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AgroDataCube and AGINFRA+: Operationalising Big Data for Agricultural Informatics

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Big Data methods and tools are becoming widely adopted by the ICT industry and create new opportunities for data intensive science in the agro-environmental domain. However, Big Data adoption is still in its infancy for Agricultural Information Systems, and many barriers still exist for wider use of big data analysis in agricultural research. Besides, essentially collections of Big Data for agriculture are currently largely missing, lowering the possibilities to use big data analytics based on machine learning techniques for agriculture. The AgroDataCube (agrodatacube.wur.nl) strives to break through this lock-in situation by providing a reference data warehouse for working with a number of large spatial open datasets, relevant to agriculture, to researchers, practitioners and industry. It is developed and tested iteratively by promoting it in a number of FarmHacks, hackathons that specifically target the use of open data and open source in the agro-environmental domain. Furthermore, two possible Use Cases for more data-driven agriculture will be explored in the AGINFRA+ (plus.aginfra.eu) European research project. AGINFRA+ is the testbed sister project to e-ROSA (erosa.aginfra.eu), a project defining a roadmap for the use of e-Infrastructure in agricultural research. A use case on crop modelling will explore the use of virtual research environments (VREs) and cluster computing for crop simulation, while the other use case will look into crop phenology estimation and prediction. The Agro-Climatic Modelling VRE of AGINFRA+ also offers generic Data Science tools to agronomists, such as RStudio and Jupyter (Python) Notebooks, combined with an online workspace and generic collaboration and data sharing tools. This presentation will give an overview of the ongoing work on AgroDataCube and AGINFRA+, describe bottlenecks encountered so far and paths taken onto enabling these exciting new possibilities for Agricultural Informatics.