

Title of a thematic issue: The Emerging Role of Quantitative Genetics in Crop Improvement

Section Editor: Vijay Gahlaut

• **Scope of the Thematic Issue:**

Agriculture output must increase by an estimated 50% if it is to keep up with the rising demand for food from the expanding global population. To achieve this, we have to look for novel approaches of breeding for important crops by using modern technologies. Quantitative genetics could greatly assist as it explores the genetic complexity of traits in crops, quantitative trait loci (QTL) mapping, genome-wide association study (GWAS) and genomic selection (GS) became excellent approaches for identifying the genetic basis of complex traits (yield, biotic and abiotic stresses). These approaches are successfully utilized to explore the causative allele(s)/loci or gene, which can be applied in crop breeding to boost yield and climate adaptability. These promising methods unquestionably could be used in further genetic analysis of complex traits in crops and finding potential candidate QTL/genes for breeding. This special issue aims to collect high-quality contributions related to the role of quantitative genetics (QTL, GWAS and GS) regulation of crop yield and abiotic stresses. So that it could be utilized in future breeding and genome editing programs to overcome the threat to food production.

Keywords: Quantitative genetics, GWAS, QTL, genomic assisted breeding, crop yield, climate-resilient crops, food production

Sub-topics:

The sub-topics to be covered within the issue should be provided:

- QTL interval mapping (IM) to detect QTL/genes and their function for crop improvements.
- Genome-wide association study (GWAS) for crop improvement.
- Genomic selection and its application in crop breeding.
- Novel methods, bioinformatic tools and models for GWAS and GS.
- Novel genetic approaches toward increased crop adaptability and yield under climate change.
- Genomics and marker-assisted breeding in crops.

Tentative titles of the articles

1. Genomic selection for crop improvement.
2. Genomics and its applicability in pseudo cereals
3. Association mapping for crop improvements
4. Novel bioinformatics tools and models for GWAS and GS
5. Genomic studies in pulses
6. GWAS and genomic selection for heat stress tolerance in crops
7. Genomic interventions for crop adaptability under thermal stress
8. Genomics-assisted selection for crop improvement

Schedule:

- ✧ Thematic issue submission deadline: 15 February 2023.

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