

Utilization of plant genome diversity for breeding

Agricultural Science and Technology

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Summary

Backgrounds

- Plants are diverse; for example, barley spikes come in a variety of colors and shapes.
- Genetic information can be obtained by sequencing genome and genes of the organism.
- Plant differences come from the genomic diversity, and breeding is to combine and modify their sequences.

Purpose

- By using diversity of plants, we develop techniques for efficiently improve plants based on sequences of genomes and genes, and contribute to the plant breeding for human needs.

Major achievements

- Methods for sequencing barley and wheat were developed, and accessions with major diversity have been sequenced.
- Using diverse accessions of genetic resources, genes of interest were identified and utilized in breeding.
- Using transformation and genome editing, genes of interest (e.g. seed germination) were modified.

Prospects of collaboration

【Collaboration with industry】

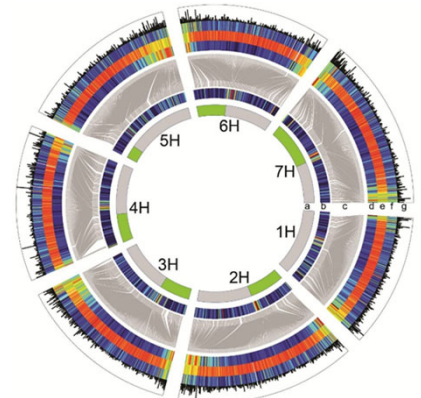
- To contribute to high quality raw materials production in the beer brewing industry, wheat flour milling industry etc.

【Cooperation with breeding programs】

- Providing efficient breeding techniques in national, public and private breeding programs.



Diversity in barley spikes



Barley genome and genes (gray line)



Targeted modification of germination



Selling Point

The research contributes to the development of efficient molecular breeding technology by utilizing diverse genetic resources and their genome and genetic information.