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Investigations on seed viability and vigour during seed ageing and priming in French Bean (Phaseolus Vulgaris)

Sarika Gowdiperu
University of Agricultural Sciences, India

Storage of French bean seeds under ambient hot and humid conditions is very problematic since these conditions deteriorate seed quality faster. Many physiological, biochemical and molecular changes are linked to the process of seed deterioration and the changes during accerlated aging were mostly the same as those in natural ageing with only difference being the rate at which they occur. The metabolic defects can be rectified by the technique of seed priming. Hence, an investigation was carried out in this direction to identify the reasons for vigour loss during ageing and vigour enhancement due to priming. Seeds aged naturally for one year (NA 1) however, maintained same viability and seed vigour as that of fresh seeds. Accerlated aged seeds for a period of 3 days (3DAA) also maintained same as that of fresh seeds. However, increase in ageing duration reduced the viability and vigor (mean germination time, germination percentage, seedling vigour index I&II) progressively with increment in ageing viz; 6, 9, 12 and 15 DAA. Changes in biochemical parameters like higher electrical conductivity, impairment in the synthesis of enzymes particularly dehydrogenase and alpha amylase activity were noticed. Protein profiles showed alteration in their number and intensity of bands in aged seeds. Molecular studies indicated loss in DNA integrity as well as quantity in aged seeds. Seed priming in aged seeds showed lower mean germination time and enhanced root length, shoot length, seedling vigor index – I & II. Among various priming treatments imposed, priming with GA_3 (1000ppm) and ethrel (1%) showed better result.

Biography

I am doing Ph.D in agriculture(seed science & technology) in university of agriculture sciences, Bangalore. I did my master sciences in seed science & technology from the same university in Bangalore.

sarikagowdiperu@gmail.com