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FARMING SMARTER, NOT HARDER

A FARMER'S LOT IS NOT A HAPPY ONE. FORTUNATELY, GEOSPATIAL TECHNOLOGIES ARE HELPING TO MAKING THEIR LIVES EASIER

Farming is not an easy job. Whether working on a small-holding in Ghana or on a large Mexican megafarm, your days will be long, full of hard work and probably not well paid. The elements may be against you, with gruelling weather not just your enemy but the enemy of your crops and animals. Even the animals might be against you, eating your crops or blocking your roads.

Whatever you do to counter your problems might make things worse. Having problems with insects? Sure, you can spray your crops with pesticide, but that can damage the environment and can be expensive. Want to buy bigger, better machinery to make your life easier? No problem, until you start accidentally running over animals that are hiding in your fields.

Fortunately, geospatial technologies can help to alleviate at least some of the difficulties and this issue we look at some of the newest and most innovative. GNSS and satellite communication technologies have been used for many years in Germany, half the land of which is dedicated to approximately 285,000 farms. But a gap exists between the potential of information derived from satellite imagery and its application in practice.

Satellite imagery can provide valuable information for crop management and precision farming. It also offers a perfect overview of field developments and high and low yielding zones. However, until now, this information was mostly available only to experts, since the collection and analysis of data were costly and complicated.

On page 28, Knut Hartmann looks at a new project designed to offer German farmers the benefits of the latest advances in satellite imagery: AGRO-DE. This aims to overcome existing barriers and bridge the gap between satellite data processing and storage, and integrate them into farmers' practice. The objective is to showcase the benefits of up-to-date, spatial information derived from satellite imagery and improve farming efficiency and sustainability.

An insect species that cause a significant amount of damage to food crops, especially in Africa, Asia, Australia and the Middle East, is the locust. The largest swarms of locusts can consume more than 100,000 tonnes

of crops each day – enough to feed tens of thousands of people a year.

Grasshoppers on their own do not constitute a problem, but a small amount of overcrowding can trigger swarming, turning a population of solitary grasshoppers into a marauding mob of locusts with a ravenous appetite attacking vegetation and crops.

On page 30, Lena Nietbaur reports on Foresight Crops, a predictive analysis platform that uses multi-temporal Earth observation satellite data combined with crowdsourced information, historical records and weather data to model the forming conditions for insect swarms that are detrimental to crops. Advance knowledge of insect infestation activity can enable early, targeted and effective use of pesticides or organic mitigation techniques. This protects farmers against loss of income and earnings due to damaged crops, and reduces the costs of pesticide control and other management activities. Reducing the amount of pesticide also benefits the environment and thus the public.

Meanwhile, on page 40, Jakub Karas discusses how a team in the Czech Republic is using UAVs to locate lost drainage systems and even save animals' lives, as well as map crops. An underground drainage system constructed in the previous century sits under most Czech farms without farmers knowing it even exists and there are no documents or maps showing where it is. As well as helping to reveal the locations of these missing pipes, UAVs armed with thermal imaging systems can also map out where animals such as deer may be hiding in fields, to prevent them from being hurt before harvests.

All these projects are designed to be simple and cheap, enabling them farmers to save money and do less work. Truly, geospatial technology is the farmer's friend.

I hope you enjoy the issue and that it inspires you in your own work.

If you have a comment or wish to express your views on anything in this issue or in the world of geospatial information, then please email me at robertbuckley@geoconnexion.com with Letter to the Editor in the Subject line. Please start your email with Dear Editor and the chances are your letter will appear in the Letters to the Editor page