UNUSUAL CYTOLOGICAL PATTERNS OF MICROSPOROGENESIS IN *Brachiaria decumbens*: ABNORMALITIES IN SPINDLE AND DEFECTIVE CYTOKINESIS CAUSING PRECOCIOUS CELLULARIZATION. Mendes-Bonato AM[1], Junqueira-Filho RG[1], Pagliarini MS[1], Valle CB[2], Penteado MIO[3]. Department of Cell Biology and Genetics, State University of Maringá, 87020-900 Maringá – Paraná, Brazil. Embrapa Beef Cattle, P.O. Box 154, 79002-970 Campo Grande - MS, Brazil. Embrapa, Secretary of Intellectual Property, 70770-901 Brasília – DF, Brazil. . mspagliarini@uem.br

The product of meiosis is a callose-enclosed tetrad of haploid microspores resulted from partitioning of the cytoplasm, a process called as cytokinesis. Cytokinesis requires both the tubulin and the actin cytoskeleton at various stages in its initiation and execution. In many species, abnormalities related to spindle and cytokinesis affected the cellularization process compromising the meiosis products and pollen fertility. Despite its economic importance for forage, the genus *Brachiaria* is poorly known on their cytological basis. Cytogenetic studies carried out in the tetraploid accession D62 of *Brachiaria decumbens* (2n=4x=36) revealed an unusual pattern of microsporogenesis. The spindle in metaphase I and anaphase I stained densely with propionic carmine. In telophase I, the interzonal microtubules continued very evident, and during the phragmoplast formation the fibers were pushed to the cell wall, persisting till prophase II, even after cytokinesis. This accession, because of its tetraploid condition, presented a lot of cells with precocious chromosome migration to the poles in metaphase I and laggards in anaphase I that gave rise to micronuclei in telophase I. While in other polyploid accessions of *Brachiaria*, micronuclei remain in this condition until the second cytokinesis, in this accession the micronuclei organized their own spindle in the second division. In several microsporocytes, these micronuclei with their minispindle were fractionated into microcytes by additional cytokinesis. Some curious planes of cytokinesis were found in some cells, partitioning the cytoplasm into cells of irregular shape. The result was a high frequency of abnormal products of meiosis. Polyploid species display more chances to present multiple spindles. Plants with meiotic irregularities due to polyploidy and wide hybridization appeared to be specially susceptible to multipolar divisions, indicating that some chromosomes is somewhat linked with the formation of spindle fibers, suggesting a spindle organizer per genome. The causes of multiple spindles in this accession of *B. decumbens* remais unknown. Despite of its tetraploid condition, their tetraploid counterparts are not presenting these abnormalities. In the present accession, chromosomes have associated mainly in bivalents, but uni-, tri-, and quadrivalents were observed in low frequency. Multiple chromosome association indicates homology among genomes, but when in low frequency indicates that the genomes are partially homologues. Thus, this accession probably is a segmental allotetraploid and both genomes are being unable to coordinate their activities, leading to multiple spindle and precocious cellularization. Despite of abnormal meiotic products reducing pollen fertility, the seed production in the accession was normal, suggesting apomictic reproduction.
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