PS Solutions: IoT and AI for smart farming

From left to right: Drs. Norio Yamaguchi, Kyosuke Yamamoto, and Takashi Togami (PS Solutions)

PS Solutions, a SoftBank Group company that develops and provides IT solutions, has developed e-kakashi for agriculture ("*kakashi*" is the Japanese word for scarecrow). The company intends to further develop this system that collects data as an agricultural IoT solution so that it will become fully capable of analyzing collected data using AI to guide and eventually automate crop cultivation.

Dr. Norio Yamaguchi, a fellow at PS Solutions, says, "Data plus analysis make it possible to grow crops without relying on experience and intuition. Data analysis plus AI will make it possible for the system to determine, for example, when to open or close vinyl greenhouse windows and how much to open them and automatically do so, instead of farmers personally opening or closing the windows based on data."

For this, however, the amount of data stored by e-kakashi is "still insufficient for fully operational output, although it has data on 85 million counts," says Dr. Kyosuke Yamamoto, senior chief engineer at the Agricultural Science Lab of the company's Critical Process Systems (CPS) Business Division. Opportunities for data collection are few and far between in the case of rice growing, for example, since it takes place only once or twice a year. For this reason, PS Solutions is also conducting R&D to establish methods that enable efficient learning with a small amount of data by combining machine learning and plant science.

Regarding the company's future orientation, Dr. Takashi Togami, director of the Agricultural Science Lab says, "We want to propose cultivation methods that are optimal for different kinds of plants and for each stage of growth. We hope to accomplish this by combining scientific knowledge with data on the growth of plants." The company is thus actively collecting and analyzing differences between its proposals founded on botanical science and actions actually taken by farmers based on their experience and intuition. By learning such findings with AI, PS Solutions hopes eventually to realize AI that can replace experience and intuition.