

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA



UFS
NATURAL AND
AGRICULTURAL SCIENCES

Plant Sciences

Conference Contributions 2023

Conference Papers

Achilonu, C.C. & Marais, G.J. 2023. RNAi spray-mediated silencing of *Alternaria alternata* AGO and DCL gene transcripts enhanced resistance to *Alternaria* black spot disease. Paper delivered at the 16th European Conference on Fungal Genetics (ECFG16), Innsbruck, Austria. 5-8 March 2023.

Adams, L.D, Steenhuisen, S-L., Martin, G.D. & Downs, C. 2023. Community perceptions of a fleshy-fruited invasive alien plant in the Grassland biome of South Africa. Paper delivered at the National Symposium on Biological Invasions, Grabouw, South Africa. 4-6 July 2023.

Alison, J., Payne, S., Steenhuisen, S. & Høye, T. 2023. Exploring the microclimate by-catch of wildlife cameras. Paper delivered at the Ecological Society of America's 108th Annual Meeting, Oregon, USA. 4-9 August 2023.

Bologo, N., Steenhuisen, S. & Martin, G. 2023. Impact of the invasive alien plant species clearing programme on socioeconomic benefits and plant biodiversity along the northern Drakensberg, Mpumalanga province, South Africa. Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.

Canavan, K., Canavan, S., Clark, V.R., Gwate, O., Mapaura, A., Richardson, D.M., Steenhuisen, S.-L., Sutton, G. & Martin, G.D. 2023. Invasive alien plants in South Africa's mountains. Paper delivered at the National Symposium on Biological Invasions, Grabouw, South Africa. 4-6 July 2023.

Coetzer, A., Maré, A. & Boshoff, W.H.P. 2023. First report of *Puccinia striiformis* f. sp. *tritici* race 142E30A+ on wheat in South Africa. Paper delivered at the Annual post-graduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.



Cordova, C. & Scott, L. 2023. The phytolith record of Lake Ngami, Botswana, during the past 17 ka and correlation with other paleoclimatic and palaeoecological proxies. Paper delivered at the XXI Congress INQUA, Roma, Italy. 13-20 July 2023.

Dabengwa, A. N., Scott, L., Bond, W., Archibald, S., Lehmann, C. & Bamford, M. 2023. An eco-evolutionary approach for examining charcoal-based fire dynamics in grassy ecosystems. Paper delivered at the XXI Congress INQUA, Roma, Italy. 13-20 July 2023.

Du Toit, I., Rothmann, L.A., Boshoff, W.H.P. & Visser, B. 2023. The sensitivity to triazole fungicides among South African *Puccinia graminis* f. sp. *tritici* isolates. Paper delivered at the Annual post-graduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.

Effiom A., Neumann, F., Bamford, M., Schefuß, E., Zabel, M., Scott, L. & Humphries, M. 2023. Late Holocene palaeoecological studies at Lake St Lucia, KwaZulu-Natal. Paper delivered at the XXI Congress INQUA, Roma, Italy. 13-20 July 2023.

Gwate, O., Payne, S., Steenhuisen, S., Martin, G.D. & Clark, V.R. 2023. Exploring mechanisms underlying the success of range expanding plant species in Maloti-Drakensberg mountains, South Africa. Paper delivered at the 58th Grassland Society of Southern Africa (GSSA) Annual Conference, Rustenburg, South Africa. 24-28 July 2023.

Hlongwane, N.V., Jackson, M., Minnaar-Ontong, A. & Rothmann, L.A. 2023. Identification and prevalence of seedborne fungal pathogens associated with soybean. Paper delivered at the 12th International Congress of Plant Pathology, Lyon, France. 20-25 August 2023.

Khoza, B.M., Bowden, N. & Moloi, M.J. 2023. Physiological, morphological and biochemical traits of dibutylidithiophosphate treated drought stressed edamame. Paper delivered at the 5th National Global Change Conference, University of the Free State, Bloemfontein, South Africa. 30 January–2 February 2023.

Khoza, B.M., Bowden, N. & Moloi, M.J. 2023. Physiological, morphological and biochemical traits of dibutylidithiophosphate treated drought stressed edamame. Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.



Kobedi, F.K., Maré, A. & Minnaar-Ontong, A. 2023. Evaluation of South African soybean cultivars for resistance to *Sclerotinia sclerotiorum*. Paper delivered at the Annual postgraduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.

Labuschagne, M.T., Van Bockstaele, F., De Leyn, I., Van Biljon, A. & Du Toit, A.G.A. 2023. Wheat growing period effects on baking quality and gluten composition. Paper delivered at the XIVth International Gluten Workshop, Madrid, Spain. 19-21 June 2023.

Liatile, P.C., Potgieter, G. & Moloï, M.J. 2023. A natural biostimulant consisting of a mixture of fish protein hydrolysates and kelp extract enhances the physiological, biochemical and growth responses of spinach under different water levels. Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.

Liatile, P.C., Potgieter, G. & Moloï, M.J. 2023. A natural biostimulant consisting of a mixture of fish protein hydrolysates and kelp extract enhances the physiological, biochemical and growth responses of spinach under different water levels. Paper delivered at the 5th National Global Change Conference, University of the Free State, Bloemfontein, South Africa. 30 January–2 February 2023.

Malekana, L., Martin, G.D., Steenhuisen, S. & Clarke, V.R. 2023. Impact and management of range expanding Rosaceae species along elevational gradients in the Maloti Drakensberg. Paper delivered at the National Symposium on Biological Invasions, Grabouw, South Africa. 4-6 July 2023.

Martin, G., Steenhuisen, S. & Bolongo, N. 2023. 25 Years of working for water - Successful? Paper delivered at the National Symposium on Biological Invasions, Grabouw, South Africa. 4-6 July 2023.

Martin, G.D., Weaver, K.N., Chikowore, G., Steenhuisen, S.L. & Venter, N. 2023. Northern temperate weeds program in South Africa. Paper delivered at the 6th International symposium on Biological Control of Weeds, Misiones, Argentina. 7-12 May 2023.



Mashamba, T., Steenhuisen, S., Payne, S. & Martin, G. 2023. Current status and population demographics of the *Salix* species in the grassland biome of South Africa. Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.

Masole, P., Steenhuisen, S., Payne, S. & Martin, G. 2023. Is the thorny invasive *Rosa rubiginosa* facilitating the recruitment of native and exotic woody species in the mountain grasslands of the eastern Free State? Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.

Mbele, T., Steenhuisen, S. & Canavan, K. 2023. Seed germination of naturalised and horticultural traded *Cortaderia* species in South Africa. Paper delivered at the Annual postgraduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.

Mekonnen, T.W., VanBiljon, A. & Labuschagne, M.T. 2023. The impact of different planting dates on protein quality and quantity, and grain yield of maize. Paper delivered at the EUCARPIA Cereals Section Conference, Szeged, Hungary. 15-20 May 2023.

Minnaar-Ontong, A. 2023. Diversification and enhancement of food and nutrition security. Paper delivered at the Science orum South Africa, CSIR, Pretoria, South Africa. 4-5 December 2023.

Minnaar-Ontong, A., Maré, A., Vander Merwe, R., Basson, H.J. & Steyn, C. 2023. Development of South African soybean lines with resistance to sudden death syndrome. Paper delivered at the International Congress on Oil and Protein Crops, Antalya, Turkey. 2-4 November 2023.

Mngomezulu, D.N., Maré, A., Rothmann, L.A., Steyn, C. & Minnaar-Ontong, A. 2023. Resistance to *Fusarium* head blight in wheat: Influence of the fungal mycotoxin profile. Paper delivered at the 12th International Congress of Plant Pathology, Lyon, France. 20-25 August 2023.

Mngomezulu, N.T., Veldkornet, D.A., Rajkaran, A. & Nasreen, P. 2023. The influence of creek dynamics and physiochemical variables on the diversity and distribution of estuarine macrophytes at the Berg River Estuary. Paper delivered at the Southern African Society for Aquatic Scientists Annual Congress (SASAqS), Somerset West, South Africa. 21-25 June 2023.



Moloi, K., Martin, G. & Steenhuisen, S. 2023. Seed biology and spread of the alien invasive *Cotoneaster pannosus* in fromontane grasslands of eastern Free State. Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.

Moloi, K.T., Martin, G.D. & Steenhuisen, S. 2023. Seed dispersal and germination of the alien *Cotoneaster pannosus* in Afromontane grasslands of the eastern Free State. Paper delivered at the 12th Oppenheimer Research Conference, Midrand, South Africa. 4-6 October 2023.

Moloi, M.J., Liatile, P. & Potgieter, G.P. 2023. Fish protein hydrolysates and kelp concoction: a green solution for drought stress protection in spinach. Paper delivered at the 10th international Plant Protection Symposium (online), University of Debrecen, Hungary. 24-26 October 2023.

Moloi, S.J., Moloi, M.J., Gokul, A., Chivasa, S. & Ngara, R. 2023. Physiological, biochemical and leaf proteomic analyses of wheat varieties to water limitation stress. Paper delivered at the Annual post-graduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.

Payne, S., Alison, J., Høye, T.T. & Steenhuisen, S. 2023. Camera surveillance monitors invertebrate abundance, plant phenology and weather events within a montane climate change experiment. Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.

Payne, S., Alison, J., Høye, T.T. & Steenhuisen, S. 2023. Camera surveillance monitors invertebrate abundance, plant phenology and weather events within a montane climate change experiment. Paper delivered at the 5th National Global Change Conference, Bloemfontein. 30 January–2 February 2023.

Payne, S., Steenhuisen, S., Moloi, K.T., Masole, P., Carvalho, G., Sithole, Z., Chikowore, G., Westwood, T., Rahlao, M., Chatanga, P., Seleteng-Kose, L. & Martin, G.D. 2023. Review of the invasive, yet economically beneficial, *Rosa rubiginosa* L. (Rosaceae) within southern Africa. Paper delivered at the 16th International Conference on Ecology and Management of Alien Plant Invasions (EMAPI), Pucón, Chile. 23-25 October 2023.



Payne, S.L., Alison, J., Steenhuisen, S. & Høye, T. 2023. Ain't no sunshine when it snows: microclimate by-catch of wildlife cameras. Paper delivered at the Faculty of Natural and Agricultural Sciences Annual Flash Fact competition, Bloemfontein, South Africa. 11-12 July 2023.

Pule, K., Boshoff, W.H.P. & Maré, A. 2023. Phenotypic and enotypic evaluation of wheat plants developed for combined rust and Fusarium head blight resistance. Paper delivered at the Annual post-graduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.

Sedimo, G., Bester, S.P., Jackson, M. & Joubert, L. 2023. Morphometric analysis in *Nemesia* (Scrophulariaceae). Paper delivered at the South African Association of Botanists (SAAB) Postgraduate Symposium (online). 28 September 2023.

Sedimo, G., Joubert, L., Jackson, M. & Bester, S.P. 2023. Systematics and morphometrics in *Nemesia* (Scrophulariaceae). Paper delivered at the 48th South African Association of Botanists (SAAB) Annual Conference, Polokwane, South Africa. 17-20 January 2023.

Shamuyarira, K. W., Shimelis, H., Figlan, S. & Chaplot, V. 2023. Combining ability analysis of yield and biomass allocation related traits in newly developed wheat populations. Paper delivered at the 2023 Combined Congress, Pretoria, South Africa. 23-26 January 2023.

Sithole, Z., Moloi, K.T., Steenhuisen, S. & Martin, G.D. 2023. Role of mammals in the seed dispersal of the invasive plant species, *Rosa rubiginosa*, in the Free State rangelands. Paper delivered at the Annual post-graduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.

Sivhada, R., Labuschagne, M.T. & Van Biljon, A. 2023. Going back to the wild for better bread. Paper delivered at the Annual postgraduate symposium of the Department of Botany and Plant Biotechnology at University of Johannesburg, South Africa. 23-25 October 2023.

Steenhuisen, S., Martin, G., Moloi, K., Adams, L.D., Gwate, O., Payne, S., Masole, P., Malekana, L., Downs, C. & Clark, V.R. 2023. Expanding ranges of invasive Rosaceae. Paper delivered at the 5th National Global Change Conference, Bloemfontein. 30 January–2 February 2023.



Steenhuisen, S., Martin, G.D., Moloi, K.T., Adams, L.D., Payne, S., Gwate, O., Masole, P., Malekana, L., Downs, C. & Clark, V.R. 2023. When roses go rogue: Expanding ranges of invasive Rosaceae in South Africa. Paper delivered at the 16th International Conference on Ecology and Management of Alien Plant Invasions (EMAPI), Pucón, Chile. 23-25 October 2023.

Steyn, C., Meyer, C., Minnaar-Ontong, A. 2023. Characterisation of the *Sclerotinia sclerotiorum* population on soybean and sunflower in South Africa to improve resistance breeding strategies. Paper delivered at the International Congress on Oil and Protein Crops, Antalya, Turkey. 2-4 November 2023.

Tóth, B., Grusak, M., Labuschagne, M., Guzman, C., Szoke, L., Kaczur, D., Harangi, R., Radocz, L., Makhsatova, S., Danter, M., Nagy, J. & Moloi, M.J. 2023. Evaluation of the impacts of stressors on crops in the context of climate change. Paper delivered at the International Summit on Renewable Energy (INSORE2023), Dubrovnik, Croatia. 11-13 February 2023.

Van Aardt, A.C., De Jager, J.C.L., Giddy, J.N. & Dayaram, A. 2023. Karroid Islands in a sea of grasses, Free State Province, South Africa. Paper delivered at the 65th Annual Symposium of the International Association of Vegetation Science, Coffs Harbour, Australia. 3–8 September 2023.

Van Biljon, A., Olckers, S-L., Osthoff, G. & Labuschagne, M.T. 2023. Size exclusion and reverse-phase high-performance liquid chromatography as complementary tools to study wheat gluten protein. Paper delivered at the 44th South African Chemical Institute (SACI) National Convention, Chemistry for Sustainable Development in Africa, Stellenbosch, South Africa. 8-13 January 2023.

Van der Merwe, R., Hlatshwayo, K.K., Maré, A., Minnaar-Ontong, A. & Zhang, Q. 2023. Development of South African soybean lines with resistance to sudden death syndrome. Paper delivered at the International Congress on Oil and Protein Crops, Antalya, Turkey. 2-4 November 2023.

Van der Merwe, R., Hlatshwayo, K.K., Minnaar-Ontong, A., Maré, A. & Zhang, Q. 2023. Breeding for pod-shattering resistance in vegetable-type soybean. Paper delivered at the International Congress on Oil and Protein Crops, Antalya, Turkey. 2-4 November 2023.

Veldkornet, D.A. 2023. The influence of macroclimatic drivers on the macrophyte phylogenetic diversity in South African estuaries. Paper delivered at the Southern African Society for Aquatic Scientists Annual Congress (SASAqS), Somerset West, South Africa, 21-25 June 2023.



Venter, K., Marè, A., Herselman, L., Pretorius, Z.A. & Boshoff, W.H.P. 2023. Exploiting wheat landraces to boost food security and sustainable agriculture. Paper delivered online through LOGYTalks. 12th April 2023

Venter, K., Swart, W.J., Visser, B. & Rothmann, L. 2023. A quantitative and qualitative analysis of rhizosphere populations of maize and soybean as influenced by soil and plant genotype. Paper delivered at the 12th International Congress of Plant Pathology, Lyon, France. 20-25 August 2023.

Zondo, S., Mohase, L., Tolmay, V. & Mafa, M. 2023. Characterisation of the cell wall reinforcing peroxidase and β -1,3-glucanase induced upon wheat infestation by *Diuraphis noxia*. Paper delivered at the 10th International Plant Protection Symposium (online) in Debrecen, Hungary. 24-26 October 2023.

Zondo, S.N., Mohase, L., Tolmay, V. & Mafa, M.S. 2023. Consolidating the cell wall modification roles of Peroxidase and β -1,3-Glucanase during *Diuraphis noxia*-wheat interaction. Paper delivered at the South African Association of Botanists (SAAB) Postgraduate Symposium (online). 28 September 2023.

Conference Posters

Adams, L.D., Steenhuisen, S., Martin, G.D. & Downs, C. 2023. The role of mammals in seed dispersal of fleshy-fruited invasive alien plants in the Grassland Biome of South Africa. Poster presented at the 16th International Conference on Ecology and management of Alien Plant Invasions (EMAPI), Pucón, Chile. 23-25 October 2023.

Ajidahun, J., Mafa, M. & Mohase, L. 2023. Effect of drought and Russian wheat aphid infestation on wheat yield and quality traits. Poster presented at the Combined Congress, University of Pretoria, Future Africa campus. 23-26 January 2023.

Delport, B., Castillo-Hernandez, J., Marais, G.J., McCarlie, S.J. & Bragg, R.R. 2023. Metagenomic evaluation of the bacterial diversity in pecan nut trees with overall decline symptoms. Poster presented at the 22nd Biennial Congress of the South African Society for Microbiology (SASM2023), Protea Hotel Technopark, Stellenbosch, South Africa. 17-20 September 2023.



Hlakotsa, N.M.M.S. & Ngara, R. 2023. Physiological responses of sorghum seedlings exposed to mild drought stress. Poster presented at the 48th South African Association of Botanists conference, Polokwane, South Africa. 17-20 January 2023.

Longwane, N.V., Rothmann, L.A. & Swart, W.J. 2023. Exploring soybean and sunflower microbiomes for beneficial bacterial microorganisms. Poster presented at the 12th International Congress of Plant Pathology, Lyon, France. 20-25 August 2023.

Malekana, L., Clark, V.R., Steenhuisen, S., Martin, G.D. & Alexander, J. 2023. Impact and management of range expanding Rosaceae species along elevational gradients in the Maloti Drakensberg. Poster presented at the 16th International Conference on Ecology and Management of Alien Plant Invasions (EMAPI), Pucón, Chile. 23-25 October 2023.

Masisi, T.V., McLaren, N.W., Jackson, M. & Rothmann, L.A. 2023. Identifying sorghum grain fungal colonisers, quantification of mycotoxins and development of weather-based predictive models for *Fusarium graminearum*. Poster presented at the 12th International Congress of Plant Pathology, Lyon, France. 20-25 August 2023.

Mbele, T., Steenhuisen, S. & Canavan, K. 2023. Invasive status of *Cortaderia* species in South Africa. Poster presented at the 18th Biodiversity Research Symposium, Kimberley, South Africa. 27 September 2023.

Mbele, T., Steenhuisen, S. & Canavan, K. 2023. Invasive status of *Cortaderia* species in South Africa. Poster presented at the National Symposium on Biological Invasions, Grabouw, South Africa. 4-6 July 2023.

Mboyi, L., Clark, V.R., Mapaura, A., Steenhuisen, S. & Canavan, K. 2023. Invasion patterns and impacts of the grass *Nassella tenuissima* in the Eastern Cape Drakensberg, South Africa. Poster presented at the 58th Grassland Society of Southern Africa (GSSA) Annual Conference, Rustenburg, South Africa. 24-28 July 2023.

Meiring, M., McLaren, N.W. & Rothmann, L.A. 2023. The viability of *Sclerotinia sclerotiorum* sclerotia exposed to dry heat temperatures and the rumen of cattle. Poster presented at the 12th International Congress of Plant Pathology, Lyon, France. 20-25 August 2023.



Mngomezulu, D.N., Rothmann, L.A., and Minnaar-Ontong, A. 2023. Resistance to Fusarium head blight in wheat: influence of the fungal mycotoxin profile. Poster presented at the 12th International Congress of Plant Pathology, Lyon, France. 20-25 August 2023.

Mngomezulu, N.T., Veldkornet, D.A., Rajkaran, A. & Nasreen, P. 2023. The influence of physiochemical variables on the distribution of aquatic invertebrates (snails and crab abundance) in salt marsh creeks. Poster presented at the Southern African Society for Aquatic Scientists Annual Congress (SASAqS), Somerset West, South Africa. 21-25 June 2023.

Mohotloane, M.M. & Mafa, M.S. 2023. HRP pretreatment modifies structural and chemical properties of rooibos biomass, improving its saccharification by enzyme cocktails. Poster presented at the 4th International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability (BIORESTEC2023). Lake Garda, Italy. 14-17 May 2023.

Moloi, K.T., Martin, G.D. & Steenhuisen, S. 2023. Seed dispersal and germination of *Cotoneaster pannosus* on Afromontane grasslands of eastern Free State, South Africa. Poster presented at the 16th International Conference on Ecology and Management of Alien Plant Invasions (EMAPI), Pucón, Chile. 23-25 October 2023.

Moshieng, N., Labuschagne, M., Shandu, S.F., Rantso, P. & Mbuma, N.W. 2023. Variation in seed protein, selected minerals, phytic acid and potential mineral bioavailability of cowpea [*Vigna unguiculata* (L.) Walp] mutants and accessions. Poster presented at the African Plant Breeders Association Conference, Mohammed VI Polytechnic University (UM6P), Benguerir, Morocco. 23-27 October 2023

Ngara, R. 2023. Comparative morpho-physiological and molecular studies of sorghum under drought stress. Poster presented at the VIB Conference: Translational Research in Crops, Ghent, Belgium. 22-23 June 2023.

Payne, S., Steenhuisen, S., Moloi, K.T., Masole, P., Carvalho, G., Sithole, Z., Chikowore, G., Westwood, T., Rahlao, M., Chatanga, P., Seleteng-Kose, L. & Martin, G.D. 2023. Review of the invasive, yet economically beneficial, *Rosa rubiginosa* L. (Rosaceae) within southern Africa. Poster presented at the 16th International Conference on Ecology and anagement of Alien Plant Invasions (EMAPI), Pucón, Chile. 23-25 October 2023.

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA



UFS
NATURAL AND
AGRICULTURAL SCIENCES

Sekhurwane, M. & Moloi, M.J. 2023. Influence of different selenium application methods on physiology and biochemistry of drought stressed edamame. Poster presented at the 48th Annual conference of the South African Association of Botanists (SAAB), Polokwane, South Africa. 17-20 January 2023.