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Characterization of Salt Stress Tolerant Cultivars in Silage Rice

Dool-Yi Kim¹, Chuloh Cho¹, Kyung Hwa Kim¹, Mi-Suk Seo¹, Man-Soo Choi¹, Mina Jin¹, Dool-Yi Kim^{1*}

¹Crop Foundation Research Division, National Institute of Crop Science, RDA, Wanju 55365, Korea

[Introduction]

Salinity is one of the major abiotic stress that inhibit growth, yield and productivity of crop plants. Therefore, it is necessary to develop an increased salt tolerance crops for the cultivation in saline soil such as reclaimed land. The objective of this study is to develop a salt-tolerant silage rice lines that grow on reclaimed lands

[Materials and Methods]

• Materials

- IR64-*Saltol* (Indica salt-tolerant variety)
- Mogyang(Japonica elite variety)

• Methods

- NaCl treatment: 0, 0.1, 0.2, 0.3, 0.4 ,0.5% concentration
- For measuring the shoot and root length, plant were grown for 10 days on seed germination pouch containing each concentrations of NaCl.
- Fresh weight used plants grown on medium containing various concentrations of NaCl in *in vitro* condition.

[Results and Discussions]

In order to develop a salt-tolerant silage rice, we carried out to transfer *Saltol*, a major QTL associated with salt tolerance, from IR64-*Saltol*, a salt-tolerant indica variety, into Mogyang, a susceptible elite japonica variety. To determine the effect of salt stress, Mogyang and IR64-*Saltol* cultivars were grown on medium containing various concentrations of NaCl in *in vitro* condition. The shoot length was decrease with increasing salt concentration and roots growth was almost arrested at over 50 mM NaCl concentration in Mogyang cultivar. Based on the preliminary results, we screened 5 salt-tolerant lines showing better growth under salt stress conditions. PCR and sequencing results showed that the introgression type of *Saltol* QTL in almost of selected lines were derived from IR64-*Saltol* cultivar. Based on the growth and physiological conditions, the new *Saltol* introgression lines showed higher salt tolerance compared to the parental cultivar Mogyang. The salt-tolerant lines identified in this study could be used as a genetic resource to improve salt tolerance.

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*Corresponding author: E-mail, dykim22@korea.kr