Subsidiary
Part - II
Lecture No-14

Plant physiology

Group - C
Photoperiodism - II

19th August 2020

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Brain (1958) has suggested that a gibberellin like hormone is produced in leaves during the daily light period from a precursor, P, produced by CO_2. In the dark there is a slow decay of Gibberellin like hormone to P. for red irradiation accelerates decay. While red irradiation promotes formation of Gibberellin like hormone as —

$$CO_2 \rightarrow \rightarrow P \underset{\text{Far Red}}{\overset{\text{Red}}{\rightleftarrows}} \text{Gibberellin like hormone} \rightarrow \rightarrow \text{FLORIGEN.}$$

As shown above, flowering in both long-day and short-day plants has been explained on the ground that "gibberellin like hormon" controls the formation of florigen. It is presumed that long-day plants are conditioned to elaborate florigen only when gibberellin like hormone is maintained at high level. On the other hand in short-day plants florigen

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Synthesis is inhibited by high levels of gibberllin.

During photoperiodic response, the green colour of the visible spectrum is normally ineffective where the blue colour induces poor flowering. However, the wavelength 580 nm to 680nm in red portion of the spectrum has been found to be the most effective as flower inducing stimulus in both short-day and long-day plants. As mentioned above, while PR stimulates flowering, PFR inhibits it. In short-day plants, at the end of the light period, the phytochrome is in the far red light form (PFR) due to the wavelengths of sun-light. In the following dark period PFR is gradually converted into red absorbing form (PR) which stimulates the synthesis of flowering substance.