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Powerful Tool to analyze the Complexity of Wheat Metabolome

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Wheat may be a widely cultivated cereal, consumed by nearly 80% of the entire population within the world. Although wheat is growing on 215 million hectares annually, its production remains inadequate to satisfy the longer term demand of feeding the ten billion human populations.

Global food security is that the biggest challenge as global climate change is threatening crop production. there's a requirement to fast-track the wheat breeding by devising modern biotechnological tools. Climate-smart wheat having greater stress resilience, better adaptability and improved agronomic traits are vital to ensure food security.

Substantial understanding and knowledge of important biochemical pathways and regulatory networks is required for achieving stress resilience in wheat. Metabolomics has emerged as a desirable technology to hurry up the crop improvement programs by deciphering unique metabolic pathways for abiotic/biotic stress tolerance. State-of-the-art metabolomics tools like nuclear resonance (NMR) and advanced mass spectrometry (MS) has opened new horizons for detailed analysis of wheat metabolome.

The identification of unique metabolic pathways offers various sorts of stress tolerance and helps to screen the elite wheat cultivars. during this review, we summarize the applications of metabolomics to probe the strain responsive metabolites and stress-inducive regulatory pathways that govern abiotic/biotic stress tolerance in wheat and highlight the importance of metabolic profiling to characterize wheat agronomics traits.

Furthermore, it also describe the potential of metabolomics-assisted speed breeding for wheat improvement and propose future direction.

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