

## [P3] Abiotic Stress for Crop Production

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 3 (Poster) (Abiotic Stress for Crop Production)

1:15 PM - 2:00 PM

### [P3-28]Seed-Flooding Tolerance in Soybean is Related to Germination Ability under Water

\*Nominated for Presentation Awards

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In Japan, soybean (*Glycine max* [L.] Merr.) is mostly cultivated in the paddy conversion fields. However, such converted fields tend to be flooded, which is one of the major causes to reduce the soybean yield. In particular, flooding stress after sowing dramatically decreases the seed emergence rate. Thus, seed-flooding tolerance of soybean is an important agricultural trait. In this study, to clarify the physiological factors of seed-flooding tolerance, we investigated the relationship between seed emergence rate in the field, water absorption rate, and germination ability under water, using some soybean varieties with different seed-flooding tolerance. As a result, the seed emergence rates were not correlated with the water absorption rate of seed, while highly correlated with the germination ability under water. To examine the relationship between seed emergence rate and germination ability of soybean under water in more detail, the accumulation pattern of seed storage substances such as total soluble protein and lipid, soluble sugars and starch during germination were analyzed using the hypocotyl and cotyledon of seed-flooding tolerant and susceptible varieties grown under water. Although the accumulation patterns in cotyledon were not changed, while glucose and fructose contents of hypocotyl of seed-flooding tolerant variety were higher than that of susceptible variety. These results suggest that seed germination ability under water is an important factor for seed-flooding tolerance of soybean, and it could be associated with sugar metabolism in hypocotyl.