

第 10 回植物生命科学セミナー

10th Open Seminar hosted by the Department of Plant-Biosciences
Faculty of Agriculture, Iwate University

Light spectrum dependent regulation of freezing tolerance and yield quality in cereals

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日時： 2018 年 5 月 16 日(水) 16:30～18:00

場所： 総合教育研究棟(生命系)1 階 遠隔講義室(生命系スペース C)

要旨

The recent break-through in LED lighting technology make it useful as lighting source in indoor plant production and the flexibility of this system allowed the development of new, adjustable light spectrum lightening devices. We have used LED illumination (1) to investigate the light-quality and temperature dependent regulation of freezing tolerance in cereals and (2) to evaluate the effects of light intensity and spectral composition on plant metabolism and nutritional quality. By lowering the red/far-red ratio in the illuminating spectra at 15°C, we were able to induce CBF gene expression and also to increase freezing tolerance in winter wheat (Cheyenne) and winter barley (Nure) genotypes. Furthermore, comparisons of different spectral compositions and light intensities revealed significant differences in growth and development, leaf photosynthesis, thiol and amino acid metabolism as well as in yield quantity and flour quality of wheat. Our results collectively demonstrated that the LED lighting technology can provide high fluency and customized wavelength for plant cultivation, and through modification of light quality LEDs make it possible to manipulate the metabolism to obtain desired traits and products.

ハンガリー科学アカデミー農業研究センターの Gabor 教授に波長の異なる LED 照射システムを用いて見いだされた植物の環境応答機構や作物学的特性の制御機構に関する知見について発表いただきます。多くのみなさまのご参加をお待ちしています。