

IMBIBITION OF SEED OF DRY BEANS (PHASEOLUS VULGARIS L.) STORED
UNDER HIGH AND LOW TEMPERATURE AND HUMIDITY CONDITIONS.

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Seed hardness is an undesirable trait affecting imbibition of dry beans. This experiment was conducted to evaluate seed hardness of dry bean cultivars/lines from different planting dates (PD) and stored under high and low controlled temperature and relative humidity (RH) conditions.

Nine dry bean cultivars/lines were planted at 6 dates, 7 days apart at Scottsbluff, Nebraska, USA, and harvested at physiological maturity. A split-split-plot design was used with temperature and RH combinations as main plots, PD as sub-plots and cultivars/lines as sub-sub-plots. Seed samples (40 seeds) of each entry from each PD were stored in incubators at 16 °C and 45 °C combined with 22-24% and 98-100% RH, respectively, for 21 days. Seed weight after storage, seed weight after soaking for 8 hrs and number of imbibed seeds were measured to evaluate imbibition and seed hardness.

Seeds stored at 98-100% RH showed a linear increase in weight after storage and weight after soaking with later PDs. The number of imbibed seeds of beans stored at 16 °C and 22% RH showed a linear decrease with later PDs. Seeds of white beans, particularly GN-Emerson, stored at 16 °C and 22% RH had greater weight after soaking and more imbibed seeds than the pinto cultivars. RH had a greater effect than temperature on increasing (high RH) or decreasing (low RH) seed weight after storage, seed weight after soaking and number of imbibed seeds. Storage conditions, cultivars/lines and planting dates affected imbibition, and therefore hardness of bean seeds.