

2ND STUDENT COUNCIL  
NEWSLETTER  
AUGUST 2012

## The Green Issue



### Note from the Editor

In this second SAAB student council newsletter, we reflect on many different topics. Firstly we report on a student fundraiser that occurred at the University of Pretoria. The roof top tea garden was the venue and all donations went to raising funds to sponsor less fortunate students to attend the 39th annual conference which will be held by the university of KZN early next year. Secondly we focus on the importance of going green and using more sustainable sources to lower our energy use. And lastly we concentrate on a few post-grad students and the passionate feelings they express for their projects.

Sarah Stanton

# SAAB student fundraiser: University of Pretoria



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Our new SAAB student president, Sarah Stanton is a Masters student at the Department of Plant Science at the University of Pretoria. Among all her studious duties she was able to muster up the energy to pull off a SAAB fundraising event earlier this year (13<sup>th</sup> April). The event aimed to raise funds for students from tertiary institutions that could not afford the costs of sending their students to present their diverse and interesting research works at the SAAB conference.

The SAAB conference was hosted at the University of Pretoria and it only seemed fit that this fundraising event took place at the new Plant Sciences Complex. The rooftop garden was a perfect location for the fundraiser with its amazing view and its built-in braai facilities.

The roof top seemed slightly bare during the first hour but this must have been due to Friday afternoon traffic. The inviting smell of boerewors in the air bought people in numbers and they seemed quite eager to tackle the boerewors rolls that were on sale. With orders piling up, more meat needed to be purchased.

The entertainment for the evening was provided by two of our very talented guitar players Carel Oosthuizen (vocalist) and Francois Kruger. The music ranged from the pop genre to some old school rock which gave that lounge-type vibe.

By providing great food and ambiance and with people sipping away on wine and beer a slightly nervous Sarah, with the help of other Plant Science side-kicks however, was able to pull off a successful event.

A special thanks to the following people for all their help: C.J. Henley-Smith, Chris Hendriks, Carel Oosthuizen, Francois Kruger, Marco De Canha, Richard Kotze, Liezl Ebersohn, Anna-Mari Kok, Marelle Taljaard and Marion Meyer. Another fundraiser is scheduled for later this year in hopes of raising more money for students to attend the 39th annual SAAB conference which will be held by the university of KZN early next year.

If you may know of a student who is needing sponsorship to attend this event please send applications regarding their interest to: Sarah Stanton at [essey\\_cygy@yahoo.com](mailto:essey_cygy@yahoo.com).



## Going Green – In the lab?



As scientists, we are always striving to develop or discover something new, improve on the old and add to the data bank that is Knowledge! An idea or topic comes our way and we attempt to pry out all the secrets from it: investigating how, why and what does it mean! We like to be on the forefront of development and research. Yet have we considered the impact our laboratories have on the environment during our research and experimentation?

We have settled into the 'Greenest' building on campus, but are our lab practices and procedures in line with 'Going Green'? According to sustainability experts at the University of Texas at Austin, "Research laboratories are often the largest consumers of utilities at a research university." Apart from replacing old, worn out equipment with newer more energy-efficient lab equipment; here are some practices we can keep in mind, recommended by Perkel (2011) in the article titled 'How Green Is My Lab' published in *The Scientist*:

Close the fume hood or laminar flow sash. Whenever a fume hood is open, it pulls conditioned room air through the sash and into the hood. Fresh outside air then has to be reconditioned and pumped back into the room. A fume hood can use up to 3 household's worth of electricity a year! A visual reminder such as a sticker, placed on the side of the hood, featuring a colour gradient from red to green that reflects energy usage at different sash heights has been successfully implemented at labs with a noticeable reduction in energy usage.

The most energy-intensive pieces of equipment in most biology labs are the freezers, especially the -80°C freezers. A typical unit consumes between 16 and 35 kWh/day, which are run all day every day. Defrosting the freezers on a regular basis and discarding outdated samples can ensure better energy usage.

Shut down and power off! Most instruments and machines are left on at night and over the weekend that essentially do not have to be on. Switch off the scales, lab computers, work bench computers, your personal computer, shakers, pH meters, laminar flows, spectrophotometers, rota vapours, air con etc. The list goes on and on, but if it doesn't need to be on for experimental purposes, then power down. Our building luckily has motion sensitive lights but there are a few that need to be turned off manually too – so don't forget those if you are the last person around.

The use of condensation towers and roto vapors may run water for hours during distillations and drying processes. If the water flows at a rate of 3.8 L per minute; that's 228 L an hour and almost a 1000 L in 4 hours! A pump could be used to recirculate water from a bucket instead, recycling the same one amount of water over and over. Another big environmental saver is recycling! Paper, glass, plastic, packaging etc. If it cannot be reused in the lab then recycle!

I think Afro Scientress (2007) states it the best: "Does the benefit of (medical) research out-weigh its negative impact on the environment or vice-versa?"

Compiled by CJ Henley-Smith

## Saasveld Green Campus Initiative: students keeping it green



When you enter the Nelson Mandela Metropolitan University's (NMMU) Saasveld (George) campus, the first sign you see is "this is a conservation friendly campus". It's a daily reminder to the 1000 plus students that we as a University strive to be an eco-friendly campus. Within the last three years, the campus has made a great amount of progress. The campus has begun the admirable initiative of converting to greener technologies. This has led to the installation of solar water geysers, rainwater systems and recycling. The removal of fences around the University has allowed wildlife to move freely in and out of campus. Indigenous trees have been planted in hopes to create more natural wildlife corridors and to re-establish the natural forest. But as this is a newsletter by students for students, this article will focus on what the Saasveld students are doing for their campus and the community of George in general.

The Saasveld Green Campus Initiative was initiated in 2010 through the sponsorship of Bianca Currie's, (a lecturer at Saasveld) PhD, to create a project of change. The initiative is completely student driven and the student committee was formed in 2011. The aim of the initiative is to tackle green issues and to provide a platform for students to express their ideas and support them in various ways. The dream of the initiative is to create a culture whereby people are aware of their impacts.

The society raises funds to support their projects & awareness campaigns. The projects are; campus clean-up operations, earth hour pledges, recycling in student houses and the residences, a functioning wormery (creating compost & earth worm products), camera traps used to determine wildlife movement and planting trees.

One of the longer running projects includes the Tierkop research project; whereby 3 student houses have been completely refitted with green technologies (jojo tanks, movement sensing lights and solar heaters), next to 3 houses which do not have green technologies, in order to compare consumption rates and economic benefits. The initiative also engages with schools, business and industries, to create awareness in the public. In May, the Lions club and Datadot technologies planted 30 indigenous trees on campus. Each fundraising event has a theme and the society brings these across via their dress and set-up.





Through the society we live out NMMU's values of 'ubuntu', by giving back to the general community; 'responsibility' and 'integrity' in our actions to the society; to strive for 'excellence' in all we do; 'respect for diversity', by incorporating different schools/ faculties/ races/ cultures into the initiative and of course respect for our natural environment. We hope to continuously grow, increase our exposure and get new ideas.

Although separate from the initiative, the green campus week also aims to create awareness amongst students. Organized and run by the 2<sup>nd</sup> year nature conservation students, the week is filled with activities and talks to highlight the importance of recycling/re-using, saving resources and our impacts. Students are 'patrolled' by the Saaaveld 'police' and "Saas-greenaz" (the mascot green rabbit) who keep an eye out for littering or other wasteful behavior. A pledge wall allows students to pledge their support to saving water, not littering, using green products and recycling, while awareness posters created by students spread the word. Other industry sectors contribute in different ways. Fairfield tours, through an agreement with Saaaveld, donates money to various NMMU conservation projects and benefit from a campus tour and their own contribution through the planting of trees. As co-ordinator of the tree planting and tour groups, it's a great way to engage people in my passion about the environment, and with an average of 1 to 2 trees being planted each week, that greatly assists the campus in their wildlife corridor project.

Changing mindsets and behavior is the major challenge to a change in action, but it can be hoped that students, who will be entering different sectors of industry and society, will have an improved understanding of green issues facing us today.

And it is on that note, that I thank NMMU staff and students for their support and passion towards the environment: I have made my pledge, have YOU??

For more details and information, you can view our facebook page: Saasveld Green Campus Forum, or contact Bianca Currie at Bianca.Currie@nmmu.ac.za



By Carina Becker SAAB student council NMMU representative, with thanks to Aneri Vlok, Saasveld's Green Campus Initiative chairperson for information and photos



# Combining molecular techniques and physiology to investigate Phosphate recycling in native *Virgilia*s.



Hi everyone! I'm Waafeka and I recently started my PhD, in the Botany and Zoology Department at the Stellenbosch University, where I also completed my MSc. However, for my MSc I worked on an invasive species, and for my PhD I am working on native *Virgilia divaricata* also known as "die keurboom". My project is quite intricate, in that it employs a range of techniques such as proteomics, particle induced x-ray emission (PIXE), gene expression, and nuclear magnetic resonance (NMR) spectroscopy, to shed light on the role of Purple Acid Phosphatase (PAPs) enzymes during phosphate stress in the nodules of *Virgilia divaricata*. PAPs are essential enzymes in the plant phosphate stress response system because they catalyze the hydrolysis of inorganic phosphate in order to recycle phosphate for various cellular functions. The role of PAPs in phosphate scavenging is well known in the roots of non-legume model plants. Compared to roots, nodules have been largely understudied in phosphate stress research. Since legume nodules are known to resist phosphate starvation for a longer period than roots, it is likely that PAPs activity may contribute to this, via enhanced phosphate recycling. Currently, no information concerning the activities and regulation of PAPs in nodules exist and this project would make a novel contribution to the understanding of the role of PAPs in nitrogen fixing nodules.





# Using the Past to Manage the Future



What is palaeoecology?

Understanding the past is important if we are to interpret today's ecological processes and predict future outcomes. Records of past environmental change are found in lake sediments, peat bogs, and other wetland areas where organic material and minerals accumulate over time in anaerobic conditions. Fossil pollen, diatoms, spores and charcoal are preserved in the sediment and provide records of past vegetation, climate, herbivory and fire history.

Sediment cores are extracted from wetlands using drilling equipment, then sediment samples are treated in the laboratory with strong acids and bases, leaving only biogenic materials (fossils) that can be identified, counted, dated and linked to ecological processes.

Briefly, that is what palaeoecologists do and where the fun happens! In the case of my project, cores were collected in KwaZulu-Natal (KZN) and the pollen extraction occurs at our palaeoecology laboratory in the Plant Conservation Unit, Botany Department at the University of Cape Town.

Some people ask why we do what we do – which involves collecting sediment from muddy, tall-grass and leech (and sometimes crocodile!) infested places. The short answer is that we love what we do and our passion for knowledge does not discriminate between environments...well, except in rare cases.

The project: My work is part of a larger project run by the Plant Conservation Unit and funded by UCT's African Climate and Development Initiative, entitled "Benchmarks for the Future". The aim of the project is to combine long term data from palaeoecological and historical changes to understand how different drivers of vegetation change interact. We are particularly interested in what happens at ecotones – the boundary between two distinct vegetation types - because it is here that plants are at their ecological or physiological limits and vegetation is expected to be most dynamic.



The SAEON Grasslands-Forests-Wetlands Node provided support towards the field work component of my project, “Reconstructing palaeovegetation sequences at biome boundaries in KZN province in the late Holocene.”

In November / December last year, my team and I had the privilege to travel to the KwaZulu-Natal province on a coring expedition to collect samples for my PhD project. The road trip to KZN from UCT was long, interesting and packed with biodiversity contrasts.

From the low-lying Cape, up the bare flat-topped hills of the nama karoo, high-up into the grasslands of Free State, and then a rollercoaster ride down the dissected hills of KZN decked by either grasslands, forests or savanna elements... We shared smiles and mishaps, drank plenty of juice, worked hard from Itala Game Reserve, down to Umgeni Vlei and up into Hluhluwe-Umfolozi under the guiding hands of our strategic partners. Julius Caesar would have said “We came. We saw. We conquered.” But we came, we saw, we cored... and appreciated the immensity of what we do not yet know and took responsibility of the tasks before us. Our motto is that when you see an “interesting” site, core it!

My research is part of a palaeoecology project initiated by ACDI and Associate Professor Lindsey Gillson and Professor William Bond at UCT supervise me. The PCU and our partners include SAEON Grasslands-Forests-Wetlands Node, Ezemvelo KZN Wildlife. We acknowledge the farmers who gave us access to their property and Mazda Wildlife Fund for sponsoring the use of their vehicle. We are in the process of establishing ties with individuals and organisations so that we can share knowledge, experience and resources in the process of better understanding our environment to improve its management. I wish to thank the above for their sterling work and a special mention of Ms Sue van Rensburg at SAEON who managed to bring many of the pieces together in the end.

By Abraham Dabengwa, PhD student at the University of Cape Town, and recipient of SAEON bursary.



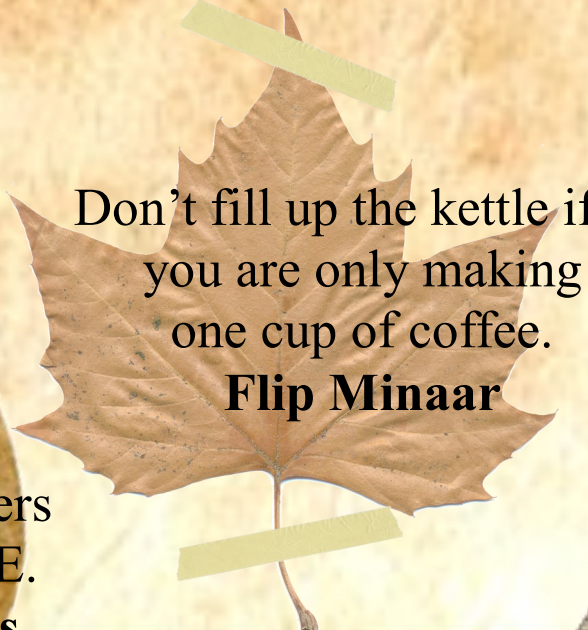


# GREEN TIPS FROM STUDENTS

By Ashton Ruiters

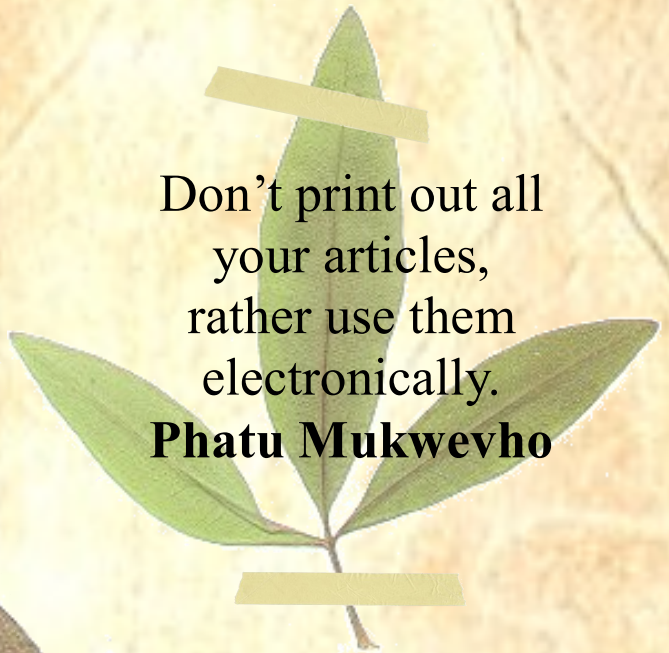


Re-use certain buffers such as TAE.  
**Vic Nicolis**



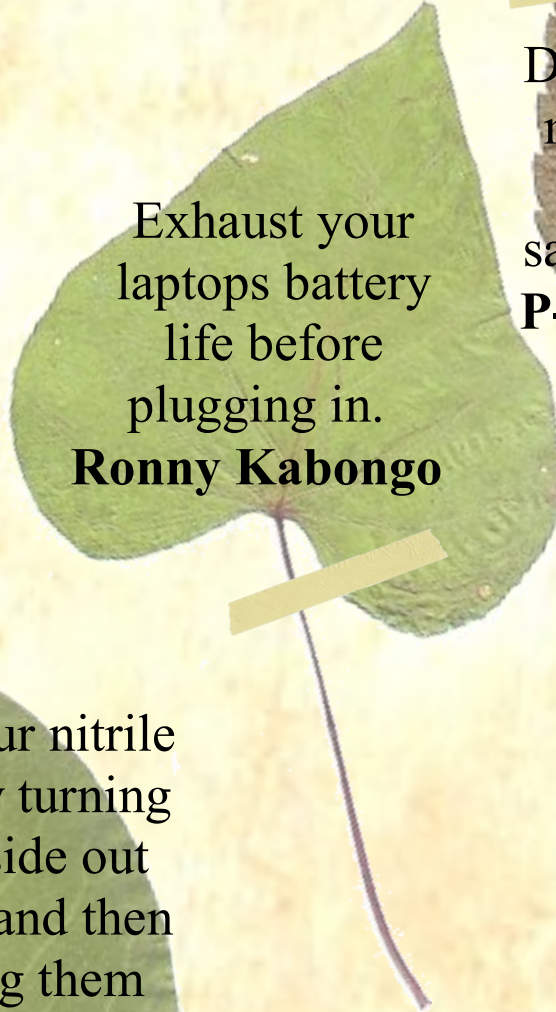
Don't fill up the kettle if you are only making one cup of coffee.

**Flip Minaar**



Don't print out all your articles, rather use them electronically.

**Phatu Mukweho**



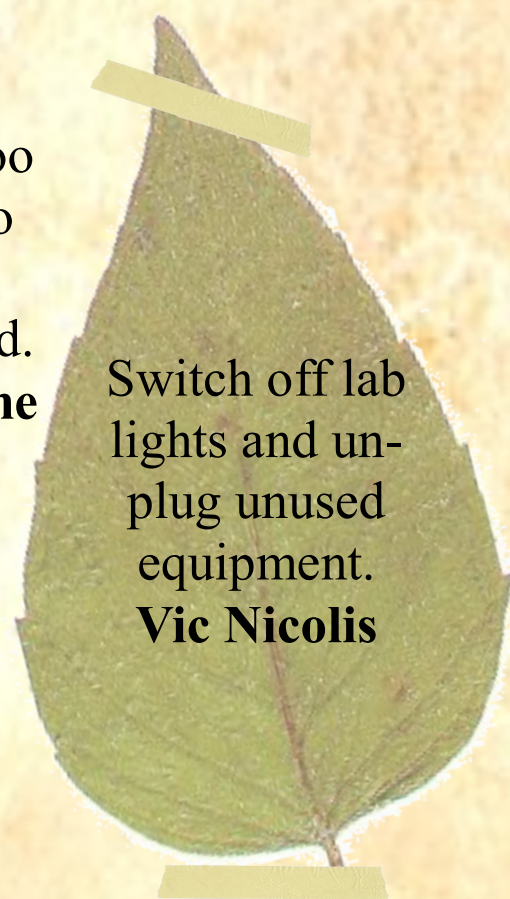
Exhaust your laptops battery life before plugging in.

**Ronny Kabongo**




Don't use too much ice to keep your samples cold.

**P-J Welcome**



Switch off lab lights and unplug unused equipment.

**Vic Nicolis**



Reuse your nitrile gloves by turning them inside out after use and then reversing them when needed.

**Sonia Greyling**

University of Johannesburg Herbarium (JRAU)

GRID:	REGION
REF.:	
LEGIT & NO.	DATE
	ALT.

*Taxodium trifidum*

Precise:

Habitat:

Plant habit:

Abundance:

Notes:

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## End note

- Articles wanted: If you have something to say which will interest the botany community, please feel free to send it to essey\_cygggy@yahoo.com
- If you are not yet a member of the SAAB student council page on facebook please request an invite ASAP
- Our new SAAB web site is up and running and looks amazing please check it out at <http://www.sabotany.co.za/>
- Breaking news guys, SAAB is on twitter please follow the link SAAB(@SABotany)
- And once again, if you know of anybody that deserves to go to the 39th SAAB conference to be held in KZN early next year who needs financial support, please send a motivational letter to essey\_cygggy@yahoo.com

