Molecular Cytogenetic Characterization of Apomictic Introgression Lines of Millet. (C08-oziasakins135003-Oral)

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Abstract:

Apomixis, or asexual reproduction through seeds, has been described as the predominant mode of reproduction in several Pennisetum species. The Pennisetum species that display apomixis are related to the forage and grain crop, pearl millet (P. glaucum). One apomictic relative, P. squamulatum, has been successfully used as a donor of apomixis to pearl millet. Introgression of the reproductive trait also required the use of a bridging species, P. purpureum, and multiple backcrosses with sexual (tetraploid) pearl millet. Several generations were screened using genomic in situ hybridization (GISH) with labeled DNA from the apomictic parent and blocking DNA from the sexual parent. This technique has allowed the identification of chromosomes from the apomictic parent in individual backcrosses. Advanced apomictic backcrosses contain 1-3 chromosomes from P. squamulatum. Only a single chromosome hybridizes with DNA clones that have been shown to be genetically linked with apomixis, providing evidence that a single chromosome is necessary and possibly sufficient to confer the reproductive trait.

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Presentation Information:

Presentation Date: Wednesday, November 13, 2002

Presentation Time: 3:35 pm

Keywords:
Pennisetum, apomixis, GISH, pearl millet