Two yong researchers at SGI receive PhD degrees

Two young scientists of ARC-Small Grain Institute, Dr Scott Sydenham and Dr Tshina Ramakuwela — neither 35 years old yet, have received their PhD degrees.

Dr Scott Sydenham (Biotechnologist) completed his degree at the University of the Free State. With his thesis, titled Marker-assisted backcross breeding for fusarium head blight resistance in South African wheat, he makes a contribution towards the control of Fusarium head blight, also known as scab. It is one of the most economically important fungal diseases of wheat in the world.

Dr Tshina Ramakuwela (Nematologist) successfully passed her PhD at the University of KwaZulu-Natal with the thesis entitled Development of a new entomopathogenic nematode (epn) species, steiernema innovationi: biological characterization and mass production.

With Dr Sydenham’s contribution, he attempted to improve Fusarium head blight (FHB) resistance levels present in South African irrigated spring wheat. He successfully applied marker-assisted fore- and background selection into the background of the ARC-SGI wheat cultivar Krookodi. This is the first public report of the successful development of South African wheat lines with improved FHB resistance.

A set of five advanced lines have been publicly released to all wheat breeders in the South African wheat industry as this was a Winter Cereal Trust funded project. The five advanced lines of this PhD are currently undergoing further phenotypic and marker screening as advanced material in the current FHB pre-breeding programme at ARC-SGI, Bethlehem, led by Dr Scott Sydenham and Ms Cathy de Villiers. These lines should make an impact to the South African irrigated wheat industry in the not too distant future.

Dr Ramakuwela’s study aimed at developing an effective, yet economical mass production protocol and biological characterisation for a new indigenous entomopathogenic nematode (EPN) species, Steiernema innovationi, to be used as environmentally friendly biopesticide.

The estimated retail price including labour and company overheads was considerably lower (R90.61) when compared to available EPN products on the international market, ranging from R271.00 to R459.00. Furthermore, the importance of this study is underscored by the potential for EPN mass production and formulation as no EPNs have been commercialised in South Africa.

Dr Ramakuwela’s research contributes to efforts in reducing the use of chemical pesticides in support of the pesticide management policy. This particular indigenous strain of EPN showed potential for control of the black cutworm, false wireworm, maize stem borer, sugarcane stalk borer, African pink stalk borer, spotted stalk borer, codling moth and diamondback moth. Future research will focus on upscaling and commercialisation of this new species.

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