

NEWS RELEASE

Shipping container farms - How UP is revolutionising mushroom growing in SA



Research assistant Justin Clayton and Dr Nazareth Siyom in the shipping container that was turned into a small-scale mushroom farm.

PRETORIA - Research by the University of Pretoria (UP) is helping South African producers find new ways to grow white button mushrooms sustainably – including a project aimed at growing white button mushrooms in repurposed shipping containers.

“Many people think of mushrooms as a luxury item, without realising that they are a superfood packed with nutrients and represent a good alternative to meat products,” says [Prof Lise Korsten](#), who leads mushroom studies in the [Plant Pathology](#) Research Group of the [Faculty of Natural and Agricultural Sciences](#) (NAS) and is co-director of the [Department of Science, Technology and Innovation/ National Research Foundation Centre of Excellence in Food Security](#).

“Biting into a freshly picked mushroom has the same crunchiness, earthy volatiles and unique taste as biting into a freshly harvested apple,” she adds. “Eating fresh mushrooms is healthy, fun and good for you.”

Prof Korsten explains that a private investment company is funding a new cycle of mushroom-related research at UP. The focus is on developing innovative technologies to replace the use of peat (an organic material often used in mushroom cultivation), and to find new solutions for developing, testing and commercialising transportable, small-scale mushroom farming units. Efforts also aim to prevent disease outbreaks in such units through best practices, integrated control and early disease diagnosis.

“This unique concept could offer future small business operators the opportunity to produce mushrooms for their community and sell locally, thereby supporting the national mushroom industry to expand production volumes and provide people with an important food source,” Prof Korsten said.

Current projects build on expertise previously developed through funding in previous years from the [South African Mushroom Farmers’ Association](#) (SAMFA). During this period, the concept of a small-scale production unit, patented alternatives to peat, and a disease diagnostic service for the industry were developed. The disease diagnostic programme, MushDrops, was extended to include the monitoring of bacterial and fungal diseases on farms and provide farmers with advice on how to continually improve their production systems.

For the current funding cycle, Prof Korsten’s team has partnered with a composting company and growers to upscale the programme. They aim to prove that white button mushrooms can be grown productively under controlled conditions in repurposed shipping containers.

Tapping into existing research

[Dr Nazareth Siyoum](#) of UP’s Department of Plant and Soil Sciences, who is co-principal investigator of the Mushroom Research Project, is thankful that existing expertise on growing mushrooms is once again being tapped into. Dr Siyoum’s previous research focused on the monitoring of the microbial ecology of casing material and mushrooms.

Existing infrastructure is also being reused, such as a container production unit conceptualised around 2010 but never commercialised because of a lack of funds.

Mini-farm project feeding needy students

As an extra bonus, fresh mushrooms being produced in a fit-for-purpose mini-farm in a shipping container are being donated to UP’s [Student Nutrition and Progress Programme](#) (SNAPP) – an initiative that supports students in need.

“SNAPP aims to address the short-term food needs of students who experience food insecurity while they wait on bursary and other payouts. Our help improves their overall well-being and ability to focus on their studies,” says SNAPP project coordinator [Bhaviksha Ramouthar](#) of UP’s [Department of Student Affairs](#).

She adds that donations from various sources, including companies, currently allow SNAPP to provide 375 UP students with daily meal credits at [TuksRes](#) food outlets. Bi-monthly food parcels containing non-perishable items are also distributed.

“Contributions such as the donated mushrooms are invaluable. They allow us to include nutritious fresh produce in the food parcels we distribute to students placed on our programme. It helps us to better support the health and well-being of our students,” she says. “The collaboration between various departments highlights the importance of a unified approach in tackling food insecurity and promoting student success.”

Looking beyond peat

Dr Siyoum says that different agricultural waste products are again being tested in search of homegrown, sustainable and commercially viable casing mediums as viable alternatives to peat.

Peat, a scarce natural resource, is found in wetlands and moors and is made up of decayed plant matter. To curb its unsustainable use, authorities identified peat as a major environmental priority for biodiversity and natural resource protection and stopped its mining in 2007, Dr Siyoum explains. South African producers have since imported peat from Europe, with a subsequent impact on the price of fresh mushrooms. To help restore degraded peatlands, new European Union regulations about the mining and exporting of peat from Europe for horticultural use are expected by 2026, with the aim of phasing out its use completely by 2030.

Harvesting for good

Those involved in the SNAPP mushroom project say it is a bonus to know that their research endeavours are also helping UP students meet their nutritional needs and complete their postgraduate studies.

“During our first harvest, we picked around 18 kilograms of mushrooms, or four picking crates full. We expect bigger harvests during the next round,” says research assistant Justin Clayton, who oversees the day-to-day running of the mini-farm.

“When it was realised how much fresh produce could be harvested, we decided that the excess should not go to waste but be put to good use. It is a privilege to support existing projects such as SNAPP in their efforts to help UP students. Our students are, after all, the engines of this institution,” says Nokwazi Mtsweni, coordinator of the Faculty of Natural and Agricultural Sciences’ [RETHINK@NAS](#) transformation initiative, through which the food donations were made.

Ultimately, Prof Korsten says, “We hope to help grow a new generation of consumers that will love fresh mushrooms and thereby support our local mushroom farmers.”

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ABOUT THE UNIVERSITY OF PRETORIA

The University of Pretoria (UP) is one of the largest contact and residential universities in South Africa, with its administration offices located on its Hatfield Campus in Pretoria. This 115-year-old institution is also one of the largest producers of research in South Africa.

Spread over seven campuses, it has nine faculties and a business school, the [Gordon Institute of Business Science](#) (GIBS). It is the only university in the country with a [Faculty of Veterinary Science](#), which is ranked the

best in Africa. UP has 120 academic departments and 92 centres and institutes, accommodating more than 56 000 students and offering about 1 100 study programmes. It has the most academic staff with PhDs (70%), NRF-rated researchers (613).

The 2025 Times Higher Education subject rankings placed UP first in South Africa in the fields of [Accounting](#) and [Finance](#); [Architecture](#); [Electrical and Electronic Engineering](#); Law; Sport Science; and Veterinary Science. UP's Faculty of Law has been ranked as the top law school in Africa for a remarkable eighth consecutive year.

Quacquarelli Symonds (QS) ranked the University among the top five in Africa, as part of their [2024 World University Rankings \(WUR\)](#). UP was the only South African university featured in the [2023 World University Rankings for Innovation \(WURI\)](#), falling within in the 101-200 range of innovative universities.

For more information, please go to www.up.ac.za