



## Plant Sciences

### Conference contributions 2018

**Akhtar, S., Labuschagne, M.T., Mashingaidze, K. & Osthoff, G.** 2018. *Heritability and expression of Fe and Zn and their bioavailability in South African maize under abiotic stress conditions*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Allemann, I., Cawood, M.E. & Allemann, J.** 2018. *Phytochemical characterization and phytotoxicity of leaf extracts from temperature stressed *Amaranthus cruentus* plants*. Poster presented at the Annual Congress on Plant Science & Biosecurity (ACPB-2018), Valencia, Spain.

**Allemann, I., Cawood, M.E. & Van Der Watt, E.** 2018. *Impact of drought on the allelopathic effects of *Amaranthus**. Paper delivered at the African Combined Congress, Ratanga Junction, Cape Town, South Africa.

**Bester, M.C. & McLaren, N.W.** 2018. *Evaluating inoculum source, application and timing in screening for resistance to *Sclerotinia sclerotiorum* on sunflower cultivars*. Poster presented at the 11<sup>th</sup> International Congress of Plant Pathology: Plant Health in a Global Economy, Heyns Convention Centre, Boston, USA.

**Booyse, M., Wentzel, B., Miles, C. & Labuschagne, M.T.** 2018. *Statistical selection methods for baking quality in summer dryland wheat cultivars*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Boshoff, W.H.P., Bender, C.M. & Pretorius, Z.A.** 2018. *Can field ratings of differential lines be used for wheat stem rust pathotyping?* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.

**Castelyn, H.D., Ereful, N.C., Visser, B., Boyd, L.A. & Pretorius, Z.A.** 2018. *Two phases of an adult plant resistance response in wheat to *Puccinia graminis* f. sp. *tritici* infection*. Poster presented at the Borlaug Global Rust Initiative (BGRI) Technical Workshop, Marrakech, Morocco.



**Castelyn, H.D., Visser, B., Ereful, N., Boyd, L. & Pretorius, Z.A.** 2018. *Differential expression of effectors in wheat adult plant – Puccinia graminis f. sp. tritici interactions.* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.

**Cawood, M.E. & Saba, L.** 2018. *Resistance responses of wheat treated with Artemisia afra extracts and their repellent ability against the Russian wheat aphid.* Paper delivered at the Annual Congress on Plant Science & Biosecurity (ACPB-2018), Valencia, Spain.

**Chemonges, M., Herselman, L., Visser, B., Boshoff, W.H.P. & Pretorius, Z.A.** 2018. *Genetics of stem rust resistance in South African winter wheat varieties.* Poster presented at the Borlaug Global Rust Initiative (BGRI) Technical Workshop, Marrakech, Morocco.

**Combrink, N.K., Bijzet, Z., Booyse, M., Labuschagne, M.T. & Sippel, A.D.** 2018. *Breeding for sweeter citrus Mandarin fruit.* Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Craven, M., Abrahams, A., Janse Van Rensburg, B. & McLaren, N.W.** 2018. *Economic viability of fungicide application for northern corn leaf blight on maize cultivars with varying resistance.* Poster presented at the African Combined Congress, Bridgeways Century City, Cape Town.

**Goche, T., Chivasa, S. & Ngara, R.** 2018. *Analysis of expression levels of drought responsive genes in sorghum and Arabidopsis under sorbitol and drought stress treatments.* Paper delivered at the South African Association of Botanists (SAAB) Conference, University of Pretoria, South Africa.

**Goche, T., Chivasa, S. & Ngara, R.** 2018. *Gene expression analysis in sorghum under drought stress.* Poster presented at the Sorghum in the 21<sup>st</sup> Century Conference, Cape Town South Africa.

**Hernández-Pinzón, I., Green, P., Dawson, A., Smoker, M., Taylor, J., Gardiner, M., Hubbard, A., Wan, A., Chen, X., Pretorius, Z.A., Comadran, J., Waugh, R. & Moscou, M.** 2018. *Map-based cloning of Rps6 implicates NLR-mediated resistance in maintaining stripe rust formae speciales.* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.



**Hiscock, L., Bothma, C., Hugo, A. & van Biljon, A.** 2018. *Development and sensory testing of products containing Amaranthus leaves*. Paper delivered at the Agricultural Research Council/Durban University of Technology/University of the Free State (ARC/DUT/UFS) Collaborative Consortium (Broadening the Food Base) Annual seminar, Bloemfontein, South Africa.

**Hodson, D., Jin, Y., Olivera Firpo, P.D., Szabo, L.J., Hovmøller, M.S., Patpour, M., Nazari, K., Gilligan, C.A., Meyer, M., Hort, M.C., Millington, S., Pretorius, Z.A., Park, R.F., Fetch, T.G. Jr. & Grønbech Hansen, J.** 2018. *Global wheat rust monitoring: meeting the challenges of a re-emerging threat to wheat production*. Paper delivered at the International Congress of Plant Pathology (ICPP), Boston, USA.

**Katondo, H.M., van Biljon, A. & Minnaar-Ontong, A.** 2018. *Genetic diversity of Amaranth genotypes*. Paper delivered at the Agricultural Research Council/Durban University of Technology/University of the Free State (ARC/DUT/UFS) Collaborative Consortium (Broadening the Food Base) Annual seminar, Bloemfontein, South Africa.

**Katondo, H.M., van Biljon, A. & Minnaar-Ontong, A.** 2018. *Nutritional diversity in leafy amaranth genotypes*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Labuschagne, M.T.** 2018. *Ancient grains breeding: current status and future prospects*. Paper delivered at the Sorghum in the 21<sup>st</sup> Century conference, Cape Town, South Africa.

**Labuschagne, M.T.** 2018. *Proteomics as a tool in sorghum and cereal quality and abiotic stress tolerance breeding*. Paper delivered at the Sorghum in the 21<sup>st</sup> Century Conference, Cape Town, South Africa.

**Labuschagne, M.T.** 2018. *Proteomics in wheat gluten research: where are we standing and where are we going?* Plenary paper delivered at the 13<sup>th</sup> International Gluten Workshop, Hilton, Mexico City.

**Labuschagne, M.T., Lindeque, R.C. & van Biljon, A.** 2018. *Relationships between grain yield and protein quantity and quality in commercial wheat*. Paper delivered at the 4<sup>th</sup> Latin American Cereals Conference, Hilton, Mexico City.



**Labuschagne, R., Terefe, T., Boshoff, W.H.P., Pretorius, Z.A., Venter, E. & Visser, B.** 2018. *The development of the Puccinia triticina population in South Africa.* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.

**Li, H., Pretorius, Z.A., Boshoff, W.H.P., Zheng, Q., Li, B. & Li, Z.** 2018. *Establishment of new wheat-Thinopyrum ponticum translocation lines with resistance to Ug99 races of Puccinia graminis f. sp. tritici.* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.

**Lindeque, R.C., van Biljon, A. & Labuschagne, M.T.** 2018. *Matching opposites – defining the association between grain yield and protein content in South African wheat.* Paper delivered at the 13<sup>th</sup> International Gluten Workshop, Hilton, Mexico City.

**Mabirimisa, A., Bijzet, Z. & Labuschagne, M.T.** 2018. *Cross compatibility between six promising imported litchi (Litchi chinensis) cultivars.* Poster presented at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**McLaren, N.W., Bester, M.C. & Rothmann, L.A.** 2018. *The need to go beyond the pathogen in development of effective disease control strategies for sorghum.* Paper delivered at the Global Sorghum Conference, Century City Convention Centre, Cape Town.

**McLaren, N.W., Rothmann, L.A., Bester, M.C. & Steyn, C.** 2018. *Sclerotinia stem rot of soybean: the South African approach.* Poster presented at the 11<sup>th</sup> International Congress of Plant Pathology: Plant Health in a Global Economy, Heyns Convention Centre, Boston, USA.

**Maré, A., Boshoff, W.H.P. & Herselman, L.** 2018. *Doubled haploid wheat lines with combined rusts and Fusarium head blight resistance.* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildew Conference (ICRPMC), Skukuza, South Africa.

**Mbumba, N.W., Zhou, M.M. & Van der Merwe, R.** 2018. *Estimating breeding values for sugarcane yield of parental genotypes using best linear unbiased prediction (BLUP).* Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.



**Mbuma, N.W., Zhou, M.M. & Van der Merwe, R.** 2018. *Evaluating breeding values of genotypes in sugarcane breeding using Best Linear Unbiased Prediction (BLUP)*. Paper delivered at the 91<sup>st</sup> Annual Congress of the South African Sugar Technologist's Association (SASTA), ICC Durban, South Africa.

**Meyer, C., Steyn, C. & Minnaar-Ontong, A.** 2018. *Population genetic structure of Sclerotinia sclerotiorum in South Africa*. Paper delivered at the Soilborne Plant Diseases Symposium Agricultural Research Council, Stellenbosch, South Africa.

**Meyer, C., Steyn, C. & Minnaar-Ontong, A.** 2018. *South Africa's big bang pathogen: Sclerotinia Sclerotiorum*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Meyer, M., Allen, C., Thurston, W., Burgin, L., Millington, S., Hort, M., Alemayehu, Y., Hodson, D., Seid, J., Derso, E., Visser, B. & Gilligan, C.** 2018. *Atmospheric spore dispersal modelling: New insights on wheat rust migration routes and real-time risk assessments*. Paper delivered at the Borlaug Global Rust Initiative (BGRI) Technical Workshop, Marrakech, Morocco.

**Mishasha, T., Zhou, M.M. & Van der Merwe, R.** 2018. *Phenotypic correlations among cane quality traits measured from unselected sugarcane breeding family plots*. Paper delivered at the 91<sup>st</sup> Annual Congress of South African Sugar Technologist's Association (SASTA), ICC Durban, South Africa.

**Mishasha, T., Zhou, M.M. & Van der Merwe, R.** 2018. *Using quantitative genetic parameters to determine sample size for sucrose content in sugarcane breeding*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Mmereki, K.P., Minnaar-Ontong, A. & Herselman, L.** 2018. *Improved Fusarium head blight resistance in the South African cultivar Krokodil*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeders' Association Symposium, Gateway Hotel, Durban, South Africa.

**Mmereki, K.P., Minnaar-Ontong, A. & Herselman, L.** 2018. *Improved Fusarium head blight resistance in the South African cultivar Krokodil*. Poster presented at the South African National Seed Organization (SANSOR) Annual Congress, Pretoria, South Africa.



**Mojapelo, P.M., Craven, M. & McLaren, N.W.** 2018. *Sorghum root rot and grain mold pathogen responses to legume rotation systems*. Poster presented at the African Combined Congress, Bridgeways Century City, Cape Town.

**Ngara, R., Movahedi, M., & Chivasa, S.** 2018. *Molecular responses of sorghum to drought stress: lessons from proteome and gene expression profiling*. Paper delivered at the South African Association of Botanists (SAAB) Conference, University of Pretoria, South Africa.

**Ngcala, M.G. & Ngara, R.** 2018. *Sorghum responses under high temperature stress*. Poster presented at the Sorghum in the 21<sup>st</sup> Century Conference, Cape Town, South Africa.

**Phakela, K., Labuschagne, M.T., Van Biljon, A. & Wentzel, B.S.** 2018. *Size exclusion high performance liquid chromatography analysis using an ultra-high resolution column for improved separation of wheat proteins in South African bread wheat cultivars*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Phakela, K., Labuschagne, M.T., Wentzel, B. & van Biljon, A.** 2018. *Size exclusion-high performance liquid chromatography analysis using an ultra-high resolution column for improved separation of wheat proteins in South African bread wheat cultivars*. Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Phakela, K., Labuschagne, M.T., Wentzel, B.S. & van Biljon, A.** 2018. *The association of protein fractions obtained with the wide bore Yarra Sec column with wheat quality characteristics in three production regions of South Africa*. Poster presented at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Pretorius, Z.A., Booysen, G.J., Boshoff, W.H.P. & Joubert, J.H.** 2018. *Innovative manufacturing of a cereal rust inoculation device*. Poster presented at the Borlaug Global Rust Initiative (BGRI), Technical Workshop, Marrakech, Morocco.



**Prins, R., Smit, C., Wessels, E., Boshoff, W.H.P., Minnaar, H., Pretorius, Z.A., Abbrouk, M., Horn, M., Doležel, J., Šimková, H. & Krattinger, S.G.** 2018. *A step closer to an improved understanding of the partial stripe rust resistance QYr.sgi-4A.1 region of the South African wheat cultivar Kariega.* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.

**Rothmann, L.A., Craven, M. & McLaren, N.W.** 2018. *Developing epidemiologically-based intervention thresholds for sorghum leaf diseases in South Africa.* Paper delivered at the Global Sorghum Conference, Century City Convention Centre, Cape Town.

**Rothmann, L.A. & McLaren, N.W.** 2018. *Relationship between weather, colonization and mycotoxins produced by Fusarium graminearum species complex on sorghum grain.* Paper delivered at the 11<sup>th</sup> International Congress of Plant Pathology: Plant Health in a Global Economy, Heyns Convention Centre, Boston, USA.

**Shawa, H.C., van Biljon, A. & Labuschagne, M.T.** 2018. *Evaluation of quality protein maize hybrids for iron, zinc and its bioavailability under two contrasting soil conditions.* Poster presented at the South African National Seed Organization (SANSOR) Annual Congress, Pretoria, South Africa.

**Shawa, H., Labuschagne, M.T. & van Biljon, A.** 2018. *The influence of low N conditions on iron, zinc and phytic acid in quality protein maize hybrids.* Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Siwale, J., Lebaka, N.G., Labuschagne, M.T., Gerrano, A., Ostoff, G. & Hugo, A.** 2018. *Nutritional diversity of Bambara groundnut germplasm collection at Agricultural Research Council, South Africa.* Poster presented at 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Smit, A., Labuschagne, M.T. & Van der Merwe, R.** 2018. *Stability of edamame (Glycine max) in South African production conditions.* Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Soko, T., Bender, C.M., Prins, R. & Pretorius, Z.A.** 2018. *Yield loss due to stem rust in wheat varieties with different types of resistance.* Poster presented at the Borlaug Global Rust Initiative (BGRI), Technical Workshop, Marrakech, Morocco.



**Steenhuisen, S-L. & Hobbhahn, N.** 2018. *A test of pollination syndrome theory using the parasitic plant *Mystropetalon thomii* reveals a surprising outcome.* Paper delivered at the South African Association of Botanists (SAAB) Conference, University of Pretoria, South Africa.

**Swart, W.J.** 2018. *Factors shaping diversity in the rhizobiome and their relevance to plant health* – Invited paper delivered at the 28<sup>th</sup> Annual Symposium of the Soilborne Plant Diseases Interest Group of South Africa, Vredenburg Research Centre, Stellenbosch, South Africa.

**Terefe, T.G., Labuschagne, R., Boshoff, W.H.P., Visser, B. & Pretorius, Z.A.** 2018. *Diversity in *Puccinia triticina* on wheat and triticale in South Africa.* Paper delivered at the Combined Crops, Soils, Horticulture and Weeds Congress (CCSHWC), Cape Town, South Africa.

**Terefe, T.G., Visser, B., Boshoff, W.H.P., Herselman, L., Soko, T., Chiuraise, N., Siwale, J., Mutari, B., Hodson, D.P. & Pretorius, Z.A.** 2018. *Evidence of wheat rust inoculum exchange between southern African countries.* Poster presented at the 15<sup>th</sup> International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.

**Tóth, B., Moloi, M.J., Steyn, C., van Biljon, A. & Labuschagne, M.** 2018. *The effect of low nitrogen and low phosphorous and a combination of the two on the quantity of HMW-GS in two South African bread wheat cultivars.* Paper delivered at the 13<sup>th</sup> International Gluten Workshop, Hilton, Mexico City.

**Tóth, B., Moloi, M.J., Steyn, C., van Biljon, A. & Labuschagne, M.** 2018. *The influence of nitrogen and phosphorous deficiency on protein quality and quantity in two bread wheat cultivars in South Africa.* Paper delivered at the 4<sup>th</sup> Latin American Cereals Conference, Hilton, Mexico City.

**Van Aardt, A.C., Scott, L., Brink, J., Toffolo, B., Ochando, J. & Carrion, J.** 2018. *Palynological reconstruction of middle Pleistocene environments at Florisbad, Free State Province, South Africa.* Paper delivered at the Proceedings of the 20<sup>th</sup> Biennial Conference of the Palaeontological Society of Southern Africa in Bloemfontein, South Africa.





**Van Biljon, A., Lindeque, R.C., Pelser, S., Akhtar, S. & Labuschagne M.T.** 2018. *Relationship between iron, zinc and ash content, and loaf volume, flour protein and yield in white flour of commercial bread wheat cultivars.* Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Van der Merwe, J.B. & Van der Merwe, R.** 2018. *Green yield potential and quality of vegetable-type soybean.* Paper delivered at the 12<sup>th</sup> Southern African Plant Breeding Symposium, Gateway Hotel, Durban, South Africa.

**Visser, B., Meyer, M., Park, R.F., Gilligan, C.A., Burgin, L.E., Hort, M.C., Hodson, D.P. & Pretorius, Z.A.** 2018. *Gone with the wind: revisiting stem rust dispersal between southern Africa and Australia.* Poster presented at the Borlaug Global Rust Initiative (BGRI) Technical Workshop, Marrakech, Morocco.

**Wentzel, B., Labuschagne, M.T., van Biljon, A. & Booyse, M.** 2018. *The effect of the environment on protein composition in selected South African wheat cultivars.* Poster presented at the 13<sup>th</sup> International Gluten Workshop, Hilton, Mexico City.

**Zhang, J., Hewitt, T., Zhang, P., Pretorius, Z.A., Upadhyaya, N., Schnippenkoetter, W., Dundas, I., McIntosh, R.A., Mago, R., Periyannan, S., Park, R.F., Boshoff, W.H.P., Kong, X., Hoxha, S., Steuernagel, B., Wulff, B.H. & Lagudah, E.S.** 2018. *Isolation of durable wheat stem rust resistance gene Sr26.* Poster presented at the Borlaug Global Rust Initiative (BGRI), Technical Workshop, Marrakech, Morocco.

**Zhang, J., Hewitt, T., Zhang, P., Pretorius, Z.A., Upadhyaya, N., Schnippenkoetter, W., Dundas, I., McIntosh, R.A., Richardson, T., Park, R.F., Mago, R., Periyannan, S., Boshoff, W.H.P., Steuernagel, B., Wulff, B.H. & Lagudah, E.** 2018. *Isolation of an immune receptor gene from tall wheat grass confers resistance to diverse races of stem rust in common wheat.* Poster presented at the International Cereal Rusts and Powdery Mildews Conference (ICRPMC), Skukuza, South Africa.