

## Effect of temperature and relative humidity on seed viability and storage of senna (*Cassia angustifolia* Vahl.) seeds

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### SUMMARY

The seed material was stored at four different levels of relative humidity (75 %, 33%, 11% and 5.5%) and three different storage temperatures (5°C, 20°C and ambient) using saturated salt solutions in airtight desiccators. Observations on various physiological and biochemical parameters were recorded on monthly intervals. Storage temperatures of 5°C and 20°C at 5.5 per cent and 11 per cent relative humidity were found to be optimal, extending seed storability in senna. Seeds stored at controlled condition and the seeds that were kept under low relative humidity (5.5% and 11%) showed no change in all the physiological parameters like seed germination (%), vigour index, root length shoot length and speed of germination. The biochemical parameters like electrical conductivity and lipid peroxidation showed significant increase in value with loss of viability under different treatments with increase in storage time. Total soluble proteins and the activity of enzymes like dehydrogenase and acid phosphatase were positively correlated with seed viability and the amount decreased with storage period. The amount of total soluble sugars progressively increased with storage period in all the treatments. Senna seeds are tolerant to ultra desiccation and this technique can be successfully used for cost effective conservation of this species

**Key Words :** Seed ageing, Germination, Seed vigour, Protein profile, Lipid per oxidation

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Senna (*Cassia angustifolia* Vahl.), belonging to sub family Caesalpinaceae (family Leguminosae), is locally known as Sonamukhi and Sanay in Hindi and as Tinnaveli Senna in Tamil Nadu. It is a legume plant native of Saudi Arabia. It is widely used in ayurveda and unani system of medicine mainly because of its laxative property of its aerial parts. The laxative property is mainly due to chemicals namely sennosides A, B, C and D. Although the pods contain higher percentage of total sennosides (3-5%) than the foliage (2-4%), the demand for leaves is high for use in ayurvedic preparations, herbal tea, bakery products and other home preparation. It is grown

as an annual crop of 5-7 months duration in approximately 10,000 ha both as irrigated as well as rainfed crop in India (Gupta and Pareek, 1995). The major part of the produce is exported as leaves and sennoside concentrates.

A little study has been carried out on the seed viability and conservation aspects, hence, the present investigation was undertaken to study the effect of various temperature and relative humidity conditions on different physiological and biochemical parameters of seed for effective conservation.

### MATERIALS AND METHODS

The freshly harvested seeds of senna (*Cassia angustifolia*) were collected from Virudhunagar district of Tamil Nadu in the month of September-October 2008. One set of 500 seeds was left at ambient laboratory conditions (30°C-35°C) in muslin cloth bag. Three sets of 500 seeds each were equilibrated over different saturated salts in airtight desiccators of uniform size to control the relative humidity. The different

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