



## Improving the nitrogen use efficiency of varieties

*A range of research activities are underway looking at nutrient inputs and efficiency, and this is being complemented by further research into varietal differences with nitrogen use.*

Research is underway to better understand whether nitrogen use efficiency (NUE) can be used as a trait in the breeding program.

Growers already have observations from the field about different varieties being more efficient users of nitrogen, and this new research project is looking to capitalise on those observations with data and create useful outcomes for sugarcane growers and millers.

The project is called *Licence to farm: nitrogen use efficient varieties to meet the future environmental targets*, and is led by SRA Leader for Trait Development, Dr Prakash Lakshmanan.

The project has three main components. The first is testing a range of clones in glasshouses at the University of Queensland (UQ) for their NUE to see if there is genetic variability. This work is currently underway, with early indications that there is significant variability.

The second component of the project is to take those observations from the glasshouse and test them in the field.

“These two components of the project will allow us to identify potential elite clones and then take them further as breeding material to create better varieties, or deploy those clones as varieties to more nitrogen sensitive areas of the industry,” Prakash said.

The third component of the project, which has not yet started, is to develop a system for screening potential varieties for their NUE by using unmanned aerial vehicles (UAVs).

These UAVs, also known as drones, use sophisticated cameras and processing software to assess potential varieties in an efficient and reliable way. This process is in development as part of other research activities at SRA.

All this could eventually lead to improved NUE information on new varieties, such as from the online variety decision tool, QCANSelect®.

Prakash said that NUE continued to be a critical topic for the Australian sugarcane industry, so this project had significant potential to add to the profitability, productivity and sustainability of the industry.

More information on this research will continue to be communicated to the industry through SRA publications and events.

### Project details

#### Key Focus Area

**Optimally adapted varieties, plant breeding and release**

#### Project name

Nitrogen use efficient varieties to meet the future environmental targets

#### Chief investigator

Dr Prakash Lakshmanan