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Poster Abstract – A.08

EVIDENCE OF CYTOMIXIS IN *POA PRATENSIS* L.

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Cell to cell migration of chromatin, nucleus, nucleolus, individual chromosome, group(s) of chromosomes, whole spindles from one cell to another that is close by, which has been reported and studied in several plants belonging to diverse families (Bell 1964; Maheshwari 1950) is referred as cytomixis. This phenomenon was first observed in the pollen mother cells (PMCs) of *Crocus sativus* by Kornicke in 1901 (Brown and Bertke 1969) and later in *Oenothera gigas* and *O. biennis* (Gates 1911). In addtion to meiocytes, cytomixis has also been reported in apical meristems, epidermal cells of scales and leaves, tapetal cells and cells of nucellus and integuments.

Polyploid species seem to exhibit cytomixis more than their diploid counterparts as shown by studies in triploids and tetraploids of sugarbeet (Semyarkhina and Kuptsou 1974). Moreover, cytologically, physiologically and biochemically imbalanced plants like haploids, triploids, aneuploids and apomicts show cytomixis more often than normal cytogenetically balanced and established plants (Percival 1930; Nandi 1937; Sapre and Deshpande 1987).

So far, cytomixis has been detected in many plant species but never in Kentucky bluegrass (*Poa pratensis* L.) which is a hardy, persistent, attractive forage and turf grass adapted to a wide range of soils and climate (van Wijk 1997). The mode of reproduction of *P. pratensis* is extremely versatile and ranges from naturally obligate apomixis to complete sexuality. The high polyploid and contrasting mode of reproduction of *P. pratensis* should make it a model species for investigating apomixis and cytomixis phenomenon.

Our preliminary results demonstrate that cytomixis and abnormal meiosis are present in PMCs of apomictic (aposporic and parthenogenetic) and recombinant (aposporic and non-parthenogenetic) plants while it is not present in sexual (non-aposporic and non-parthenogenetic) genotypes. Cytomixis phenomenon was seen occurring exclusively at the prophase of first meiotic division, while meiotic abnormalities were present overall the entire meiotic process. We also observed univalents in diakinesis and metaphases I while metaphases and ana-telophases II showed laggards.

Results will be used to try to understand: i) how much cytomixis can inflence pollen fertility in *P. pratensis*; ii) if there is a correlation between cytomixis and apomixis and the possible role that cytomixis could have played in the development of apomictic reproduction; iii) to study candidate genes involved in cytomixis and meiotic abnormalities.