



Joint News Release

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BASF Digital Farming and VanderSat first to offer access to scalable, daily biomass images unimpeded by cloud cover

- **Biomass image service to be integrated with xarvio™ FIELD MANAGER and available in North America by March 2021**
- **Farmers gain daily access to reliable, highly accurate biomass images derived from satellites**
- **Consistent crop growth monitoring enhances agronomic decision making**

RESEARCH TRIANGLE PARK, NC, January 25, 2021 – BASF Digital Farming GmbH, in cooperation with VanderSat, will be the first company globally to offer the agricultural industry access to scalable, daily biomass images derived from satellites and unimpeded by cloud cover. The two companies have signed a commercial agreement, which will integrate VanderSat's innovative, fully operational *Cloud-free Biomass* product with BASF Digital Farming's market leading xarvio™ FIELD MANAGER solution. The technology is expected to be available in North America by the end of March 2021.

Using the technology via xarvio FIELD MANAGER, farmers will get daily access to high quality, consistent, cloud-free biomass images. Faster access to biomass images enables consistent monitoring of crop growth and leads to enhanced agronomic decisions. This optimizes crop production, saves time and money and supports on-farm sustainability efforts through enhanced application efficiency of crop inputs.

Collaboration to transform farming

Cloud-free Biomass is the result of close collaboration and testing by xarvio and VanderSat teams across the last two years. The new product was successfully tested in Germany, Ukraine, United Kingdom, Canada and Brazil. It has a high spatial resolution (10 meters x 10 meters) and provides a single, consistent metric of crop biomass. This allows farmers to compare the performance of several fields over a large area, or in different growing seasons.

Expertise delivering a reliable, daily measure of crop biomass

Integrating three different satellite products together, Cloud-free Biomass uses VanderSat's patented retrieval method for passive microwave technology along with active microwave from the European Space Agency's (ESA) Sentinel-1 satellite, and optical images from its Sentinel-2 satellite. VanderSat then uses its expertise in remote sensing to interpret the output from these data sources to provide a reliable, daily measure of crop biomass.

Biomass images unimpeded by cloud cover

In some parts of North America, biomass images are significantly obstructed by cloud cover. At times it can take more than two weeks to receive a "clean" biomass image, which by then is usually outdated because crop conditions have changed.

Cloud-free Biomass images are available daily and offer significant benefits. Unlike Normalized Difference Vegetation Index (NDVI) biomass images from satellites, which are not available on cloudy days and only measure spectral greenness, Cloud-free Biomass also measures biophysical parameters and water content in vegetation to

continually and accurately calculate all stages of crop growth during the entire growing season.

Jeff Spencer, xarvio Global Technology & Data lead, BASF Digital Farming, commented: “Giving farmers quicker access to reliable, quality biomass images provides greater oversight and helps to reduce risk by ensuring any required action can be taken almost immediately. We are confident Cloud-free Biomass will be well-received by xarvio FIELD MANAGER customers and the agricultural industry.”

“As a launching partner, xarvio has given VanderSat the opportunity to develop a state-of-the-art product that perfectly matches farmers’ needs. The launch of the Cloud-free Biomass product is a major step forward for VanderSat on the way to a fully-fledged proposition for the agricultural market. It is now possible to monitor crop conditions continuously through a globally available operational service”, said Arjen Bakker, Director of Agri, Food and Commodities at VanderSat.

For more information, please visit www.xarvio.com.

About xarvio Digital Farming Solutions; a brand by BASF Digital Farming GmbH

xarvio is at the forefront of the digital transformation of agriculture, optimizing crop production. xarvio offers digital products, based on a global leading crop model platform, which deliver independent, field-zone-specific agronomic advice that enables farmers to produce their crops most efficiently and sustainably. xarvio products SCOUTING, FIELD MANAGER and HEALTHY FIELDS are being used by farmers in more than 100 countries. xarvio FIELD MANAGER is used by 39,000 farmers (total area of more than 4 million ha) in 15 countries, and xarvio SCOUTING is used by more 3.4 million farmers and consultants. For more information please visit xarvio.com or any of our social media channels.

About BASF's Agricultural Solutions division

With a rapidly growing population, the world is increasingly dependent on our ability to develop and maintain sustainable agriculture and healthy environments. Working with farmers, agricultural

professionals, pest management experts and others, it is our role to help make this possible. That's why we invest in a strong R&D pipeline and broad portfolio, including seeds and traits, chemical and biological crop protection, soil management, plant health, pest control and digital farming. With expert teams in the lab, field, office and in production, we connect innovative thinking and down-to-earth action to create real world ideas that work – for farmers, society and the planet. In 2019, our division generated sales of €7.8 billion. For more information, please visit www.agriculture.basf.com or any of our social media channels.

About BASF

BASF Corporation, headquartered in Florham Park, New Jersey, is the North American affiliate of BASF SE, Ludwigshafen, Germany. BASF has more than 18,800 employees in North America and had sales of \$18.4 billion in 2019. For more information about BASF's North American operations, visit www.basf.com/us.

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 117,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €59 billion in 2019. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at <http://www.basf.com>.

About VanderSat

Unmatched water data. Satellite observed. VanderSat is a leading provider of global satellite-observed data, products and services over land with a special emphasis on water and crops. We give our customers essential insights into soil and crop conditions by applying our mathematical expertise to raw data from a constellation of satellites from several space agencies including ESA, NASA, and JAXA. Crucial for your business is our use of passive microwave technology. This enables us to offer highly accurate measurements of soil water content and crop status, unhindered by cloud cover or darkness. As specialists in obtaining accurate and relevant data, we understand every aspect of the data we provide. This is the key to the invaluable service we offer our customers. Obtaining reliable and up-to-date information on water availability and crop health is more important than ever. Extreme weather, rapid population growth and rising demand are making food and water security among the most pressing global challenges we face. We believe satellite observation has a crucial role to play in combating the food and water crisis, now and in future. We believe that only highly accurate measurements of soil water content and crop conditions, unhindered by cloud cover or darkness, will enable you to make the right decisions. We believe that the key to delivering vital data, is to understand the significance of every last detail of it.