



DOCTORAL RESEARCH OPPORTUNITY

Department of Horticultural Science

Title: Apple water use under shade netting

Professor Stephanie Midgley of the Department of Horticultural Science at Stellenbosch University (SU) is offering an opportunity for a motivated student to study full-time towards a doctoral degree (PhDAgric in Horticultural Science). This is a 4-year partnership project with the Council for Scientific and Industrial Research (CSIR) and the Agricultural Research Council (ARC) and is funded by the Water Research Commission (WRC) and Hortgro Pome through Hortgro Science. The multidisciplinary research team comprises scientists with expertise in agrometeorology, plant ecophysiology, pomology, soil and irrigation science.

Increasing pressure on water resources in South Africa and rising water insecurity are a serious threat to the sustainability of the deciduous fruit industry. Water resources used by the industry for irrigation are coming under increasing strain due to increasing competition from other users, the need to allocate water to new farmers, and the impacts of climate change. It is essential that the industry remains competitive and provides growth opportunities. Farmers have to increase the water use efficiency and productivity of irrigation. The installation of shade netting has been identified as a promising adaptation response to stressful climatic conditions and future climate. The microclimate under shade netting is milder and can result in lower transpirational water loss. Consequently, whole tree/orchard water use is potentially reduced. This, however, depends on the vigour and total leaf area of trees which can increase under netting compared to open trees. Other significant benefits of netting include reductions in sunburn, wind and hail damage. Research on shade netting for apple orchards in South Africa is limited and has not quantified the water-related benefits of production, quality and profitability at tree and orchard level. The study will compare the water use of open and netted (fixed and draped systems) full bearing apple orchards under unstressed soil water conditions, in order to determine water savings per hectare and per ton. The study will investigate how these savings are achieved through in-depth measurement of soil, tree and atmospheric factors.

If you are an MScAgric/MSc graduate and meet the University's requirements for doctoral study (www0.sun.ac.za/pgstudies/), consider this excellent opportunity. You should have an interest in horticulture and tree physiology, and a good understanding of soil science. You should also be able to conduct field research independently, and possess an unendorsed driver's license valid in South Africa. An added advantage would be experience in the use of plant ecophysiology equipment and/or agrometeorological equipment. Graduates in Botany or Forestry (ecophysiology) are welcome to apply, but may be required to conduct supplementary studies in Pomology (the science of deciduous fruit production).

Date of commencement: July 2018 subject to University approval processes

Bursary value: R 140 000.00 per year for 3 years

Please submit your full application including transcripts of your academic record to Stellenbosch University by **31 May 2018**, and at the same time send all documents and a covering letter to Prof Midgley: stephanie.midgley@gmail.com