

The effect of sodium chloride on the growth of mangrove tree species

Tsuneo Nakasuga (Faculty of Agriculture,
University of the Ryukyus)

Tsukasa Kishimoto (Okinawa International
Association for Mangroves)

Masatoshi Shiotsuki (Faculty of Agriculture,
University of the Ryukyus)

Summary

The mangrove forest is decreasing rapidly on the both stands of distribution area and recourses in the world. The forest of mangrove is the important ecosystem called "ecotone" which occupied the coastal and river mouth area. The conservation and reforestation of the mangrove forest is an important problem for the environmental tasks in the world, especially in the tropical and subtropical zone. In this study, the effect of sodium chloride on the growth of mangrove tree species, *Kandelia candel* was examined under the greenhouse condition.

The viviparous seedling of *K. candel* sprouted under fresh water condition, and after one month it was controlled under three salt concentration, 0%, 1.8% and 3.6% of the soil. After 110 days growing period, *K.candel* seedlings in each salt condition were dig up and were measured the weight, after that sample seedlings were used for the analysis of inorganic matters. Photosynthesis of *K.candel* seedling in each salt condition was measured at before and after the treatment by high concentration salt water.

The growth of *K.candel* seedling was the best in 1.8% salt concentration of the soil. The result of this experiment was supported by the former reports, but, in another report, the growth of *K.candel* seedling which were sprouted under salt water condition showed different patterns under the salt concentration of the soil. The decreasing rate of photosynthesis at before and after the acute treatment of high concentration of salt water was increased with increases in salt concentration of the soil. However, the survival rate were increased with increases in salt concentration of the soil. The content of sodium and potassium of *K.candel* seedling changed by the salt concentration of the soil. From the patterns of absorption and diffusion of Na and K in each part of *K.candel* seedling, it estimated that medium root which has spongy aerenchyma has an important role for the salt tolerance.