Plants exhibit various behaviors based on their growth patterns and responses to stimuli. Tropisms are directional growth responses, with positive tropisms indicating growth towards the stimulus and negative tropisms indicating growth away from it. Examples include phototropism (stems towards light), gravitropism (roots towards gravity), and hydrotropism (roots towards water). Besides tropisms, plants also demonstrate temporary and reversible movements due to changes in water pressure. These movements are not directed by the stimulus but are inherent to the plant's physiology. For instance, pea and bean leaves open during the day and close at night, while cornflowers release pollen upon contact with insects. Water deficit significantly impacts plant behavior, particularly flowering and reproduction. Depending on the species, drought can either advance or delay flowering. ABA, a plant hormone, has been linked to delaying flowering in some plants. Under stress, maize exhibits delayed female organ development while male development is less affected, leading to a longer time interval between pollination and fertilization. Drought stress can lead to reproductive failure by affecting pollen viability. Male sterility is common under drought conditions due to the sensitivity of pollen cells to desiccation. Reduced grain set in wheat has been linked to ABA accumulation in the shoot. Sugar starvation has also been suggested as a contributing factor to reproductive failure under drought stress. Plant responses to water stress also involve root growth and distribution. Under drought conditions, root/shoot dry weight ratio increases, primarily due to reduced shoot growth. ABA and osmotic adjustment can promote deeper root growth, enabling the plant to access moisture from lower soil layers. Cereals exhibit different root growth patterns depending on topsoil moisture, with dry conditions leading to deeper roots and limited tillering, while moist conditions promote shallow root systems and extensive tillering.

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