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The Extent and Its Source of Variation for Characteristics Related to Seed Quality of Adzuki Beans : III. The water uptake of seeds and hardseededness

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Abstract:
Water uptake of seeds and hardseededness under 27°C soaking in adzuki bean (Vigna angularis) cv. Erimo-shozu were evaluated for seedlots (a total of 544 growers) collected from four districts in Hokkaido (42-45°N lat) from 1987 to 1989. For comparison, the other cultivars and soybean cv. Kitahomare also were investigated in 1987. The change with time in percent water uptake (PWU) of adzuki bean seeds displayed a sigmoid curve ; seeds absorbed water very slowly by 5% (cf. 85% in soybean) at 4 h of soaking, quickly through 12 h, and slowly again after 24 h. Differences in PWU were remakable after 12 h of soaking with higher percentages in smaller-seeded cultivars. There was a greater difference between years in PWU than among districts. These differences, however, mostly disappeared after 24 h. Seed size, moisture content, and specific gravity were not closely related to PWU after 12 h, although significant negative correlations were found in some cases. Percent hard seeds (PHS), evaluated after 36 h of soaking, varied in the ranges 0-13%, 0.35-0.74%, and 0.06～1.21% among individual seedlots, districts, and years, respectively. Within or between seedlots, smaller seeds tended to become hard. Seed characteristics such as moisture content, percent seed coat, and specific gravity, and conditioning period were rarely associated with PHS. Also, the relationship between mean day temperature or rainfall during the reproductive period and PHS was unclear in this investigation.

Keywords:
Adzuki bean, Hard seed, Interannual difference, Locality, Seed quality, Vigna angularis, Water uptake

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