

PLANT SCIENCES RESEARCH OUTPUTS

Research Articles 2021

Abdi, N., Labuschagne, M., Ullah, A., Hemissi, I., van Biljon, A., Hachana, A. & Sifi, B. 2021. Legume-rhizobia symbiosis under abiotic constraints: performance system. *Agrosciencia* 55(2): 37-61.

Abdi, N., van Biljon, A., Steyn, C. & Labuschagne, M.T. 2021. Morpho-physiological studies of wheat-arbuscular mycorrhiza symbiosis under drought stress conditions. *Plants* 10(9): 1756.

Adegbegi, A.J., Ashafa, A.O.T., Balogun, F.O., Omonkhua, A.A. & Onoagbe, I.O. 2021. *In vitro* determination of the inhibition of free radical activity and carbohydrate-hydrolysing enzymes by extracts and phytochemical fractions of *Cymbopogon citratus*. *Academia Journal of Medicinal Plants* 9(3): 30-35.

Akhtar, S., Labuschagne, M., Osthoff, G., Mashingaidze, K. & Hossain, A. 2021. Xenia and deficit nitrogen influence the iron and zinc concentration in the grains of hybrid maize. *Agronomy* 11: 1388.

Bakare, O.O., Gokul, A. & Keyster, M. 2021. PR-1-Like protein as a potential target for the identification of *Fusarium oxysporum*: An in silico approach. *BioTech* 10(2): 8. DOI: 10.3390/biotech10020008.

Bakare, O.O., Gokul, A., Wu, R., Niekerk, L.A., Klein, A. & Keyster, M. 2021. Biomedical relevance of novel anticancer peptides in the sensitive treatment of cancer. *Biomolecules* 11(8): 1120.

Bender, C.M., Boshoff, W.H.P. & Pretorius, Z.A. 2021. Infection and colonization of triticale by *Puccinia graminis* f. sp. *tritici*. *Canadian Journal of Plant Pathology* 43(sup2), S198-S210. DOI: 10.1080/07060661.2021.1931453.

Chiipanthenga, M.K., Van der Merwe, R., Labuschagne, M. & Fandika, I.R. 2021. Combining ability and mode of gene action of soybean (*Glycine max* L.) traits under water-limited stress conditions. *Euphytica* 217: 41.

Chikowore, G., Steenhuisen, S., Mutamiswa, R., Martin, G.D. & Chidawanyika, F. 2021. Integration of invasive tree, black locust, into agro-ecological flower visitor networks induces competition for pollination services. *Arthropod-Plant Interactions* 15: 787-796.

Clark, V.R., Mukwada G., Hansen, M., Adelabu, S., Magaiza, G., Le Roux, A., Bredenhand, E., Otomo, P.V., Steenhuisen, S.-L., Franke, A., Van Tol, J., Mathinya, N. & Makombe, R. 2021. The Afromontane Research Unit: Driving connections and capacity building for the

sustainable development of southern African mountains. *Mountain Research and Development* 41(2): 1-5.

Combrink, H.M., Oosthuizen, J., Visser, B., Chabilal, N., Buccimazza, I., Foulkes, W.D. & Van der Merwe, N.C. 2021. Mutations in BRCA-related breast and ovarian cancer in the South African Indian population: A descriptive study. *Cancer Genetics* 15: 258-259. DOI: 10.1016/j.cancergen.2021.06.002.

Crous, P.W., Lombard, L., Sandoval-Denis, M., Seifert, K.A., Schroers, H.-J., Chaverri, P., Gené, J., Guarro, J., Hirooka, Y., Bensc, K., Kema, G.H.J., Lamprecht, S.C., Cai, L., et al. 2021. Fusarium: more than a node or a foot-shaped basal cell. *Studies in Mycology* 98(1): 1-184.. ISSN 0166-0616. DOI: 10.1016/j.simyco.2021.100116.

De Ron, A.M., Cartea, E. & Van der Merwe, R. 2021. The challenges of some horticultural crops in the International Year of Fruits and Vegetables. *Mol (Sociedad de Ciencias de Galicia)* 20: 1.

De Vega, C., Álvarez-Pérez, S., Albaladejo, R.G., Steenhuisen, S.-L., Lachance, M.-A., Johnson, S.D. & Herrera, C.M. 2021. The role of plant-pollinator interactions in structuring nectar microbial communities. *Journal of Ecology* 109: 3379-3395.

Gokul, A., Fahiem-Carelse, M., Niekerk, L.A., Klein, A., Ludidi, N., Mendoza-Cozatl, D. & Keyster, M. 2021. Exogenous 3, 3'-Diindolylmethane improves vanadium stress tolerance in *Brassica napus* seedling shoots by modulating antioxidant enzyme activities. *Biomolecules* 11(3): 436.

Goredema-Matongera, N., Tarekegne, A., Ndhlela, T., van Biljon, A. & Labuschagne, M.T. 2021. Multi-nutrient biofortification of maize (*Zea mays* L): Current status, opportunities and limitations. *Nutrients* 13: 1039.

Istain, B., Mokgokong, P.S., Wu, R., Mia, J., Gokul, A., Mendoza-Cozatl, D., Du Plessis, M. & Keyster, M. 2021. Draft genome sequence of the putative endophytic bacterium *Pantoea agglomerans* R6, associated with *Lactuca serriola* from South Africa. *Microbiology Resource Announcements* 10(10).

Kovács, G.E., Szőke, L., Tóth, B., Kovács, B., Bojtor, C., Illés, Á., Radócz, L., Jr., Moloi, M.J. & Radócz, L. 2021. The physiological and biochemical responses of European chestnut (*Castanea sativa* L.) to bight fungus (*Cryphonectria parasitica* (Murill) Barr). *Plants* 10: 2136.

Labuschagne, M., Guzman, C., Phakela, K., Wentzel, B. & van Biljon, A. 2021. Solvent retention capacity and gluten protein composition of durum wheat flour as influenced by drought and heat stress. *Plants* 10: 1000.

- Labuschagne, R., Venter, E., Boshoff, W.H.P., Pretorius, Z.A., Terefe, T. & Visser, B.** 2021. Historical development of the *Puccinia triticina* population in South Africa. *Plant Disease* 105(9): 2445-2452. DOI: 10.1094/PDIS-10-20-2301-RE.
- Mafa, M.S., Malgas, S. & Pietschke, B.I.** 2021. Feruloyl esterase (FAE-1) sourced from a termite hindgut and GH10 xylanases synergy improves degradation of arabinoxylan. *AMB Express* 11(21). DOI: 10.1186/s13568-021-01180-1.
- Mafa, M.S., Pietschke, B.I. & Malgas, S.** 2021. Defining the frontiers of synergism between cellulolytic enzymes for improved hydrolysis of lignocellulosic feedstocks. *Catalysts* 11(11): 1343. DOI: 10.3390/catal11111343.
- Malgas, S., Mafa, M.S., Mathibe, B.N. & Pietschke, B.I.** 2021. Unravelling synergism between various GH family xylanases and debranching enzymes during hetero-xylan degradation. *Molecules* 26(22): 6770. DOI: 10.3390/molecules26226770.
- Maré, A., Boshoff, W.H.P. & Herselman, L.** 2021. Molecular and phenotypic evaluation of wheat containing different combinations of rust resistance genes. *Plant Breeding* 140(3): 419-431. DOI: 10.1111/pbr.12913.
- Marivate, V., Aghoghovwia, P., Ismail, Y., Mahomed-Asmail, F. & Steenhuisen, S.-L.** 2021. The Fourth Industrial Revolution - What does it mean to our future faculty? *South African Journal of Science* 117(5): 1-3.
- Matova, P.M., Kamutando, C., Sarsu, V., Ingelbrecht, I., Labuschagne, M. & Magorokosho, C.** 2021. Exploring the opportunity for maize crop improvement with gamma irradiation. *Journal of Crop Improvement* 35(4): 568-581.
- Mbuma, N.W., Gerrano, A.S., Lebaka, N., Amoo, S., Mofokeng, A. & Labuschagne, M.T.** 2021. Variability in the nutritional value of cowpea genotypes for crop improvement. *Acta Scandinavica* 71: 132-144.
- Mbuma, N.W., Gerrano, A.S., Lebaka, N., Mofokeng, A. & Labuschagne, M.T.** 2021. The evaluation of a southern African cowpea germplasm collection for yield and yield components. *Crop Science* 61: 466-489.
- McInturf, S.A., Khan, M.A., Gokul, A., Castro-Guerrero, N.A., Hoehner, R., Li, J., Margault, H., Fichman, Y., Kunz, H.H., Goggin, F.L., Keyster, M., Nechushtai, R., Mittler, R. & Mendoza-Cózatl, D.G.** 2021. Cadmium interference with iron sensing reveals transcriptional programs sensitive and insensitive to reactive oxygen species. *Journal of Experimental Botany* Sep 9:erab393. DOI: 10.1093/jxb/erab393. Epub ahead of print. PMID: 34499172.

- Meyer, W.B., Boshoff, W.H.P., Minnaar-Ontong, A., Young, A., Kong, G., Thompson, S., Pretorius, Z.A. & Visser, B.** 2021. Phenotypic and genotypic variation of *Puccinia helianthi* in South Africa. *Plant Disease* 105(5): 1482-1489. DOI: 10.1094/PDIS-09-20-1903-RE.
- Minnaar-Ontong, A., Gerrano, A. & Labuschagne, M.** 2021. Assessment of genetic diversity and structure of Bambara groundnut (*Vigna subterranea* (L.) verdc.) landraces in southern Africa. *Scientific Reports* 11: 7408.
- Moloi, L.D., Balogun, F.O. & Ashafa, A.O.T.** 2021. Mitigation of free radicals and carbohydrate-linked enzymes by extracts and partitioned fractions of *Elephantorrhiza elephantina* (Burch.) Skeels root. *Journal of Medicinal Plants for Economic Development* 5(1): a109.
- Moloi, M.J. & Van der Merwe, R.** 2021. Drought tolerance responses in vegetable-type soybean involve a network of biochemical mechanisms at flowering and pod-filling stages. *Plants* 10: 1502. DOI: 10.3390/plants10081502.
- Muiruri, V., Marchant, R., Rucina, S.M., Scott, L. & Lane, P.J.** 2021. Late Holocene environmental change and anthropogenic: Ecosystem interaction on the Laikipia Plateau, Kenya. *Ambio* Epub 2021 Jun 16. DOI: 10.1007/s13280-021-01554-6.
- Nafiu, M.O., Adewuyi, A.I., Abdulsalam, T.A. & Ashafa, A.O.T.** 2021. Antimalarial activity and biochemical effects of saponin-rich extract of *Dianthus basuticus* Burt Davy in *Plasmodium berghei*-infected mice. *Advances in Traditional Medicine*. DOI: 10.1007/s13596-021-00571-w.
- Ngara, R., Goche, T., Swanevelder, D.Z.H. & Chivasa, S.** 2021. Sorghum's whole plant transcriptome and proteome responses to drought stress: A review. *Life* 11: 704. DOI: 10.3390/life11070704.
- Niekerk, L.A., Carelse, M.F., Bakare, O.O., Mavumengwana, V., Keyster, M., & Gokul, A.** 2021. The relationship between cadmium toxicity and the modulation of epigenetic traits in plants. *International Journal of Molecular Sciences* 22(13): 7046.
- Omóbòwálé, T.O., Oyagbemi, A.A., Adejumobi, O.A., Ugbor, F., Asenuga, E.R., Ajibade, T.O., Afolabi, J.M., Ogunpolu, B.S., Falayi, O.O., Gbadamosi, I.T., Ola-Davies, O.E., Saba, A.B., Ashafa, A.O.T., Yakubu, M.A., Adedapo, A.A. & Oguntibeju, O.O.** 2021. Antihypertensive effect of methanol leaf extract of *Azadirachta indica* is mediated through suppression of renal caspase 3 Expressions on N^ω-Nitro-L-Arginine Methyl Ester induced hypertension. *Pharmacognosy Research* 12: 460-465.

Oso, A.A. & Ashafa, A.O.T. 2021. Compatibility of entomopathogenic nematodes with plant extracts and post-exposure virulence test under laboratory condition. *Turkish Journal of Zoology* 45: 384-394.

Oso, A.A., Kolawole, A.O. & Ashafa, A.O.T. 2021. Assessment of pest problems and farmers' perception on the use of botanical pesticides in Ekiti State, Nigeria. *Research Journal of Agriculture and Forestry Sciences* 9(2): 12-17.

Peprah, B., Parkes, E.Y., Kulakow, P., van Biljon, A. & Labuschagne, M. 2021. Genetic analysis of yield and quality characteristics in provitamin A hybrid cassava families in Ghana. *Agronomy* 11: 1911.

Phakela, K., van Biljon, A., Wentzel, B., Guzman, C. & Labuschagne, M.T. 2021. Gluten protein response to heat and drought stress in durum wheat as measured by reverse phase - high performance liquid chromatography. *Journal of Cereal Science* 100: 103267.

Ruiz-Hernández, V., Joubert, L., Rodríguez-Gómez, A., Artuso, S., Patrick, J.G., Gómez, P.A., Eckerstorfer, S., Brandauer, S.S., Trcka-Rojas, C.G.I., Martínez-Reina, L., Booth, J., Lau-Zhu, A., Weiss, J., Bielza, P., Glover, B.J., Junker, R.R. & Egea-Cortines M. 2021. Humans share more preferences for floral phenotypes with pollinators than with pests. *Frontiers in Plant Science* 12: 1762. DOI:10.3389/fpls.2021.647347.

Scott, L., Manzano, S., Carr, A.S., Cordova, C., Ochando, J., Bateman, M.K. & Carrion, J.S. 2021. A 14 000 year multi-proxy alluvial record of ecotone changes in a Fynbos-Succulent Karoo transition in South Africa. *Palaeogeography, Palaeoclimatology, Palaeoecology* 569: 110331.

Shamle, N.J., Tella, A.C., Whitwood, A.C., Ashafa, A.O.T. & Ajibade, P.A. 2021. Synthesis, characterization, electrochemistry, antioxidant, and toxicological studies of Co(II), Ni(II) and Ag(I) complexes of mefenamic acid/tolfenamic acid bearing metronidazole. *Journal of Coordination Chemistry* 74(8): 1255-1271.

Shawa, H., van Biljon, A. & Labuschagne, M.T. 2021. Protein quality and quantity of quality protein maize (QPM) and non-QPM hybrids under optimal and low nitrogen conditions. *Cereal Chemistry* 98 (3): 507-516.

Szilágyi, A., Radócz, L., Hájos, M.T., Juhász, C., Kovács, B., Kovács, G., Budayné Bódi, E., Radványi, C., Moloi, M.J. & Szőke, L. 2021. The impacts of woolly cupgrass on the antioxidative system and growth of a maize hybrid. *Plants* 10: 982.

Szőke, L., Moloi, M.J., Kovács, G., Biró, G., Radócz, L., Hájos, M.T., Kovács, B., Rácz, D., Danter, M. & Tóth, B. 2021. The application of phytohormones as biostimulants in corn smut infected Hungarian sweet and fodder corn hybrids. *Plants* 10(9): 1822.

- Terefe, T.G., Visser, B., Botha, W., Kozana, A., Roberts, R., Thompson, G.D., Prinsloo, G. & Read, D.A.** 2021. Detection and molecular characterization of wheat stripe mosaic virus on wheat in South Africa. *Crop Protection* 143: 105464. DOI: 10.1016/j.cropro.2020.105464.
- Thoresen, M., Malgas, S., Mafa, M.S. & Pletschke, B.I.** 2021. Revisiting the phenomenon of cellulase action: Not all endo- and exo-cellulase interactions are synergistic. *Catalysts* 11: 170. DOI: 10.3390/catal11020170.
- Tóth, B., Bóka, K., Rothmann, L. & Moloi, M.J.** 2021. The effect of four industrial by-products on the photosynthetic pigments, dry weight and ultrastructure of *Zea mays* L. *Biology Bulletin* 48(3): 296-305.
- Tóth, B., Moloi, M.J., Szőke, L., Danter, M. & Grusak, M.A.** 2021. Cultivar differences in the biochemical and physiological responses of common beans to aluminium stress. *Plants* 10: 2097.
- Toth, B., Moloi, M.J., Szőke, L. & Labuschagne, M.T.** 2021. Low nitrogen and phosphorus effects on wheat Fe, Zn, phytic acid and phenotypic traits. *South African Journal of Science* 117(3/4): 8414.
- Van der Merwe, R., van Biljon, A., Hugo, A. & Van der Merwe, J.** 2021. Relationships between yield and nutritional components of vegetable-type soybean genotypes using correlations and principal component analysis. *Mol (Sociedad de Ciencias de Galicia)* 21: 2.
- Vermeulen, M., Rothmann, L., Swart, W.J. & Gryzenhout, M.** 2021. *Fusarium casha* sp. nov. and *F. curculicola* sp. nov. in the *Fusarium fujikuroi* species complex isolated from *Amaranthus cruentus* and three weevil species in South Africa. *Diversity* 2021 13(10): 472. DOI: 10.3390/d13100472.
- Yang, G., Boshoff, W.H.P., Li, H., Pretorius, Z.A., Luo, Q., Li, B., Li, Z. & Zheng, Q.** 2021. Chromosomal composition analysis and molecular marker development for the novel Ug99-resistant wheat-*Thinopyrum ponticum* translocation line WTT34. *Theoretical and Applied Genetics* 134: 1587-1599. DOI: 10.1007/s00122-021-03796-0.
- Zhang, J., Hewitt, T., Boshoff, W.H.P., Dundas, I., Upadhyaya, N., Li, J., Patpour, M., Chandramohan, S., Pretorius, Z.A., Hovmøller, M., Schnippenkoetter, W., Park, R., Mago, R., Periyannan, S., Bhatt, D., Hoxha, S., Chakraborty, S., et al.** 2021. A recombined *Sr26* and *Sr61* disease resistance gene stack in wheat encodes unrelated NLR genes. *Nature Communications* 12: 3378. DOI: 10.1038/s41467-021-23738-0.

Books/Chapters in Books

Gerrano, A.S., Eifediyi, E.K., Labuschagne, M., Ogedegbe, F.O. & Hassen, A.I. 2021. Production practices of bambara groundnut. In: *Food and Potential Industrial Applications of Bambara Groundnut*. S.A Oyeyinka & B.I.O. Adeomowaye (Eds.). Springer. pp. 7-25. DOI: 10.1007/978-3-030-73920-1_2.

Marais, G.J. 2021. Managing diseases, pests and other problems: Chapter 22 Diseases. In: *Production Guidelines for Pecan*. A.D. Sippel & H. du Toit (Eds.). ARC-Tropical and Subtropical Crops. pp. 141-151. ISBN No 978-0-621-49137-1.

Thipe, V.C., Maloney, V., Klein, A., Gokul, A., Keyster, M. & Kati, K.V. 2021. Chapter 21 RNA interference and CRISPR/Cas9 techniques for controlling mycotoxins. In: *CRISPR and RNAi Systems: Nanobiotechnology Approaches to Plant Breeding and Protection*. K.A. Abd-Elsalam & K-T. Lim (Eds.). Elsevier. pp. 463-490. ISBN 9780128219102.