

## Improvement of salt tolerance rootstock of citrus and development of ceramic pipe irrigation system for early evaluation.

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### Summary

The use of rootstock is prerequisite for the stable cultivation of *Citrus* in Asian countries. The basic research on the improvement of citrus rootstock has been carried out using orange subfamily plants maintained at Saga University. The present research consists of following three topics.

#### 1. Salt tolerance of orange subfamily plants.

Calli induced from leaf segment of *Glycosmis pentaphylla*, *Murraya koenigii* and *Eremocitrus glauca* were transferred to the medium containing NaCl at the concentration of 0, 0.01, 0.1, 1.0 and 2.0%. The growth of callus of *M. koenigii* was seriously inhibited by the addition of NaCl. While, callus of *E. glauca* had the trait resistant to NaCl at the concentration of 1.0%. NaCl also involved in the morphogenesis of callus cells. Chlorophyll in the callus at the low concentration of NaCl disappeared on the medium at the high concentration of NaCl. NaCl at 0.01% stimulated the embryo formation. The callus of *E. glauca* could grow at 2.0% NaCl in the medium containing  $\text{Ca}^{2+}$  ion, indicating the synergistic effects between NaCl and Ca ion.

#### 2. Somatic embryogenesis and plant regeneration from protoplasts of *Eremocitrus glauca*.

A sequence from protoplasts to a plant via somatic embryogenesis was established for *E. glauca*. This efficient protoplast-to-plant system for this species could facilitate the transfer of nucellar cytoplasmic genes from this species into cultivated *Citrus* through protoplast fusion.

#### 3. Development of new cultivation system with under-ground irrigation by porous ceramic pipes.

New cultivation system by porous ceramic pipes as irrigation material was experimented and applied to cultivate spinach (*Spinacia oleracea* L) in saline soil. Consequently, this system accomplished to grow spinach and might be elucidated the possibility of cultivation in saline soil.