Stellenbosch students for young researchers awards

Two Master's in Engineering students from Stellenbosch University, Yasmin de Raay and Chris Erasmus, have advanced to the international round of the 2025 Blue Sky Young Researchers and Innovation competition.

Projects by two Master's in Engineering students from Stellenbosch University, Yasmin de Raay and Chris Erasmus, have impressed the Paper Manufacturers Association of South Africa (PAMSA) for their originality and relevance to the forestry sector, which play a key role in producing wood and paper.

Managed by the International Council of Forestry and Paper Associations (ICFPA), this competition seeks projects from researchers under 30 years of age who are working in forest-based science; products using wood, pulp or paper as a raw material; process improvements; or any other innovations that involve the forest sector value chain.

As first and second place winners in the South African competition, Erasmus and De Raay were awarded R15 000 and R10 000, respectively. Their projects will now be judged against those from the United States, Canada, Europe, and Australia. An international panel will select the top three global finalists who will then present their projects at the ICFPA CEO Global Roundtable in May 2025 in New York.

"As a sector that has for decades centred around the renewability of wood, both of these projects offer significant value for forestry companies by enhancing sustainable forest management and improving crop yields," says Jane Molony, PAMSA executive director. "This in turns supports the sustainable supply of wood into the pulp, paper, and sawn timber industries."

Innovative Solutions in Agritech and Forestry

Both submissions focused on the monitoring of aspects of tree health, which plays a critical role in tree resilience and resource optimisation by using technology to capture and analyse data continuously and remotely.

Erasmus, who is completing a Master's in Electrical and Electronic Engineering, has developed a wireless dendrometer and environmental sensing system tailored for the forestry industry. This solar-powered device tracks with precision tree growth patterns, water dynamics, and environmental stressors such as temperature, humidity, and soil moisture. It offers a cost-effective, low-maintenance solution, reducing the need for human intervention while ensuring consistent accuracy and reliability.

"Our dendrometer allows seamless, real-time monitoring of trees' daily growth variations, using advanced technology to overcome the limitations of traditional analogue systems, which are prone to noise and interference," notes Erasmus.

De Raay is pursuing a Master's degree in Industrial Engineering, specialising in agritech, with a strong focus on integrating technology and nature conservation. "My honours and master's theses both focus on agritech, and through my work in the open-air eucalyptus laboratory, I've had the opportunity to apply engineering to sustainable forestry," she explains.

Her project introduces a mini rhizotron system designed to remotely monitor root growth and dynamics in forestry plantations. By using machine learning techniques and capturing microscopic images of roots, this system provides continuous, cost-effective access to vital root growth data, even in remote field settings, improving resource optimisation without sacrificing quality.

"We are excited by this ingenuity, which not only highlights South Africa's scientific talent but also has the potential to make a meaningful impact in our sector," concludes Molony.

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Left: Erasmus, who is completing a Master's in Electrical and Electronic Engineering, has developed a wireless dendrometer and environmental sensing system tailored for the forestry industry. Right: Yasmin de Raay is pursuing a Master's degree in agritech, with a focus on integrating technology and nature conservation.

"Through my work in the open-air eucalyptus laboratory, I've had the opportunity to apply engineering to sustainable forestry," says de Raay.