学術講演会のお知らせ

日時: 2024 年 1 月 24 日(水)15:10 - 17:00
場所: 農学研究科　B101

15:10-15:50
講演タイトル
Research on the Germplasm Creation and Utilization of Chinese cabbage
講師: Dr. WEI Xiaochun (Henan Academy of Agricultural Sciences, China)
講演内容:

Cruciferous vegetable crops covered more than 0.48 M and 0.21 M ha in 2020, all over the world and China separately (FAOSTA, 2020), and this is expanding rapidly year on year. Chinese cabbage (*Brassica rapa* var. *pekinensis*, 2n = 20) is annually grown as a leafy crop. It is indigenous to China and eastern Asia, where it has been in cultivation since the fifth century. We engaged in microspore culture and embryo rescue technology in Chinese cabbage since 1989. Thousands of DH lines were created, and many germplasm resources were innovated based on those techniques. Fine mapping and clarifying genetic mechanism and gene regulatory network of important agronomic traits, especially clubroot resistance, male sterility, and tip burn were performed. Clubroot disease is a soil-borne disease caused by *Plasmodiophora brassicae*, and affects *Brassica* vegetable production worldwide. We engaged in the fine mapping and the mechanism research of *CR* gene, the miRNAs regulatory network, and the single *CR* gene line creation, which will provide new insights into biotic research.

15:50 - 16:20
講演タイトル
Study on Isolated Microspore Culture and Genes Related to Embryogenesis in Cabbage
講師: Dr. SU Henan (Henan Academy of Agricultural Sciences, China)
講演内容:

Cabbage (*Brassica oleracea* L. var. *capitata*) is an important vegetable crop that is widely cultivated around the world. Most commercial cabbage cultivars are F_1 hybrids to ensure high uniformity and yield. It approximately requires 6 years to produce stable inbred lines in the conventional breeding of parental lines. At the same time, microspore culture is an effective technique to produce homozygous doubled haploid (DH) lines in only two years, which significantly accelerates the breeding process. However, the embryogenic rate of microspore

culture in cabbage is generally low, and the culture system still needs to be optimized. And the molecular mechanism of microspore embryonic formation is not clear, which limits its further application in cabbage breeding. In this research, cabbages with different genotypes were used as the test materials to study the factors affecting microspore embryogenesis rate, QTL location of embryogenesis, related genes during heat shock-induced microspore embryogenesis. It will provide a basis for accelerating the large-scale application of microspore culture technology in cabbage breeding.

16:20 - 16:50

講演タイトル

The plastid-localized BASS5 plays a critical role in xylem sodium loading and stomatal control regulating plant salt and drought stress

講師: Dr. CHEN Weiwei (Henan Academy of Agricultural Sciences, China)

講演内容: In land plants, root-to-shoot signaling is essential to resist stress by turning extracellular stimuli into endogenous signals. Sodium ion (Na+) is a critical osmotic substance in plants. However, the long-distance mechanism of plant roots recognizing the environmental Na+ signals to rapidly activate the defense system remains elusive. Here, we identified and characterized a bile acid sodium symporter, GhBASS5, by analyzing the transcriptome data in a salt-tolerant and salt-sensitive variety and its regulation during the salt and drought response. GhBASS5 is localized in the plastid membrane and preferentially expressed in the cotton root system. It mediated Na+ loading from roots to shoots in response to salt and drought stress. Overexpression of GhBASS5 accelerated Na+ accumulation in the plant aboveground and showed improved drought tolerance. Under drought stress, GhBASS5 involved the aliphatic glucosinolates synthesis to promote stomatal closure depending on Na+ in Arabidopsis, and Na+-dependent regulation of stomatal closure function is conserved in cotton. This study reveals a long-distance signaling pathway by which plants recognize drought and regulate stomatal closure based on soil moisture Na+ concentration, establishing a signaling link between plant stomata from the root system to the leaves.

主催　さくらサイエンスプログラム

共催　神戸大学国際共同研究強化事業【B 型】ー国際共同研究育成型ー

問い合わせ：神戸大学大学院農学研究科　資源生命科学専攻　応用植物学講座
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