Development of Agave species as crops for marginal lands: tackling the problem of bolting

*Agave* species are native to Mexico and have been exploited since the pre-Columbian era as sources of food, fiber and fermented beverages. These CAM species tolerate arid conditions and high temperatures and are cultivated commercially for the production of tequila and mezcal. Wider development of *Agave* species as crop plants could provide important alternative sources of income to small farmers in marginal environments. However a lack of breeding programs and basic molecular research are obstacles to this goal. Classical breeding and genetic studies in agave are hampered by the long life cycle and the ability to regulate flowering in commercial fields would also be advantageous. The development of an agave genome sequence has been technically and economically prohibitive until recently. Therefore we chose a candidate-gene transcriptome strategy to identify and characterize the genes involved in the process of bolting in *A. tequilana*. Our preliminary model contemplates the roles of Florigen (Flowering locus T) and MADS proteins in addition to gibberellin metabolism and regulation by miRNAs. We have developed a transformation system based on organogenesis and are currently carrying out functional analyses of selected candidate genes in agave and in the heterologous system of *A. thaliana.*