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A Review

Seed physiological maturity

K.MALARKODI* AND P.SRIMATHI
Department of Seed Science and Technology, Tamil Nadu Agricultural University, COIMBATORE (T.N.) INDIA

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Good quality seeds of improved varieties are the milestone for green revolution, carrier and catalyst of agro - technologies. A successful and profitable crop production is possible only through quality seeds. Its production, availability and quality play a significant role in achieving the higher agricultural production. The quality of the seed is basically dependent on the metabolic and synthetic efficiency during seed development and maturation, which in turn is reflected upon the germination and vigorous growth of the resultant seedlings.

Seed maturation refers to the physiological and functional changes that occur from time of anthesis until the seeds are ready for harvest. Maturity is the critical and the most important factor that determines the size and the quality of the seed. Physiological maturity is defined as the occurrence of maximum seed dry weight and represents the end of dry weight accumulation and seed filling period. It has been widely adopted as an important growth stage and used by researchers and producers because it represents the end of active plant growth and the production of yield. Widely used indicators of maturity that relate to the harvestability of the crop is termed as harvestable maturity which occur after physiological maturity.

The production of the yield occurs before physiological maturity, so plant and environmental factors that affect yield can do so only before physiological maturity. Yield to the commercial producer is harvested yield, which can be reduced by weather damage, disease or other problems occurring between physiological maturity and harvestable maturity. The production of yield is complete at physiological maturity.

Planting value and storability of the seed are directly related to the level of maturity of the seed at the time of collection Hence, information on optimum stage of maturity based on physical and physiological indices will enable the seed producer to harvest the seed crop in time. Thus, the decision when to harvest is important and assumes greater significance.

In view of above said reasons determination of physiological and harvestable maturity in different crop plants are reviewed and tabulated hereunder.

Physiological and harvestable maturity symptom in different crop plants

Crop	Attains maximum physiological maturity indices / symptoms at	Harvestable maturity indices / symptoms	Source
CEREALS Paddy (*Oriza sativa)*	28 and 31 days after 50% of spikelets in the panicle have flowered for medium and short duration varieties, respectively	Turning of 90% of seed to straw or golden yellow colour and associates with moisture content of 20% for short and medium duration varieties and 17% for long duration varieties.	Jerlin *et al* (2001)
Wheat (*Triticum vulgare)*	Loss of green colour in the flag leaf or the first appearance of a dark pigment strand beneath the embryo in the seed	Seeds become hard and straw coloured and become dry and brittle	House ley *et al* (1982)
Oats (*Avena sativa)*	Loss of green colour in the glumes	-	Lee *et al* (1979)
Barley (*Hardeum vulgare)*	Loss of green colour from glumes and peduncle	-	Copeland and Crookston (1985)

* Author for corrospondence.