



Improving farm resource management

Dr Dharma Hagare from the School of Computing, Engineering and Mathematics has received funding from Dairy Australia Ltd., and partnered with other organisations* to improve the effluent management system of dairy farms to maximise the resource recovery cycle. Dr Julian Fyfe has joined the project as a post-doctoral fellow.

‘Resource efficiency is a key component of a dairy farm’s productivity and longevity’, explains Dr Hagare. ‘Resources, in the form of water and nutrients, cycle between the pasture and the herd – as the cows eat the grass their manure fertilises and promotes grass growth. But, more than 10% of cow manure collects in the dairy shed, rendering it useless to the pasture. Maximising the return of nutrients into the pasture is essential to improving farming productivity, and is economically and environmentally good practice.’

‘Dairy sheds are flushed clean with fresh and recycled water and the resulting effluent stream can be put to good use through active nutrient recovery,’ describes Dr Fyfe. ‘However, effluent handling is complicated by the high concentrations of manure solids, and water is a limited resource. We are aiming to improve the effluent and nutrient management systems by developing a new framework, testing the performance of this approach, estimating the amount of nutrient recycling required, and undertaking a sustainability analysis. We will investigate a novel two-pond effluent treatment and distribution system which will improve nutrient recovery while simplifying manure solids handling and reducing fresh water use through stormwater harvesting.’

The research will involve monitoring the two-pond effluent management system of two farms – one retrofitted with improvements and the other to act as the control. Both farms will be monitored in real-time.



A range of parameters will be examined including temperature, pH, salinity, physical and chemical parameters, micro-organism levels and flow measurements.

A decline in farm productivity is costly to both farmers and consumers. An improved effluent management system developed through this research is expected to enable dairy farmers to better manage their nutrient recycling and manure solids handling practices within the farm. It should also reduce fresh water demand and the quantum of pollutants entering the water ways, producing benefits to the broader water supply catchment.

Project Title: Increasing Dairy Farm Productivity through Stormwater Harvesting, Resource Recovery and Recycling

Funding has been set at: \$300,000

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September 2015

***Partner organisations:**

WaterNSW

South East Local Land Service



Department of
Primary Industries