

Joint Press Release

Kassel/Germany, December 18, 2019

Innovative technology for agriculture

Cooperation between K+S and the Spacenus start-up

Preventing crop failures by using a smartphone to detect a plant's nutrient deficiency at an early stage: The Agricultural Nutrient Assistant (ANA) from Spacenus is designed to support farmers in fertilizing plants according to their needs. K+S and Spacenus, a start-up company based in Darmstadt, have agreed to work closely together in developing this digital technology in the area of precision farming

ANA combines smartphone and satellite images to indicate the current nutrient supply of cultivated plants. Artificial intelligence (AI) is used, which evaluates satellite images and calculates differences within a field generating a nutrient map. This provides information on the supply of plants with the nutrients nitrogen, phosphorus, potassium, sulphur and magnesium. With this information, farmers and consultants can plan the appropriate amount of fertilizer according to demand and variability, and prevent damage to plant growth.

The AI developed by Spacenus identifies the supply status of a plant by analyzing smartphone photos. Tests on wheat plants, currently being carried out by K+S as part of the cooperation at the IAPN research institute in Göttingen, provide important data for the AI used to train and test the models. This project envisages cooperation for an initial period of two years.

"We expect this innovative technology to have a decisive advantage over our competitors in agricultural application consulting in the future," says

Alexa Hergenröther, CEO of Europe+ Operating Unit at K+S. "We are very much looking forward to the joint development of ANA with Spacenus".

"In K+S, we have found a particularly strong cooperation partner. Our visions with regard to more efficient fertilization in agriculture are a perfect match. The development of our algorithms is being significantly advanced by K+S and its partner institute IAPN. Our project really benefits from the commitment of K+S as well as from the excellent cooperation between our two teams," says Lionel Born, co-founder of Spacenus GmbH.

Since 2017, the development of ANA has been funded by the European Space Agency ESA and the German Aerospace Center DLR.

Pilot project of the ANA prototype in 2020

ANA is already being tested in agricultural applications for the 2020 fertilizer season. Up to 60 farmers and agricultural consultants can currently register as pilot participants. The findings of the pilot project will be measured using various indicators - both agronomic and for handling the tool - and will be published in a final report at the end of 2020.

Note

Ready-to-print press photos on this topic are available on our [website](#).

About Spacenus

Spacenus is a tech-startup based in Darmstadt. We combine artificial intelligence with satellite images with the aim of meeting the challenges of feeding a growing world population. The world depends on agriculture as the basis of life. Growing population figures, changing climate conditions and new environmental regulations call for new, digitally supported solutions. Spacenus develops digital products that address today's agricultural challenges. Our tools use powerful satellite data and artificial intelligence to create analyses and guidance for agriculture. We help both farmers and businesses improve the quality and accuracy of their decisions. For an overview of Spacenus solutions and the team, please visit www.spacenus.com.

About the IAPN

The Institute of Applied Plant Nutrition (IAPN) acts as an interface between science and industry, taking up current practical issues, bundling existing knowledge and disseminating new findings to agricultural practice. The IAPN is a so-called public-private partnership between the Georg-August-Universität Göttingen and K+S Minerals and Agriculture GmbH. This cooperation will result in advantages for all parties involved. Resources are bundled effectively and the dialogue between research and practice is intensified. More information can be found at www.iapn.de.

About K+S

K+S considers itself a customer-focused, independent minerals company for the Agriculture, Industry, Consumers, and Communities segments and wants to grow the EBITDA to € 3 billion by 2030. Our more than 14,000 employees enable farmers to provide nutrition for the world, solutions that keep industries going, improve daily life for consumers and provide safety in the winter. We continually meet the growing demand for mineral products from production sites in Europe, North and South America as well as a worldwide sales network. We strive for sustainability because we are deeply committed to our responsibilities to people, environment, communities and economy in the regions in which we operate. Learn more about K+S at www.kpluss.com.

Your contact persons

K+S:

Michael Wudonig
Phone: +49 (0) 561 9301-1262
michael.wudonig@k-plus-s.com

Spacenus:

Janine Neuf
Telefon: +49 (0) 6151 6290964
j.neuf@spacenus.com