

A new project has found ways to identify combinations of microbes that could boost plant growth and crop yields from the second seeds are planted.

With the objective of producing higher yields and making the growing process more efficient, the project is developing algorithms to specifically target bacteria that would help plant seeds grow.

Technology being developed would infuse plant seeds with bacteria to create sustainable, efficient growing processes, according to the Chilean research team called Andes.

The chief science officer of Andes Felipe Aquea told FreshFruitPortal.com that the team currently investigates bacteria in research labs with the goal of finding the right microbes to

"We have around 2000 isolated bacteria that have been harvested from places from California all the way to Antartica," he said.

There are microorganisms that have the capacity to store nitrogen found in the atmosphere and use it for plant production.

Things like tolerance to environmental stress, disease and pests are critical elements that the group is looking for as it continues looking for the right mixture.

So, what the group is doing is "using these organisms to see how they interact with the biosphere (their environment) and the plants themselves".

"We are developing algorithms to predict the possible combinations of bacteria that would perform better than others," said Aquea.

Particularly in the context of global warming, the bacteria technology's impact on preventing the effects of drought will be critical as well.

"If we are able to cultivate crops that require less water, we could plant in more arid regions," he explained.

Such has serious implications for the future of sustainable agriculture and global food security.

Right now, the technology is in the process of being patented so that in the future, seeds can be mixed with this bacteria to aid them in the field.

"Our business is located in the U.S. and Chile. In Chile we have the research labs and later, we will scale and certify our product in the U.S.," he detailed.

In the next year the group hopes that it will have its test runs done in Chile and will soon move on to scaling the innovation in the U.S.

"We expect that within this year or next we will have a product that is validated and commercialized."

Focusing on the sustainability aspect of the new product and the benefits it brings to the industry, Aquea told us that the story of agriculture is what has motivated work like theirs.

"In the past 30 to 40 years, agriculture has achieved a lot - thanks to the use of chemicals, herbicides, fertilizers, etc. - and that has helped crops meet their maximum yields."

However, this doesn't come without its tradeoffs. Aquea said that "this high performance in yields also brings erosion and causes the earth to be worn down and contaminated".

"On the other hand, there are a lot of reports that suggest that certain microorganisms create even better potential for plants through the use of biological-based vegetal-hormones," Aquea explained.

And this problem of efficiency without compromising sustainability can be solved from the very beginning of the process, he went on to say. With, for instance, nitrogen, it's important that plants are efficient from the moment that they are put into the soil.

With this concept in mind, the Andes team wanted to create a clean-focused, nitrogen-boosting alternative to ensure plants find the most efficient, productive path possible without harming the earth.