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Evaluation and Selection of Kenaf (*Hibiscus cannabinus*) Mutants with Salt Tolerance for Reclaimed land

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[Introduction]

Kenaf(*Hibiscus cannabinus* L. 2n=36) is an annual herbaceous crop of the Malvaceae family, which is known for both its economic and horticultural importance. Recently, rapid development of kenaf production is of important significance to protect forest resources. So, it has been called 21st century. Biological yield of kenaf is about 3-4 times that of forest and CO₂ assimilation capacity is about 4-5 times that of trees. Therefore, this study was conducted to select a elite mutant with salt tolerance through induced mutagenesis.

[Materials and Methods]

The kenaf used in this study is Hongma 300 variety and irradiated with 250Gy of gamma-ray in 2017. M₂ generation mutants were planted and harvested in 2018. In 2019 year, M₃ generation mutants were planted at a reclaimed land called Saemanguem. A lot of agricultural characteristics were evaluated to select mutants with salt tolerance from May to early September.

[Results and Discussions]

These days, a concern for kenaf(*Hibiscus cannabinus*) has been increased due to a high biomass. So, the study was conducted to select the elite mutants with salt tolerance produced through mutation. Salt-affected soils are divided into three groups depending on the amounts and kind of salt present. The classification depends on total soluble salts(measured by electrical conductivity(E.C.), soil pH and exchangeable sodium percentage). Salinization consists of an accumulation of water soluble salts in the soil. These salts include the ions potassium (K⁺), magnesium(Mg²⁺), calcium(Ca²⁺), chloride(Cl⁻), sulphate(SO₄²⁻), carbonate(CO₃²⁻), bicarbonate(HCO₃⁻) and sodium(Na⁺). Sodium accumulation is also called sodification. High sodium contents result in destruction of the soil structure which, due to a lack of oxygen, becomes incapable of assuring plant growth. This trial field is close to saline. Hongma300 was irradiated with 250Gy of gamma-ray. The agronomic performances of the elite mutant lines were investigated at M₃generation in comparison with the Control and Jangdaevariety. First, significant differences were observed from plant height of two mutants compared to Jangdae. The plant height of Jangdaeand Hongma300 was 182.6cm and 271.2cm, respectively. JBM349-1 and 349-2 showed 272 and 291cm of plant height. The second was a difference in seed formation. Hongma300 has not yet been borne seeds until Sept. 9. However, both mutants, JBM349-1 and 349-2, have got seeds. Also, those lines presented tolerance for anthracnose at germination and seedling stages. It demonstrated differentiation between the Control and mutants. Taken together, the mutant lines can be useful as a resource for promoting salt tolerance.

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