Post Fertilization

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Post Fertilization

In plants, fertilization is defined as the fusion of the male and the female gamete to develop into a diploid zygote. After fertilization, a series of event occurs in the zygote to develop into a seed. Let us take an overview of the process of post fertilization, endosperm and embryo formation.

What Is Post Fertilization?

Post-fertilization is a series of events that takes place after fertilization to develop a seed from an ovule and a fruit from an ovary.

The following events occur in the post-fertilization.

1. Endosperm development
2. Embryogeny

Endosperm

Endosperm is a type of tissue, which is present in the seeds of flowering plants during the time of fertilization. Reserve food materials fill in the cells of endosperm tissue. It provides nutrition to the developing embryo in the form of starch. Endosperm development is classified into three types. These are as follows:

1. Nuclear endosperm formation: In this process, the primary nucleus of endosperm undergoes a nuclear division repeatedly to produce free nuclei without wall formation.
2. Cellular endosperm formation: During nuclear division, the formation of cell wall occurs and it leads to the cellular endosperm formation.
3. Helobial endosperm formation: It is an intermediate type of endosperm formation between cellular and nuclear type endosperm formation.

During seed maturation or in the mature seed, the developing embryo may either utilize the endosperm completely or it is used by seed during seed germination.

Embryogeny

Embryogeny is defined as the process of growth and development of an embryo from a zygote in the flowering plants. Embryo development stages are same in both monocot and dicot plants.

In dicot plant embryo, an embryonal axis and two cotyledons are present. Two parts are present in the embryonal axis. These are as follows:

1. Epicotyl: It is located above the cotyledon level.
2. Hypocotyl: It is located below the cotyledon level.

A monocot plant embryo consists of only one cotyledon. The cotyledon is termed as scutellum in the grass family. Root cap of grass is covered with an undifferentiated sheath which is called as coleorrhiza. A portion of the embryonic axis, which is located above the scutellum is called as epicotyls. Epicotyl consists of shoot apex and coleoptiles.

DIGRAMATICAL VIEW OF EMBRYO DEVELOPMENT -:

In angiosperms, double fertilization takes place; one male gamete fuses with the egg cell to form the zygote and another male gamete fuses with the polar nuclei to form the endosperm. Various changes take place after fertilization. These include endosperm and embryo development, maturation of the ovules to form seeds and maturation of the ovary to give rise to a fruit. The zygote divides to give rise to two cells called as the terminal cell and basal cell. The basal cell divides to form the suspensor which is a linear group of cells. The terminal cell divides to form the embryo. These embryo cells are further divided to form the different stages in the development phase. The first stage is the globular stage, followed by heart stage and finally the torpedo stage. This embryo develops and matures inside the seed.