PAPERS PUBLISHED:

Thirteen peer reviewed journal papers were published:

2019/20:

1. Assefa T, J Zhang, RV Chowda-Reddy, ANM Lauter, A Singh, J O’Rourke, MA Graham, AK Singh (2020). Deconstructing the genetic architecture of iron deficiency chlorosis in soybean using genome-wide approaches. BMC Plant Biology volume 20, Article number: 42
2. Falk KG, TZ Jubery, SV Mirnezami, KA Parmley, S Sarkar, A Singh, B Ganapathysubramanian, AK Singh (2020). Computer vision and machine learning enabled soybean root phenotyping pipeline. Plant Methods volume 16, Article number: 5.
3. Nagasubramanian K, SE Jones, AK Singh, S Sarkar, A Singh, B Ganapathysubramanian (2019) Plant disease identification using explainable 3D deep learning on hyperspectral images. Plant Methods volume 15, Article number: 98
4. Parmley KA, RH Higgins, B Ganapathysubramanian, S Sarkar, AK Singh (2019 Machine Learning Approach for Prescriptive Plant Breeding. Scientific Reports volume 9, Article number: 17132.
5. Parmley K, K Nagasubramanian, S Sarkar, B Ganapathysubramanian, AK Singh (2019) Development of Optimized Phenomic Predictors for Efficient Plant Breeding Decisions Using Phenomic-Assisted Selection in Soybean. Plant Phenomics. Volume: 2019, Article ID: 5809404
6. Natukunda MI, KA Parmley, JD Hohenstein, T Assefa, J Zhang, GC MacIntosh, AK Singh (2019) Identification and Genetic Characterization of Soybean Accessions Exhibiting Antibiosis and Antixenosis Resistance to Aphis glycines (Hemiptera: Aphididae). Journal of economic entomology. Volume 112, Issue 3, Pages 1428-1438.

2018:

1. Akdemir D, W Beavis, R Fritsche-Neto, AK Singh, J Isidro-Sánchez. (2018). Multi-objective optimized genomic breeding strategies for sustainable food improvement. Heredity. Published online: https://www.nature.com/articles/s41437-018-0147-1
2. Akintayo, A., GL Tylka, AK Singh, B Ganapathysubramanian, A Singh, S Sarkar (2018). A deep learning framework to discern and count microscopic nematode eggs. Scientific Reports. 8: 9145 (Available online: 10.1038/s41598-018-27272-w)
3. Gao T, H Emadi, H Saha, J Zhang, A Lofquist, A Singh, B Ganapathysubramanian, S Sarkar, AK Singh, S Bhattacharya. (2018). A Novel Multirobot System for Plant Phenotyping. Robotics 7 (4): 61.
4. Ghoshal, S, D Blystone, AK Singh, B Ganapathysubramanian, A Singh, S Sarkar. (2018). Bringing consistency to plant stress phenotyping through an explainable deep machine vision framework. Proceedings of the National Academy of Sciences. DOI: 10.1073/pnas.1716999115
5. Nagasubramanian K, S Jones, S Sarkar, AK Singh, A Singh, B Ganapathysubramanian. (2018). Hyperspectral band selection using genetic algorithm and support vector machines for early identification of charcoal rot disease in soybean stems. Plant Methods 14:86. https://doi.org/10.1186/s13007-018-0349-9
6. Singh AK, B Ganapathysubramanian, S Sarkar, A Singh. (2018). Deep learning for plant stress phenotyping: trends and future perspectives. Trends in Plant Science. Published online. DOI:https://doi.org/10.1016/j.tplants.20

INVITED PRESENTATIONS MADE (acknowledging Iowa Soybean Association funding):

1. Singh AK (2019). “Plant breeding programs at Iowa state university.” UK-USA Research & Innovation in Agrifood Workshop. University of Leeds, UK. Oct 24, 2019.
2. Singh AK (2019). “Case example of the use of HTP and AI for plant breeding”. Symposium at Annual Meeting of Japanese Society of Breeding. Japan. Sept’19.
3. Singh AK (2018). “The interdisciplinary nature of plant breeding with engineering and AI: challenges and opportunities” University of Saskatchewan, Canada. Attended by ~75 people.
4. Singh AK (2018). “Cyber-Agricultural Systems” 9th Annual CPS PI Meeting, Alexandria, VA. Nov 15-16, 2018. Attended by ~35 people.
5. Singh AK (2018). “Skeptic to Believer: The ML journey of a plant breeder” Predictive Plant Phenomics Research Symposium, Ames, IA. Nov 9, 2018. Attended by ~60 people.
6. Singh AK (2018). “Plant Breeding Education in the new era” Federal University of Vicosa, Brazil. Oct 25, 2018.
7. Singh AK (2018). “Soynomics – Soybean Breeding in the Phenomics Era” Hermitage Research Center, Australia (Oct 9, 2018). Attended by ~ 75 people.
8. Singh AK (2018). “AI in PB: We are living in an exciting world” National Agriculture and Food Research Organization, Tsukuba, Japan. April 4, 2018. Two presentations given in Japan (Tsukuba and Memuro campus, NARO). Attended by ~ 25 people.
9. Singh AK (2018). “Building teams for scientific and breeding innovations” Engineering college, U.P., India. July 4, 2018. Attended by ~ 100 people.
10. Singh AK (2018). “Rootomics: When all the low hanging fruits are gone” IA Soybean Research Center, Ankeny, IA. Aug 24, 2018. Attended by ~ 30 people.
11. Singh AK (2018). “Robotics and AI driven scientific and breeding innovations” System’s Biology conference. Melbourne, Australia. May 17, 2018. Attended by ~ 150 people.
12. Singh AK (2018). “Plant Breeding: An Evolving Discipline in Big Data World” JST Big Data Symposium, Japan (January 16-17, 2018). Attended by ~ 75 people.

PhD STUDENTS GRADUATED (partially funded by Iowa Soybean Association)

1. Race Higgins (Working at PanAm seeds)
2. Kyle Parmley (working at, Bayer)
3. Kevin Falk (working at Corteva)