



agronomy



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Flowering and Flower Development in Plants

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In the life cycle of plants, the phase transition from vegetative growth to reproductive growth is very important. Many species have evolved multiple ways to adapt to the environment and endogenous factors to regulate flowering. It is now known that plant flowering is mainly regulated by five main signal pathways, namely, photoperiod, vernalization, age, autonomy, and gibberellin. In addition, it is also affected by some environmental factors such as drought stress, salt stress, cold stress, nutrient deficiency, heat damage, sugar budget, oxygen stress, and biotic stress. Furthermore, the quality and quantity of flowers determine the yield of crops and the quality of fruits. Flower development has been summarized as the ABC model and then extended to the ABCDE model. A large number of related genes have been cloned and functionally identified in annual plants and perennial plants. Over recent years, enormous scientific progress has been made to understand the molecular basis of flowering and flower development. However, flowering and flower development still need to be further explored for future crop breeding.



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