Oral sessions | Abiotic Stress for Crop Production | P33: Salinity

[O33] Salinity

Chair: Yoshihiko Hirai (Okayama University, Japan)
Chair: Sakae Agarie (Kyushu University, Japan)
Chair: Glenn Borja Gregorio (Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), Phillippines)
Thu. Sep 9, 2021 5:00 PM - 7:00 PM Room 3 (Oral) (Abiotic Stress for Crop Production)

6:10 PM - 6:25 PM

[O33-05]Cl^- More Detrimental Than Na^+ in Salt-Stressed Rice

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Rice is the most sensitive to salinity among cereal crops. The salinity tolerance of rice is thought to be closely related to Na^+ accumulation in shoots, then, most research on salinity tolerance in rice focuses on the toxicity of Na^+ and not Cl^-. However, the comparison of the responses to Na^+ and Cl^- is limited. To learn the effect of Na^+ and Cl^- on rice seedling, five rice varieties differing in salinity tolerance were grown in nutrient solution with NaCl and/or KCl. As the result, there was a positive correlation between the percentage of dead leaves and the Cl^- content in the plants, but not between the percentage of dead leaves and Na^+ content. To study the difference in the long-term effects of Na^+ and Cl^- on the plant growth and grain productivities, three rice varieties differing in salinity tolerance were grown in pots irrigated by water with NaCl or KCl in the same molar concentration. As the result, there was a negative significant correlation between the relative dry weight and grain yield (treated/control) and the Cl^- content in the plants. Moreover, to confirm the effects of Cl^- on the plant growth and grain productivities, three rice varieties were subjected to four iso-osmotic salt stresses, then similar results were observed. From these results, it was suggested that plant growth and grain yield under salinity conditions were reduced by Cl^- toxicity rather than Na^+ toxicity.