

MEDIA INFORMATION

Leibniz Institute for Farm Animal Biology

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LEIBNIZ INSTITUTE
FOR FARM ANIMAL BIOLOGY

Are there sustainable solutions in dealing with dwindling phosphorus resources?

Scientists in Dummerstorf set out in the European research project ERANet PEGaSus on the search

After nitrogen, phosphorus is the second most important mineral and an essential building block for all living organisms in agricultural cycles, be it fodder plants, livestock or crop growing. Natural resources are shrinking and will dry up in the foreseeable future. For this reason, research has been under heavy pressure for years on the efficient use of this valuable raw material, and for some years now also the Leibniz Institute for Farm Animal Biology (FBN) in Dummerstorf as part of the Leibniz Science Campus Rostock is involved. Another major research project in this area worth 2.0 million euros and running for three years has been granted to the FBN: "ERANet PEGaSus".

"For about three years now, we have been investigating intensively on making more efficient use of the limited resource phosphorus in modern livestock farming," said FBN director and project manager Prof. Klaus Wimmers. The coordination of the international project "ERANet PEGaSus" is an excellent opportunity for our institute to advance our scientific work in an interdisciplinary consortium and to extent our research as a partner in the DFG research group "P-Fowl", which was also recently established. We are looking for sustainable solutions for the future use of phosphorus."

With the world's growing population, demand for phosphorus as a fertilizer and feed additive is steadily increasing by 2-3% per year, while the reserves of today's exploitable deposits are limited. The great public interest in phosphorus is also due to its environmental problems, for example, when ecosystems such as the Baltic Sea are heavily polluted by phosphorus seepage via liquid manure discharge. It is therefore also important to find ways of effectively recovering and reusing phosphorus. "We must develop basic strategies to use the valuable raw material more sparingly and efficiently," emphasized Prof. Klaus Wimmers. "This concerns the feeding, fertilization and recovery of phosphorus from the environment."

What shall ERANet PEGaSus achieve?

PEGaSus stands for "Phosphorus Efficiency in Gallus and Sus Scrofa", i. e. bridging the gaps in the phosphorus utilisation chain in chicken and pigs. The project is part of the European Research Network for Sustainable Animal Husbandry ERA-Net SusAn (European Research Area **NET**work on **Sustainable Animal Production**). Cooperation partners in the PEGaSus project are the Agri-Food and Biosciences Institute in Northern Ireland/United Kingdom, the Aarhus University in Denmark, the University of Piacenza in Italy and the Stockholm Environmental Institute in Sweden.

“As part of the project, we want to describe an efficient and consistent use of phosphorus in the circular economy of agriculture”, explained Wimmers. Farm animals such as laying hens or pigs should use the vital nutrient phosphorus in the best possible way. Animal studies in the FBN on pigs and chickens are designed to find ways of optimising the phosphorus utilisation chain in order to reduce the use of minerals in feed.”

In a first step, the research partners are focusing on the old fodder plant Comfrey, which is said to make phosphorus in the soil highly bioavailable.

In addition, the researchers are looking for ways to better exploit the genetic potential of phosphorus uptake and storage. For this purpose, it is necessary to gain in-depth knowledge of how phosphorus is processed in the digestive tract of animals. The scientists are also investigating the extent to which there is an interaction between the phosphorus supply and the immune system, i. e. the animal's health and well-being.

Since the experimental animal-based data at the FBN are the basis for both bio-economic modelling and possible recycling approaches for phosphorus, reliable results are expected in three years' time. “We are confident that we can make a contribution to increasing phosphorus efficiency in animal husbandry within the framework of this interdisciplinary and European cooperation.”

#BACKGROUND

Phosphorus is vital

The continuous availability of phosphorus is vital for all organisms. If an adult person consumes less than 0.7 grams of phosphate per day in food over a longer period of time, he or she develops deficiency symptoms, especially growth disorders such as problems with bone and tooth formation. Furthermore, phosphorus plays an important role in the efficient development of the immune system due to the interrelationship between cells of bone grafting and degradation and immune cells maturing in the bone marrow. Currently, more than 17 megatons of phosphorus are produced per year, mainly in Morocco, China, the USA, South Africa and Jordan. Germany is almost entirely dependent on imports from other countries.

Leibniz ScienceCampus Phosphorus Research Rostock

In Mecklenburg-Western Pomerania, the Leibniz ScienceCampus Phosphorus Research Rostock has been working on the problem of phosphorus since 2014. The state of Mecklenburg-Western Pomerania, the University of Rostock, the Leibniz Institute for Catalysis in Rostock (LIKAT), the Leibniz Institute for Farm Animal Biology in Dummerstorf (FBN), the Leibniz Institute for Baltic Sea Research Warnemünde (IOW), the Leibniz Institute for Plant Genetics and Crop Plant Research in Groß Lüsewitz (IPK) and the Leibniz Institute for Plasma Science and Technology (INP) in Greifswald are participating in this interdisciplinary research network.

further Informations

<http://pegasus.fbn-dummerstorf.de>

www.wissenschaftscampus-rostock.de

www.era-susan.eu

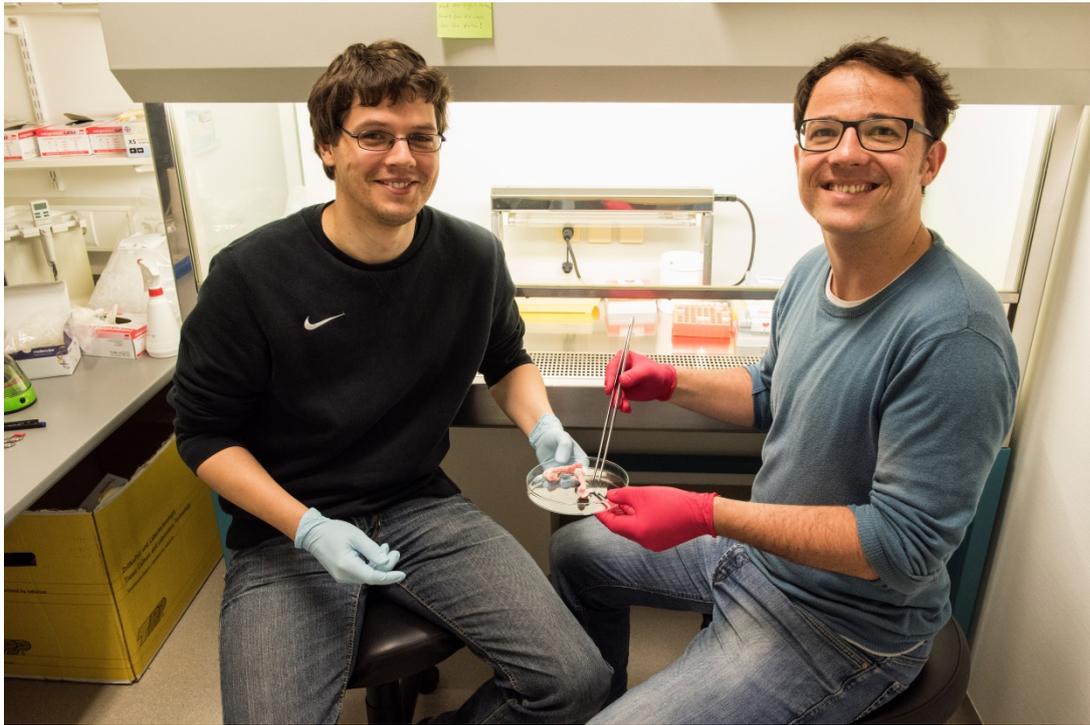


Photo: FBN/Borowy

Dr. Henry Reyer and Dr. Michael Oster (right) belong to the research team at FBN, which is looking for solutions to the problem of limited phosphorus resources.

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www.leibniz-gemeinschaft.de

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