of the agricultural sector, and one in three is under 36.

One of them is Paola Gutiérrez Barón, a 23-year-old music student who recently moved to a rural area. She says she has always lived in the city, but when the pandemic hit, she moved to the countryside with her family and is now learning to grow crops and generate income from her products, the fruit of a place where "I thought there were no opportunities.

Agronomist Liney Pinto helps measure the quality of potatoes leaving the fields for the industry.

FOTO: Juan Alejandro Motato. EL TIEMPO

Sebastián Rodríguez says the biggest challenge for many young farmers today is getting their own land to work, and most of them do not have the financial resources: "To produce one hectare of potatoes, you need at least 20 million pesos. If you don't have the technology, the knowledge of more experienced producers, and the financial support, starting your own business is a risky bet.

In Colombia, two out of five farmers are over the age of 45. According to DANE, in 2023 an agricultural worker earned an average of 838,244 pesos per month, a figure below the minimum wage. This is worrying considering that 87 percent of the sector does not contribute to any pension fund.

This profit contrasts with the economic benefits of Toca's women farmers, who are assured that their potato and barley crops will be bought at a fixed price, regardless of drought, frost or price fluctuations. For example, they receive between 1.8 and 2 million pesos per ton of barley.

According to Alejandro Martínez, co-founder of the organization Planeta Rural, the average age of farmers in Boyacá is 55, which could lead to food security problems within a decade due to a lack of producers. "If young people don't find stable opportunities in their areas, they will want to leave," he notes.

With the calm demeanor of someone who knows his business, Miguel Antonio Moreno, 59, knows from experience that it is also about booms and crises. Sometimes drought and frost are the biggest threats to his crops, wiping out months of work.

Another challenge for farmers is to avoid relying on middlemen to buy their produce, because they often do not get a fair price and lose the investment of months of work. In addition, they often invest their time and money in a single product that requires special care.

In this regard, regenerative agriculture involves practices that give farmers more options and allow them to better optimize these resources. Although the cost of bioinputs is borne by farmers, Moreno acknowledges that moving from planting grass for cattle to applying techniques in potato and barley fields is a step forward.

But in a country like Colombia, expanding the Agrifood Innovation Center project nationwide means overcoming challenges such as a lack of training and access to technology. It is also not enough to replicate Boyacá's methods, as each region requires different resources depending on its geography and culture. For now, support to sustain this project depends on a five-year agreement between the World Economic Forum and the Bioversity & Ciat Alliance, and it is expected to be extended to other departments.

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Editor's note: *This text is an artificially intelligent English translation of the original Spanish version, which can be found here. Any comment, please write to berdav@eltiempo.com*