OMICS-assisted promotion of climate resilient Pseudocereals to recuperate global food security

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Introduction

Mankind is facing a globally hostile phenomenon in the form of climate change today. Nevertheless, the rapid increase in human population is posing a serious threat to food security, particularly in traditional farming communities of developing countries. With an ever increasing burden on major crops, a diversification away from over-dependence is the only answer for achieving food security in changing climate scenario. Pseudocereals such as amaranth, buckwheat and chenopod have gained considerable attention worldwide owing to their immense nutritional and pharmacological benefits. Reports suggest that research advancements in OMICS era have potential implications in mainstreaming traditional crops. Thus, exploiting the potential of Pseudocereals by integrating OMICS-based approaches could certainly aid in mitigating the effects of climate change and affirmation of global food security.

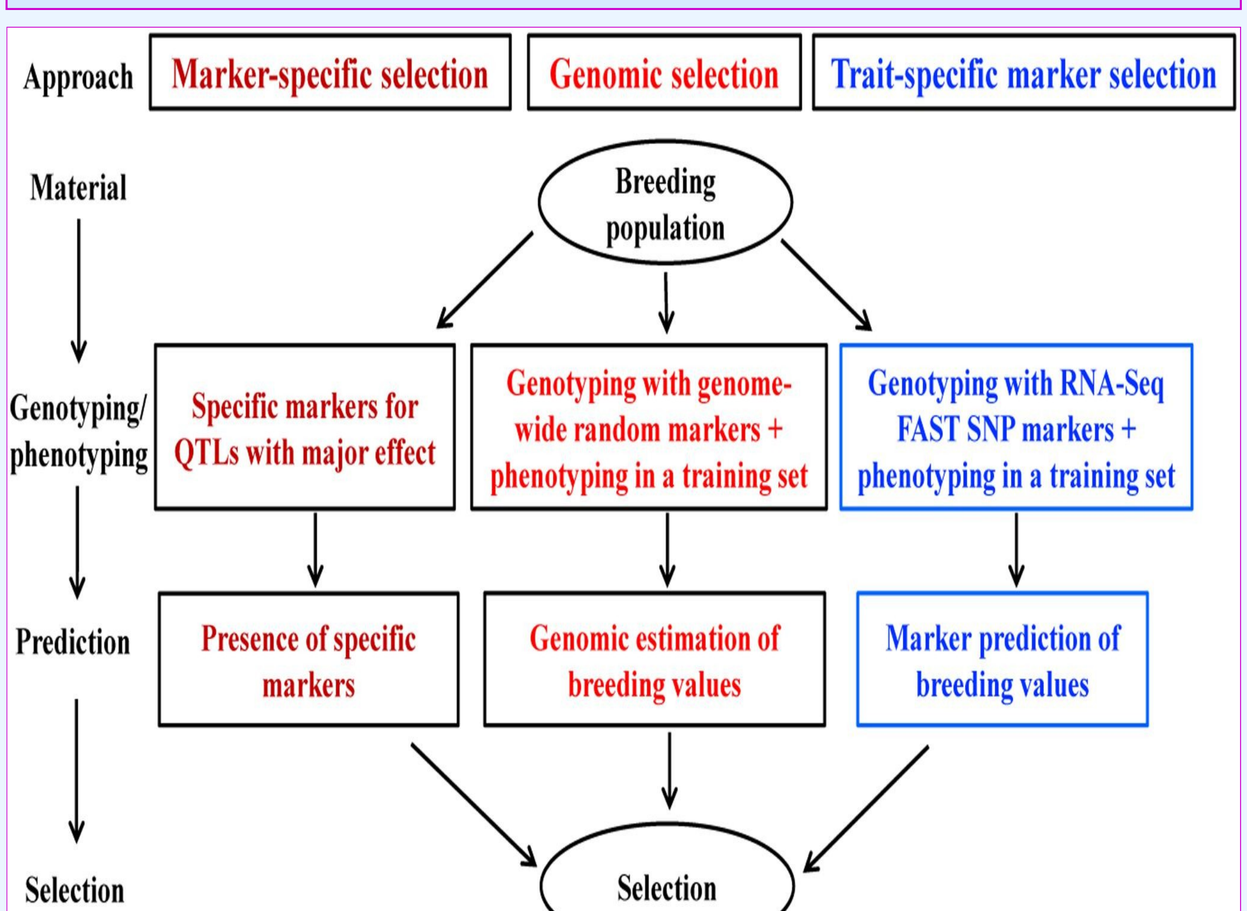
Methods

Phenotypic evaluation and high throughput genomics will be integrated to study the morphology and development of Pseudocereals (amaranth, buckwheat and chenopod). This will be followed by their biochemical characterization for identification of high value bioactive compounds and nutrients**.** Further, genetic variations will be identified for rapid advances in crop improvement programs.

Amaranth

Buckwheat

Chenopod



Integrating genomics and phenomics for achieving higher genetic gains in Pseudocereals

Nutrient	Amaranth	Buckwheat	Chenopod
Protein	16.5	14.5	12.5
Fat	5.7	5.2	2.1
Starch	61.4	64.2	58.9
Dietary fiber	20.6	14.2	29.5

Nutritional composition of amaranth, buckwheat & chenopod (g/100)

Results/Conclusion

Elite germplasm with climate resilient traits and nutraceutical potential will be identified which could result in conserving natural resources and dietary diversification for achieving food and nutritional security, thereby impacting long term sustainability of Pseudocereals.

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