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South African Grape and Wine Research Institute
Suid-Afrikaanse Wingerd-en-Wyn
Navorsingsinstituut

31 July 2022

POSTGRADUATE OPPORTUNITY AVAILABLE AT THE SOUTH AFRICAN GRAPE AND WINE RESEARCH INSTITUTE (SAGWRI) FOR 2023

The following project is available for an MSc-level study from 2023, for a suitable student with a molecular biology/genetics/plant biotechnology background.

Project Title: Analysing the colour locus in a collection of gamma-irradiated Pinotage plants to identify novel colour variants as potential Pinotage clones

Project description:

This project links to an existing project where 500 Pinotage gamma irradiance plant lines and their controls are being analysed in a field trial for potential novel phenotypes and ultimately new Pinotage clones. Colour mutants (like a Pinotage Blanc) would be interesting and industrially sought-after. The collection is not yet fruit-bearing, making scoring for fruit colour not possible until 2024. The project aims to implement a genetic screening analysis (using vine leaves) to evaluate of the colour locus of the irradiated plants to identify/predict possible berry colour variants in the collection. Grapevine has a well-characterised colour locus. It has been shown that red grape cultivars gave rise to white grape varieties through specific mutations in the genes that form part of the colour locus (Walker et al., 2007). The colour locus consists of two important genes, namely the VvMYBA1 and VvMYBA2 genes (Walker et al., 2007). Both regulate colour in the grape berry: In red berries, both genes are functional, whereas in white berries, the VvMYBA2 gene is inactivated by two mutations, and a retrotransposon in the promoter of the VvMYBA1 gene renders it inactivated.

Several studies have reported primers and methods to characterise the colour locus in grapevine (Rockel et al., 2020) and these will be used and validated for use in the proposed project. The project has as resources a field trial with 500 young Pinotage plants (planted in September 2021) that comprise three clones of Pinotage that have been gamma-irradiated to potentially increase the phenotypic diversity in this cultivar, as well as the unirradiated control clones. Moreover, a mapping population of 250 mature individuals that segregate for berry skin and flesh colour is available to validate the methodology in plants that are already fruit-bearing and with known diversity in the colour locus.

Contact persons for the project:

Prof M.A. Vivier (mav@sun.ac.za)

Please send a CV, as well as a cover letter to Prof M.A. Vivier (mav@sun.ac.za) to indicate your interest in this opportunity.

General contacts for SAGWRI:

Prof MA Vivier: Interim Director of SAGWRI (mav@sun.ac.za)

Ms Lorette de Villiers: Postgraduate Admin officer (lorette@sun.ac.za)