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바이오에너지 식물 Hexaploid *Miscanthus* × *giganteus* 의 특성

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Morphological characteristics of chromosome-doubled *Miscanthus* × *giganteus*.

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Objectives

Miscanthus sinensis is a diploid hybrid and a temperate, perennial, cross-pollinating grass used commercially as an ornamental plant It is also a useful non-food crop for biomass or fiber production because it has large biomass production and high-quality cellulose. The perennial grass, *Miscanthus* × *giganteus* is a sterile triploid, which due to its growth rate and biomass accumulation has significant economic potential as a new bioenergy crop. Chromosome doubling was used to produce hexaploid plants in an effort to restore fertility to *M*×*giganteus.* Successful chromosome doubling and plant regeneration of *M*×*giganteus* suggest that ploidy manipulation of this plant. It could be a means to access genetic variabllity for the improvement of *Miscanthus* as a biofuel/bioenergy.

Materials and Methods

- *Miscanthus*(triploid)-control, *Miscanthus* × *giganteus*(hexaploid) - 68, 69.
- Measurement the length of leaf, width of leaf, height, color of leaf of triploid and hexaploid.
- Microscopic analysis the stoma of leaf and stem.
- Analysis of Phenolic compounds Contents in the triploid and hexaploid by HPLC

Results

Photographs of the impressions of the leaf surface of M.giganteus plants showed that stomate size was significantly greater in the No. 68 of hexaploid at 28.14±0.2 ㎛ and the No. 69 of hexaploid at 26.13±0.2 ㎛ compared with the triploid at 18.62±1.0㎛. The result of Measure the lenth of leaf, width of leaf, height of triploid is higher than hexaploid. but phenolic compounds contents of the hexaploid is higher than triploid.Chromosome doubling of related diploid species has also been repeatedly used to overcome incompatibility and generate fertile interspecific tetraploid hybrids.These studies suggest that ploidy manipulation via chromosome doubling could access genetic variability for the improvement of Miscanthus as a biofuel/bioenergy crop.

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Figure 1. Triploid and Hexaploid of *Miscanthus*

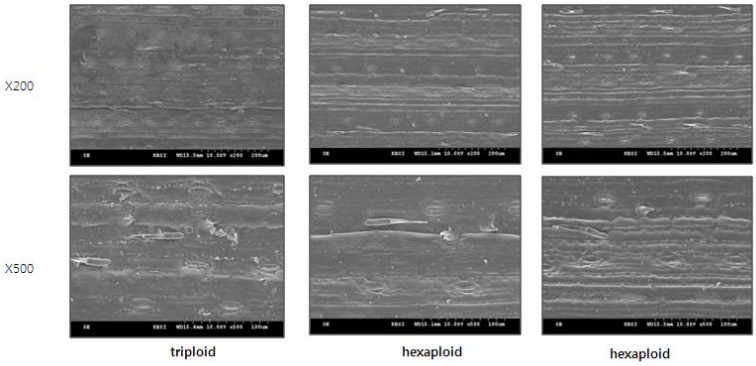

Figure 2. SEM analysis abaxial surface on triploid and hexaploid of *Miscanthus*

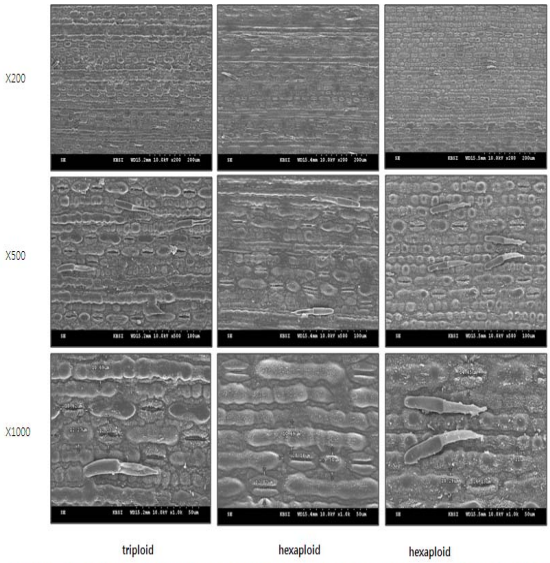

Figure 3. SEM analysis adaxial surface on triploid and hexaploid of *Miscanthus*

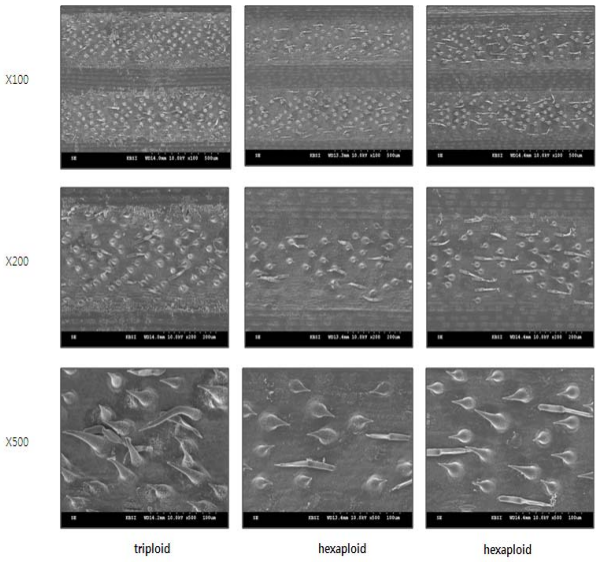

Figure 4. SEM analysis stem on triploid and hexaploid of *Miscanthus*