



IPPS

SHARING PLANT PRODUCTION KNOWLEDGE

Australia student
exchange
program 2019

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My Background

- Grew up and studied in Pretoria
- Interest in nature since childhood:
 - Reading books
 - Collecting seed
 - Propagating succulents
- Big dreams

UP with Science 2011-2013



University

- BSc(Agric) Applied Plant and Soil Sciences 2014-2017
- Exposure to different aspects of plant sciences
- Horticultural subjects:
 - Nursery management
 - Ornamental horticulture
- SAAB conference 2018



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

University



- MSc(Agric) Horticulture 2018 - present
- Tissue culture of *Moringa oleifera*
- Clonal propagation
- Conventional methods vs TIS bioreactors



Experience



DU PRINS
Wholesale Nursery



- Propagation
- Stocktaking
- Marketing/admin
- Social media
- Project development





Indigenous grasses





Compost earthworms



Propagation
of
indigenous
plants





Introducing new plants



My interest in horticulture



- Indigenous plants
- Urbanisation
- Technology
- Awareness




Why Australia?

- International exposure
- Learning opportunity
- More technologically advanced
- Problem solving
- Networking





My Future Plans

- My own nursery
 - Indigenous plants
 - Urban landscaping
 - Modern technology
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Good afternoon ladies and gentlemen. I am Elmien Coetser and I will be presenting as a candidate for the Australian student exchange program. First of all I would like to thank you for allowing me to be part of this worldwide community to share knowledge of plant propagation. Just being part of IPPS is already a privilege which will help me advance my career.

Starting with a bit of my background. I was born and raised in Pretoria and I am currently studying at the University of Pretoria. I have had an interest in nature, particularly in plants, since childhood, as well as a love of reading. When I was little I would often read gardening books for fun (even though I didn't know most of what I was reading) and instead of being bribed with sweets or toys to behave in the store, my mom would bribe me with packets of plant seeds which I would go and plant in the garden as soon as we got home. I was constantly collecting seed from every nook and cranny on the ground and I would keep them in a safe place, dreaming about the wonderful plants I'd have in my dream garden one day when I'm all grown up. I remember being fascinated when my mom taught me how to propagate succulents by breaking off and planting their leaves, it absolutely blew my mind when I first saw it in action and I loved propagating them. I used to imagine myself as this great naturalist once I grew up; I wanted to be like some type of game ranger who would help rescue the natural world from urbanisation and global warming. However, as I grew up, I started doubting myself. I knew I wanted to become someone who works with nature, preferably plants, but I didn't know which options there were. Everyone either wanted to become a doctor, an engineer, a teacher or a lawyer. And in my head, the only things you could do with plants are either becoming a farmer or a small nursery owner; back then I didn't even realise how large those two industries alone were.

In High School I was accepted into a program hosted by the University of Pretoria called UP with Science. This was an enrichment program that selected grade 10 learners and exposed them to the university and the science departments. We attended special lectures, met scientists and went on excursions. We visited the different science departments, the experimental farm and had projects to do involving science, and exercises helping us to prepare for university life as well as a life in science. This helped keep me inspired to go into natural sciences after school and also provided me with a bursary to do my degree in BSc.

With some help, I finally decided to do my degree in BSc Agriculture, Applied Plant and Soil Sciences, which covered everything from plant genetics to soil chemistry. This course really opened my eyes to the possibilities available in plant sciences as well as the importance of all the different aspects in the industry. Some of my subjects included Nursery Management and

Ornamental Horticulture which were presented by my current supervisor Professor Elsa du Toit. These subjects gave us the opportunity to learn some of the practical aspects of horticulture, such as running a nursery, doing grafting, making cuttings, tissue culture, and even designing our own garden. During these subjects I realised how little interest there is under our youth in ornamental horticulture. The people I studied with were mostly interested in farming and did not regard ornamental horticulture as an important part of agriculture. In the beginning of 2018, I was given the opportunity to attend the annual conference for South African Association of Botanists to present some of the work that I've done in tissue culture. An interesting thing I learnt at this conference is Plant Blindness; A guest speaker from the university of Oklahoma, Dr Uno, spoke about this topic and it surprised me that the ignorance people generally show towards plants were actually given a name. But I could relate to this, especially when I think back to school; I can't remember one other learner in my class that really had an interest in plants and who would like to make a career out of it. And now in university, of those that actually did have an interest in plants, very few had an interest in ornamental horticulture. I think this might have had an influence in my moving further towards horticulture.

I am currently busy with my masters degree in tissue culture of *Moringa oleifera*. I started working in UP's tissue culture lab in my final year of undergrad studies. My current supervisor, Professor du Toit trained a friend of mine and myself to do tissue culture and we did small projects that year. For my current project, we are comparing different methods for clonal proliferation of *Moringa* tissues. We are comparing conventional semi-solidified medium methods to liquid culture in temporary immersion bioreactors. The factors we are looking at are effect on growth as well as secondary metabolite production. *Moringa oleifera* is a valuable medicinal plant and we're hoping that culture in bioreactors will stimulate better metabolite production so that ultimately, *Moringa* can be produced in the controlled in vitro environment for metabolite extraction and use in medicinal products. I presented my project at the SAAB conference this year in January.

Last year I started working part time for Du Prins Wholesale nursery. Just being around the nursery has already taught me so many plant names popular in the industry and how they can be propagated. Some of my responsibilities include helping out with propagation, doing stocktaking and compiling availability lists, some administrative work such as managing invoices, and marketing such as managing our Facebook page. I am also involved in projects in the nursery...

One of the first projects I started out with at Du Prins is planting indigenous veld grasses from seed. Indigenous veld grasses are becoming more and more popular in the landscaping industry and landscaping projects are requiring them by the thousands and we just cannot keep up with the demand. We decided to try and plant them ourselves since buying in plugs is more expensive and laborious to split. We are also trying to establish lines of different grasses that we can use for rehabilitation purposes. We aim to provide the plant material for rehabilitation projects happening in the area.

Another project I'm involved in is our earthworm project. We keep composting earthworms so that we can use the compost "tea". We're still new to this so we're testing what works best as food for our wormies, luckily we have tonnes of plant material on site which we could use. In the one picture you can see them devouring some rooibos tea leaves; we weren't too sure whether they'd like it since rooibos is considered a herbal tea and in general they dislike herbal teas apparently. The compost tea is tested on seedlings and cuttings. We want to use this "tea" since vermicompost tea is known to have good levels of humic and fulvic acids which play a role in making nutrient more readily available as well as improving soil moisture retention. Vermicompost is also known to increase the microbiological populations in the soil, which can protect plants from pathogens or even act as growth promoters. Hopefully we'll be able to produce enough one day for all our young plants and cuttings.

I've also come to know and work with species which I've never been familiar with such as *Scadoxus* and *Juncus* species which is exciting to me. I've been propagating some other plants such as *Crassula orbiculata*, *Elegia tectorum*, *Asparagus* "Mazeppa" and *Strelitzia* species from seed. I enjoy seeing that our indigenous plants are becoming more popular and I'm proud to be part of their production.

Something new that we're busy with is new lines of *Buxus* species. We have about 14 different *Buxus* species on site, of which we are considering increasing production of 4 of them and introduce them to the South African market. Not only does working with Du Prins provide me with work experience, it has also provided me with opportunities to meet people in the industry as well as visiting other nurseries and teach me a little more about what's going on in Horticulture in SA.

I have an interest in indigenous plants and using them in gardening, not just in terms of water wise gardening, but also creating ecosystems. It is good for me to see the growing interest towards indigenous plants and along with it, conserving the environment we live in. I find it interesting how you can adapt gardens to suit the environment by choosing plants that work best in certain situations. Urbanisation creates an interesting problem in this aspect; we have to

adapt to smaller spaces and think in different dimensions. This provides opportunity to find creative solutions such as using verticulture, rooftop gardening and urban farming techniques. Along with these new techniques, come new technologies and we get the chance to integrate modern technology with landscaping. I also enjoy showing people just how wonderful plants are. Projects like the recent “My Little Garden” from Checkers get me excited. It creates awareness and encourages people, especially children to get involved in gardening and teaches them where plant products come from and what it takes to produce them.

So why would I like to go on this exchange program to Australia? I am still young and have very little experience as yet so to be able to go to Australia would mean a great learning opportunity for me and it would definitely give me a boost in my career. Already the experience to travel abroad changes your way of thinking about the world and the people you’ll interact with in future. This would most likely improve my people skills which I find to be important in any career. Australia is more technologically advanced than South Africa and would provide me with the opportunity to see what is possible as well as teach me different ways of problem solving that I am not familiar with, which I might apply in my own situation one day. Attending the IPPS conference is also a good networking opportunity, allowing me to meet and interact with different professionals in the industry so that I could learn from them. Already this opportunity to attend the annual South African conference allowed this by letting me visit different nurseries, visiting another tissue culture lab which is a first for me, and meet new people. The Australian conference, will be an even greater opportunity, even more so since this year it will be part of the IPPS international tour as well.

I would love to run my own nursery one day, however I know that starting a new business from scratch is difficult, so for now, I’m aiming to get work experience in the industry first. I think South Africa has a lot of potential in terms of the indigenous plants which we can still introduce in the industry and develop their propagation. Another thing is that many of our indigenous plants are used in traditional medicine, but many are harvested from the wild and have become more and more threatened by these practices. If we could develop propagation strategies for such plants we could propagate them sustainably within a nursery system and hopefully reduce the pressure from wild harvests. I believe in the process of getting such plants into production, we’ll be able to learn more of their traditional use, which is important for conserving traditional knowledge here in South Africa. Besides this, I think our indigenous plants are absolutely wonderful and we have such a large variety in South Africa, and I really want to be a part of making people aware of their wonder and importance in our daily lives. There is also lots space for improvement in our urban landscapes and use of modern landscaping techniques and

technologies. To combine these two aspects of conserving native plants along with improving our use of modern technology will probably be a challenge, but it would be an exciting one to be a part of.

I would like to acknowledge my supervisor Prof du Toit and her husband and owner of Du Prins Wholesale Nursery, David du Toit for nominating me for this program. And would like to thank the IPPS South Africa for giving me the opportunity to attend this conference and considering me as one of the candidates for the Australian exchange program.

Acknowledgements

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- ❖ The owner of Du Prins Wholesale Nursery:
David du Toit
- ❖ IPPS South Africa