

University of Pretoria tackles food insecurity

While many South Africans fret over the current drought and the resulting rapid increase in food prices, food insecurity is not a new challenge for impoverished households across the country

Food security is not only determined by a country's ability to provide affordable food to its population, it also takes into account whether there is sufficient household income to sustain a well-balanced diet, the food choices and behaviours of individuals as well as their overall nutrition.

Environmental factors such as water scarcity and climate change may constrain the production of food while political unrest, a struggling economy and a weak exchange rate may affect food prices.

The Institute for Food, Nutrition and Well-being (IFNuW), a virtual organisation hosted by the University of Pretoria, seeks to address these challenges with a network of over 100 experts from related disciplines, all dedicated to finding innovative and practical solutions to the complex problems related to food insecurity in South Africa and the rest of the continent.

Headed by Founding Director Professor Sheryl Hendriks, the strategic research focus was first conceptualised in 2010 by the university's Vice-Chancellor and Principal, Professor Cheryl de la Rey. As part of the University of Pretoria's 2025 Strategy, it established Institutional Research Themes (IRT) that would address complex societal issues and improve the university's research output and international positioning.

Food insecurity was identified as one of five IRTs and Dr Hendriks was recruited to assist in developing a proposal with a team which was led by the deans of the four founding faculties – Education, Health Sciences, Natural and Agricultural Sciences and Veterinary Science. The team was given a year to develop a proposal and was provided with seed funding of R10.5-million for three years. This funding initiated 20 collaborative projects.

"The support and funding we've received from the university have been overwhelming. The development of this IRT is unique in that many of the research projects are interdisciplinary. Different departments and faculties often compete against each other as the budgets allocated to them is dependent on research outputs. But, with strong leadership, we are now seeing teams of people from different fields excited to work together. Through the development stages, we had identified the underutilisation of research capacity; researchers are often dispersed and unaware of what other researchers are doing. The IFNuW plays a critical role in addressing these gaps," says Professor Hendriks.

Responsible for consolidating and co-ordinating research, Professor Hendriks views the role of the institute in achieving a critical mass of work as important in leveraging a bigger impact on society. Through the organisation, Professor Hendriks and the leadership team provide



Founding Director Professor Sheryl Hendriks

essential services to researchers – involving anything from linking researchers and marketing, to assisting with funding proposals.

"By joining researchers together, we assist in finding the cohesion between their respective fields. Not only do they have grasp the bigger picture, but the university's footprint becomes more visible. Often researchers working independently have difficulty answering the 'so what?' question. What's the relevance of their research? We [the leadership team] help them answer the question and this has generated a high level of enthusiasm within the various research themes," she says.

Research conducted through the IFNuW is focused around five strategic research themes, applying science to solving issues related to producing more food in sustainable ways, food safety, exploiting the health-promoting properties of foods to improve nutrition, influencing what people eat and investigating the impact of policies on food security.



“While these interdisciplinary projects provide opportunities for scientists to engage, exchanging information and expertise with one another, the institute also provides them with a platform to engage with both the government and society. It is important to pay special attention to the practical applications of their research, and how this research can solve real-life everyday problems.”

Alongside the University of Pretoria’s IRT on Food, Nutrition and Well-being, the IFNuW co-hosts the Department of Science and Technology and National Research Foundation (DST/NRF) Centre of Excellence in Food Security with the University of the Western Cape.

The DST/NRF Centre of Food Excellence was created in 2014 to assess three aspects of food security, namely the impact of government programmes, the interface between local and global domains and individual food choices. Together with the 20 projects working under the IRT, the University of Pretoria hopes to use the combined research to break new ground.

One of these programmes, the Micronutrient Nutrition Research Programme, hopes to address a number of critical micronutrient problems

faced by many South African families. According to Prof Hendriks, zinc, iron and vitamin A deficiencies are a common occurrence, particularly in young children.

“The programme works closely with communities, looking for new ways to improve how the body absorbs these micronutrients. The research team are also looking at locally produced fruits and vegetables to see how the nutrients in these foods can be enhanced to meet communities’ needs. There’s also the economic factor to consider, and it comes down to getting more from their food at a lower cost,” Professor Hendriks says.

Another aspect of the programme looks to address the current testing methods for zinc and iron deficiencies which currently rely on drawing blood, and a team of experts is working towards alternative methods that are more affordable and non-invasive.

“Current testing can be quite a frightening experience for children and sometimes adults too. This method is also expensive and time-consuming, and the need for a new test has become essential. For me, there is nothing more exciting than facilitating research like this, where this research team is not only breaking new ground but also giving

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The IFNuW Leadership team



Prof John Taylor: Lead researcher for the IRT programmes on improving health and micronutrients



Prof Lise Korsten: Lead researcher on food safety for the IRT and DST/NRF CoE



Prof Naushad Emmumbux: Lead researcher on the DST/NRF CoE programme on food processing



Prof Johann Kirsten: Lead researcher on the DST/NRF CoE programme on markets and livelihoods



Prof Hettie Schönfeldt: Lead researcher for the IRT on biofortification for the IRT



Prof Ronél Ferreira: Lead researcher on the IRT programme on changing consumption behaviour



Ms Anjanette Haller-Barker: Lead researcher for the IRT programme on Food Law



Mrs Lorraine Makena: Programme Coordinator



Elizabeth Mkandawire (PhD candidate) and Dr Nokuthula Vilakazi, lead person for science communications

our students an opportunity to work on very practical solutions to very common problems.”

Professor Hendriks, who has a PhD in Agriculture economics, is also working with government to assist with documenting policies on food security. According to her, South Africa has over 70 national programmes in place to deal with food security, but many have proved ineffective.

“While government appears to be doing so much to address food security, these programmes have had little impact. The occurrence of childhood stunting, which refers to the significant impairment of a child’s growth due to malnutrition of either the child or the mother when she was pregnant, hasn’t decreased despite numerous efforts by government. Childhood stunting may lead to poorer cognitive and educational outcomes in later childhood and adolescence, and this has significant educational and economic consequences,” she explains.

“We need to look at the current policies in place and ask ourselves, ‘are these policies delivering?’ What government needs is a comprehensive approach. There is a great divide between what officials in various departments understand food security to be, and what people on the ground experience in reality. We need to educate people on the real meaning of food security.”

In this regard, Professor Hendriks believes that South Africa has a lot to learn in terms of how we manage our resources, with special regard to how South Africa is positioned to deal with an emergency situation, as highlighted by the recent drought.

“We assume that we are food secure, but we need to ask: Do we have enough grain? Can we import if needed? How will the current drought affect overall food intake? Will households be deprived of essential nutrients beyond staple starches? There seems to be a refusal by government to take serious action, and there are many political factors that contribute to food security. For government, there seems to be a concern that declaring a state of emergency for the country would reflect poorly

on them when, in reality, climate change is completely out of their control. Putting appropriate measures in place will benefit all in the longer-term,” says Professor Hendriks.

“We also need to look at the reliance of South Africans on purchased staples such as maize and bread. Most of our policies are focused on smallholder and household subsistence, but national statistics shows that only 16% of households participate in agricultural production. Maize and bread are staple foods here and most people prefer refined purchased maize. In a recent study, we found a heartening amount of subsistence farming in the Eastern Cape, KwaZulu-Natal and Limpopo, and while there was an improvement in their diets, they are only able to benefit from their own produce in the summer months.”

Food insecurity, however, does not only apply to a lack of food but includes micronutrient deficiencies as well as issues such as being overweight. Obesity is a growing concern, yet it is not only linked to poor food choices but also to poverty. While roughly 40% of food is wasted during harvest in Africa, Europe sees 40% of their food lost post-supermarket purchase.

“In most countries food security is delegated to a single department –often relating to agriculture– but governments worldwide need a more comprehensive approach in order to effectively deal with these problems,” she says.

Having achieved great success so far, the IFNuW will in the near future tackle a number of additional research domains. One of the bigger topics covers biofortification, which will involve looking at indigenous vegetables and how they can be strengthened, in terms of their nutritional content.

“We’re looking at creating superfoods through selective–or cross-breeding, in order to create more nutritious food. We also want to get a better understanding of the bioavailability of nutrients, which involves taking a closer look at how the body takes them in,” says Professor Hendriks.

Other new topics include food safety in the informal sector, intended not to expose bad behaviour but rather to assist with by-laws and promoting good practice within the sector. The law faculty has recently joined the institute to assist with research on current food law. This research will look at everything from GMO foods to the right to food and the constitution.

“Since its conception, the institute has broken a number of academic traditions. There are always going to be people who don’t want to work together, but we really only target people who do. Researchers often find themselves working in quite a challenging environment. You have to keep up with current debates and often high-level decision-makers are unreachable. It’s important that we build trust with stakeholders and establish ourselves as a credible source of information. We need to be responsive, which can be difficult as often research processes can be quite slow. In our work, we have to keep in mind the unique context of South Africa’s history. We have to deal with the realities that are a result of that history, and that can be quite depressing, particularly when you become aware of flaws and faults in the system,” she says.

“What inspires me and our team of world-renowned research leaders most is the passion of the people in the groups we work with. The feedback we receive from researchers working on these projects is very encouraging, and their willingness to work together is particularly inspiring. In terms of academics, the IFNuW has shifted the game and, for me, it’s seeing the players really enthusiastic about their work that makes my job so exciting.” ▲