Apomixis expression in *Eragrostis curvula* under stress conditions

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Over the past few years our research group has been analyzing the molecular mechanisms involved in the reproductive control of weeping lovegrass (*Eragrostis curvula* [Schrad.] Nees), an apomictic perennial grass. This work was aimed at analyzing apomixis expressivity in Eragrostis curvula plants subjected to three stress conditions: 1) tissue culture followed by a colchicine-induced ploidy change; 2) tissue culture and 3) water deficit. In the first system, a colchicine-induced polyploid plant (C) changed the expressivity of apomixis in a four year period, being highly sexual shortly after polyploidization and highly apomictic four years later. During this interval, genetic and epigenetic changes were also observed. While genetic variation led to diversification with respect to an obligate apomictic control, epigenetic variation resulted in increased similarity. Polymorphic sequences were mainly similar to transposable elements and/or protein-coding-like sequences. In the second system, explants originated from near obligate apomictic plants were subjected to tissue culture. The expressivity of apomixis of a regenerated plant was analyzed immediately after treatment and nine years later. In this period, the levels of sexuality shifted from 45 to 0%. In the third model, near-obligate apomictic plants subjected to water stress showed an increase in expression of sexuality from 2 to 20%. As a whole, our results suggested that stress can temporarily activate sexuality in apomictic genotypes. At least in one system, this change was correlated with genetic and epigenetic modifications involving retroelements and/or protein-coding-like sequences.