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Appendix

Improving access to research outcomes for innovation in agriculture and forestry: the VALERIE project

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Appendix Table 1. A minute with *ask-Valerie.eu*

John and Mary operate a dairy farm in Wales, Britain. Ten years ago they switched to organic farming. Demand for 'organic milk' is high, and the farm is doing well financially. However, as organic farmers they avoid herbicide use. In recent years, the common grassland weed 'broad-leaved dock' has proliferated and grassland productivity is declining. The pastures look really untidy. John and Mary plan to revert to conventional farming unless they can solve the dock problem. Then ... they read in Farmer's Weekly about ask-Valerie.eu. They fire up a web browser, create an account, enlist as organic dairy farmers, and give the location of their farm. Having completed this, John types "control docks" and hits the Search button. The ensuing search goes far beyond what could be achieved with a simple web search for "dock", or with a wiki or OrgEprint approach. This is because ask-Valerie.eu knows that "dock" is one of the common names for the species Rumex obtusifolius*. Thus, ask-Valerie.eu not only searches for dock, but also for synonyms ("sorrel") and "Rumex", as well as for the common names of this weed in six other languages. It even searches for "grassland weed" because ask-Valerie.eu knows that docks are typically found in grassland. Knowing that its client is a dairy farmer, ask-Valerie.eu will rank high the results that relate to dairy farming, particularly to dairy farming in Wales. Thus, John and Mary retrieve highly relevant results: annotated literature, practical end-user notes, fact sheets, messages harvested from social media. What's more, ask-Valerie.eu knows other farmers who have queried for dock control, and offers to establish contact via email, Facebook, or LinkedIn. Similarly, ask-Valerie.eu knows advisers and research institutes who list dock/sorrel control as one of their areas of expertise. Even a Hungarian supplier of an automated dock control vehicle is identified. Key people are shown on a map. John and Mary begin to feel overwhelmed, but then read about Martin, a fellow dairy farmer in Scotland who is very active on social media. ask-Valerie.eu shows that Martin's comments are highly appreciated by colleagues. Mary sends him an instant Facebook message, and gets an immediate reply: next week Martin will demonstrate his own innovative dock control method on his farm in south west Scotland. Not the nearest neighbour, but John and Mary decide to make the trip. Chances of John and Mary continuing to farm organically have just improved considerably.*

Appendix Table 2. Example mini-factsheet *Application of air sampling in early plant disease detection*.

Theme
Crop rotation, soil cover management and integrated pest management

Sub-theme
Pest monitoring and detection

Description of the innovation
Many plant diseases reproduce and spread through spore production and release. Since it has been shown that there is a correlation between the amount of spores and disease pressure, disease monitoring by spore traps/ airborne sampling has been developed as an early plant disease detection method. Many innovations in the development and use of air sampling devices have occurred in plant pathology since the first description spore trap (capture efficiency improvement, automation of sampling, wireless reporting of results). Air samplers have to be coupled to detection methods, which are mostly DNA-based nowadays. Since these techniques improve rapidly, costs become affordable and the methods more efficient (fast disease identification) and economically viable.

Issue
Plant disease monitoring

Projects
(ENDURE) European Network for the Durable Exploitation of crop protection strategies
(PURE) Pesticide Use-and-risk Reduction in European farming systems with Integrated Pest Management

Literature sources
William *et al*., 2001; Luo *et al*., 2007; Nieuwenhuizen, 2011; Savage *et al*., 2012; West, 2012; Parker *et al*., 2013; West, 2013; Meitz-Hopkins *et al*., 2014; West, 2014; West and Kimber, 2015.

Appendix Table 3. Example mini-factsheet *Wastewater reuse in short rotation plantations.*

Theme
Water management in agriculture and forestry

Sub-theme
Use of non-conventional water in agriculture

Description of the innovation
Wastewater reuse in short rotation plantations can be seen as an attractive process, combining biomass production with wastewater reuse and purification. Non-food/non-fodder crops have a high demand for nutrients and water, which may be met by reusing pre-treated wastewater, enabling sustainable nutrient recycling and water saving. The woody biomass produced can be used as a renewable and clean source for heat and power generation, or for further processing into liquid biofuels. The wastewater reuse in short rotation plantation is not popular in all the European countries often because of legislation, since in many countries wastewater quality standards for wastewater reuse in short rotation plantation are the same as for other crops.

Issues
Fresh water saving in irrigated agro-forestry land-use systems
Reduction of economic costs for bioenergy production
Phytotechnology for the agricultural wastewater treatment alternative to conventional treatment systems
Reduction of mineral fertilizers

Projects
(BIOPROS) Solutions for the safe application of wastewater and sludge for high efficient biomass production in Short-Rotation-Plantations
(SRCplus) Short Rotation Woody Crops (SRC) plantations for local supply chains and heat use
(WACOSYS) Monitoring and control system for wastewater irrigated energy plantations
(UBENEFIT) Utilization of wastewater for fuel and fodder production and environmental and social benefits in semi-arid peri-urban zones of sub-Saharan Africa

Literature sources
Dimitriou, 2005; Larsson *et al*., 2007; Hänel, 2008; Dimitriou and Rosenqvist, 2011; Dimitriou *et al*., 2012; Dimitriou and Aronsson, 2015.

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