Leibniz Centre for
Agricultural Landscape Research
(ZALF)

10.07.2018

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Advance warning system via cell phone app:

Avoiding extreme weather damage in agriculture

Long droughts, heavy rainfall, hailstorms, cold and late frost – extreme weather events cause substantial damage in the agricultural sector. Researchers at the Leibniz Centre for Agricultural Landscape Research (ZALF) are investigating in a new project to what extent such extreme weather events can be better predicted and damage prevented or limited.

The aim of the project funded by the Federal Ministry of Food and Agriculture (BMEL) is to develop an extreme weather monitoring and risk assessment system (EMRA). As a first step, specific risks for agriculture, such as crop failures or soil erosion, are to be analysed and thus better assessed through the systematic recording of actual extreme weather events and their damage. The main focus is on the consequences of hail, cold and late frost, waterlogging, heavy rainfall, drought and heat. In the case of waterlogging and heavy rainfall, immediate risks to the ecosystem are investigated and local management measures derived from these. These are intended to prevent soil fertility from being endangered by erosion, for example, and to prevent adjacent ecosystems from being polluted by pesticide and fertiliser inputs. Based on two model regions and cultures, Apple in the Altes Land (Lower Saxony and Hamburg) and Winter wheat in the Uckermark (Brandenburg), a system is being developed during the three-year project in cooperation with project partners and agricultural enterprises, that provides practical decision-making aids for short to long-term extreme weather management. "An important component here is the development of suitable communication channels", says **Dr. Detlef Deumlich, agricultural engineer at ZALF**.

"Therefore, in addition to an Internet platform, an app for mobile devices is also being developed to support farmers and fruit growers with their daily decisions."

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Further information can be found at: http://emra.julius-kuehn.de

Winter wheat field after heavy rainfall: erosion and loss of yield due to waterlogging – the EMRA project collects reports of damage to agriculture caused by extreme weather conditions. The image is released for editorial reporting purposes provided the source of the image is given: © Detlef Deumlich, ZALF. Image source in colour and print quality: http://www.zalf.de/de/aktuelles

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Project partners:

- Julius Kühn-Institut (JKI), Federal Research Institute for Cultivated Plants, Institute for Strategies and Technology Assessment, Kleinmachnow
- Deutscher Wetterdienst (German Weather Service - DWD), Centre for Agrometeorological Research, Braunschweig
- Leibniz Centre for Agricultural Landscape Research (ZALF), Muencheberg

Enterprises:

- DELPHI IMM GmbH, Potsdam
- proPlant Agrar- und Umweltinformatik GmbH, Muenster

Subcontractors:

- Obstbauversuchsring des Alten Landes e.V. (Fruit-growing research group of the Altes Land - OVR), ESTEBURG – Fruit-Growing Centre, Jork;
- State Office for Rural Development, Agriculture and Land Consolidation (LELF) Brandenburg, Plant Protection Service, FGL Risk and Control Management, Frankfurt (Oder)

Gefördert durch:

Bundesministerium für Ernährung und Landwirtschaft

aufgrund eines Beschlusses des Deutschen Bundestages

About the Leibniz Centre for Agricultural Landscape Research (ZALF) in Muencheberg, one of the institutes of the Leibniz Association:

ZALF's mission is to scientifically explain causal relationships in agricultural landscapes, and to provide society with a knowledge-base for the sustainable use of agricultural landscapes through excellent research.

Unlike natural landscapes, agricultural landscapes are shaped by their use and their users. The research at ZALF therefore comprises the social demands placed on agricultural landscapes and the effects of their use. ZALF has been increasingly concentrating its research on the Grand Societal Challenges relevant in the context of agricultural landscapes, such as climate change, food security or the protection of biodiversity.