MIT News: Cognizant's AVP, Evolutionary AI, Co-Authors Study on the Future of Agriculture

Excerpts from MIT News' article:

"What goes into making plants taste good? For scientists in MIT's Media Lab, it takes a combination of botany, machine-learning algorithms, and some good old-fashioned chemistry.

Using all of the above, researchers in the Media Lab's Open Agriculture Initiative report that they have created basil plants that are likely more delicious than any you have ever tasted. No genetic modification is involved: The researchers used computer algorithms to determine the optimal growing conditions to maximize the concentration of flavorful molecules known as volatile compounds.

In the PLOS ONE study, co-authored by **Risto Miikkulainen**, the MIT team set out to demonstrate the feasibility of their approach, which involves growing plants under different sets of conditions in hydroponic containers that they call 'food computers.' This setup allowed them to vary the light duration and the duration of exposure to ultraviolet light. Once the plants were full-grown, the researchers evaluated the taste of the basil by measuring the concentration of volatile compounds found in the leaves, using traditional analytical chemistry techniques such as gas chromatography and mass spectrometry. These molecules include valuable nutrients and antioxidants, so enhancing flavor can also offer health benefits.

All of the information from the plant experiments was then fed into machine-learning algorithms that the MIT and Cognizant teams developed. The algorithms evaluated millions of possible combinations of light and UV duration, and generated sets of conditions that would maximize flavor.

Moving beyond flavor, the researchers are now working on developing basil plants with higher levels of compounds that could help to combat diseases such as diabetes. Basil and other plants are known to contain compounds that help control blood sugar, and in previous work, John de la Parra, an author of the study, has shown that these compounds can be boosted by varying environmental conditions."

Click **here** to read more.

https://news.cognizant.com/2019-04-03-Risto-Miikkulainen-Co-Authors-Study-on-the-Future-of-Agriculture