Abstract:

Floral initiation is an important process for temperate woody perennials that affects the subsequent development of the flower. Although this process is well known in annual plants such as *Arabidopsis thaliana*, not much research has been done in woody plants. This review summarizes the knowledge about mechanisms of flowering induction in woody perennials, compared to the findings in model plants, especially *A. thaliana*, including factors involved in the regulation of the flowering process. In particular, *FT*-like genes and *TFL1*-like genes, which play an important role in the regulation of flowering induction, are discussed in detail. In temperate woody plants the dormancy period follows the floral induction before the floral development. Periodic regulation of this stage is controlled endogenously and, in addition to other factors, it is affected by expression of *DAM* genes. The genetic mechanisms regulating endodormancy release in woody perennials are similar to vernalization in herbs. Better understanding of processes such as the floral induction and endodormancy release can help us to develop cultivars with a modified flowering time.