Stages in the life cycle of the plant

Science, Biology

Plants begin their lives in the form of seeds. The embryo inside the seed is considered as the next sexual generation of plants. Seed germination is an important phase in plant's life. Successful seed germination is vital in every reproducing species in order to perpetuate itself. By definition seed germination is when the dry seeds shed from its parent plant, takes up water and is completed when the embryonic root visibly emerges through the outer structure of the seed (seed coat) (Hasanuzzaman et., al. 2013).

Bewley (1997) described that it includes different events that commence with the uptake of water by the quiescent dry seed and terminate with the elongation of the embryonic axis. The visible sign that germination is complete is usually the penetration of the structures surrounding the embryo by the radicle (radicle protrusion). Several authors had reported the importance of germination in the life cycle of plant.

According to Hubbard et., al (2012) this stage in the life cycle of the plant is considered as a critical event as germination is the first step in determining the survival rate of the crop thereby affecting its productivity. Meanwhile Donohue et., al. (2010) reported that seed germination is an important developmental phase change in the plant life cycle, which plays critical roles in seedlings establishment and consequently in environmental adaptation.

The process of seed germination involves several complex processes and activation of the seeds metabolic pathways which eventually leads to the emergence of newly grown generation of plants. Many of the specific biochemical and physiological processes which characterize germinating seeds, particularly those occurring in storage organs, are special during this

stage (Bewley and Black 1994). Knowledge of the germination process and of the seedling establishment and development, involving morphological, physiological, biochemical as well as molecular mechanisms and features is of essential importance for taxonomic, ecological and agronomic studies of certain plants.

There are several different gene expression that underlies plant development, the relative specificity of these processes suggests that distinct gene sets are activated and repressed during this stage. The reaction between activation of essential enzymes, sequential release of hormones and the energy relations of the process during seed germination are very significant in understanding the appropriate establishment of plant for its adaptation.

Identifying these genes and defining mechanisms involved in regulating their expression will aid in understanding the control of germination-specific mechanisms.

This review will provide an overview on the mechanism of gene expression in mainly in angiosperm plant. The different genes expressed in embryos and seedlings will also be tackled A brief description of on the hormonal changes and hormonal balance that triggers or promotes gene expression during germination is also discussed in this paper.