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Male Meiotic Course and Pollen Fertility in Grasses from Parvati Valley in Kullu District (H.P.)

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Abstract Detailed male meiotic studies have been performed on 46 species of grasses falling into 59 accessions from different localities of Parvati Valley in Kullu district of Himachal Pradesh in the altitudinal range of 1,100 m to 2,750 m. All the species have been worked out cytologically for the first time from the study area. The meiotic chromosome count of *n*=14 for *Calamagrostis emodensis* is the first ever chromosome report. Three species namely, *Agrostis alba* (*n*=21), *Avena byzantina* (*n*=21), and *Bromus inermis* (*n*=14) have been worked out cytologically for the first time from India. New intraspecific diploid/polyploid cytotypes have been reported for *Arthraxon serrulatus* (2*n*=4x=32), *Iseilema laxum* (2*n*=12x=60), *Digitaria albudens* (2*n*=8x=72), *Festuca kashmiriana* (2*n*=2x=14) and *Stipa orientalis* (2*n*=2x=20). The existence of variable number of B-chromosomes (2*n*= 60+0-5B) have been reported for the first time in the 12x cytotype of *Iseilema laxum*. Secondary associations of chromosomes in the tetraploid cytotype of *Cymbopogon martini* (*n*=20) indicated to its secondary polyploid nature. As many as 18 species showed various meiotic anomalies such as the phenomenon of cytomixis involving inter PMC migration of chromatin material, chromatin stickiness, interbivalent connections, abnormal spindle activity, presence of bridges and laggards during anaphases and telophases and abnormal sporads. These meiotic abnormalities consequently yielded sterile and heterogeneous sized fertile pollen grains. The polyploidy and aneuploidy have played an active role in the evolution of grasses.