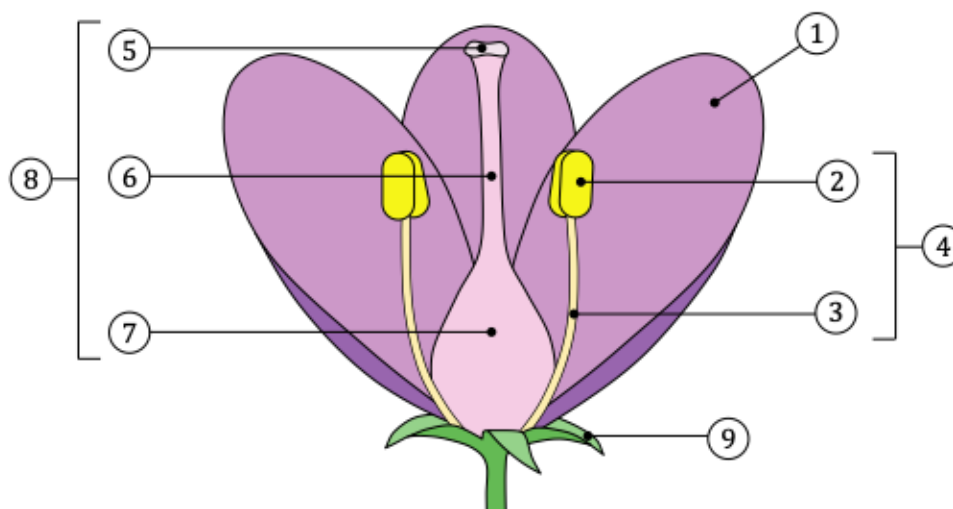


9.4 Reproduction in Plants

Flowering

Label a diagram of a dicotyledonous flower (monoecious)



- | | | |
|--------------------------|------------------------|------------------------|
| 1. Petal | 4. Stamen | 7. Ovule |
| 2. Anther | 5. Stigma | 8. Pistil |
| 3. Filament | 6. Style | 9. Sepal |

Distinguish between pollination, fertilisation and seed dispersal

Pollination: **Transfer of pollen from the anther to the stigma (usually between different plants)**

Fertilisation: **Fusion of male gamete nuclei (in pollen) with female gamete nuclei (in ovule)**

Seed Dispersal: **Fertilised ovule (seed) moves away from parent plant to reduce competition**

Outline the role of pollinators in plant reproduction

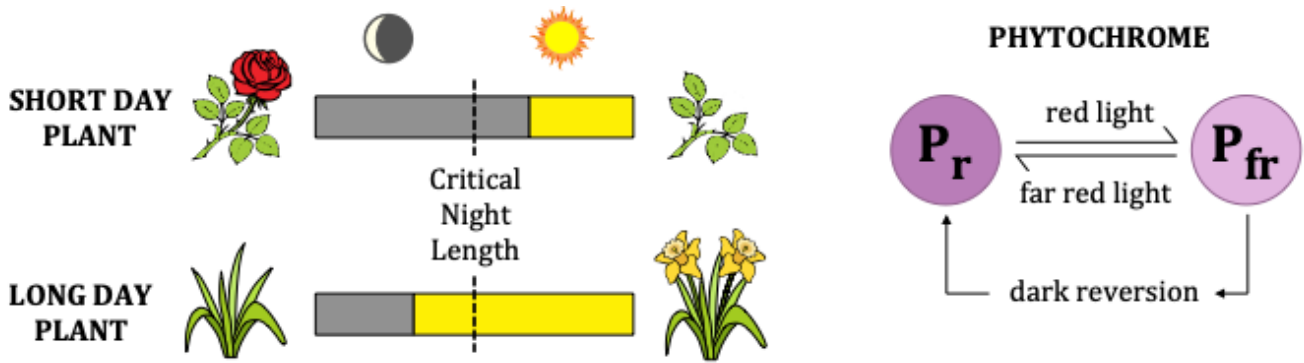
Most flowering plants will use mutualistic relationships with pollinators to reproduce

The plant gains a mechanism of pollen transfer, while the animal gains source of nutrition (e.g. nectar)

Define photoperiodism

The response of a plant to the length of day or night

Explain, with the aid of the diagram, how flowering occurs in short day plants and long day plants



Phytochrome exists in two forms: an inactive form (P_r) is predominant at night, while an active form (P_{fr})

is predominant during day (flowering is triggered by the active form and requires a critical night length)

In long day plants, P_{fr} activates flowering so flowering is induced when night is short ($\uparrow P_{fr}$)

In short day plants, P_{fr} inhibits flowering so flowering is induced when night is long ($\downarrow P_{fr}$)

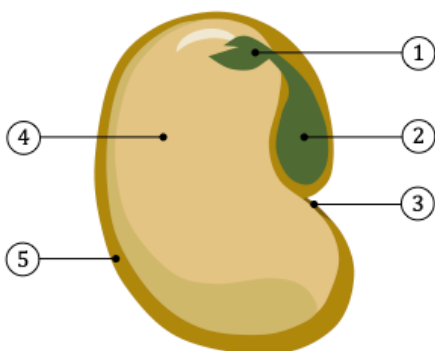
Describe one strategy horticulturalists can use to promote flowering of short day plants out of season

Horticulturalists can manipulate flowering by controlling the exposure of light

Short day plants can be induced to flower by covering with a black cloth for ~12 hrs a day

Germination

Label the diagram of a seed



1. Epicotyl (embryonic shoot)

2. Radicle (embryonic root)

3. Micropyle (pore for water uptake)

4. Cotyledon (food store / forms embryonic leaf)

5. Testa (seed coat)

Identify factors that contribute to the germination of a plant

Germinating seeds require oxygen (for ATP via aerobic respiration), water (to metabolically activate cells),

temperature (for optimal enzyme activity) and pH (suitable soil conditions for enzymes)

In addition, particular species may require specialised conditions, such as fire, freezing, washing, digestion