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Development of Rice “Seed-Mats” Consisting of Hardened Seeds with a Cover of Soil for the Rice Transplanter

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Abstract: Conventional seedling mats for rice transplanters in Japan are heavy to carry, and much labor is required to collect, wash and store the nursery boxes. In addition, seeding time overlaps with the labor peak in spring. To reduce such labor, we developed a “seed-mat” consisting of hardened rice seeds (*Oryza sativa* L.) glued onto a molded rice-hull mat with a cover of soil glued on. Seed hardening, which is done by soaking seeds in water at 15°C for 5 d followed by drying, and heating of the seeds at 50°C for 5 or 7 d, reduced the time to 50% germination (T_{50}). In dormant seeds, the heating before the hardening enhanced the effect of the hardening more than the heating after the hardening. Seed hardening increased the dry weight of the shoots from the seed-mats. Covering the mat with soil also increased the percentage of seedling emergence, shoot length, number of leaves and shoot dry weight of the seed-mats. The hardened seeds maintained short T_{50} and 95% or higher germination for 120 d at room temperature. In the seed-mat, the hardened seeds maintained 95% or higher seedling emergence for 208 d. In conclusion, superior seed-mats could be produced using the procedure involving both seed hardening and cover of soil. The seed-mats can be prepared in winter and stored until seedling-raising period in spring. By the seed-mats, seedling mats can be prepared for the rice transplanter

without using nursery boxes, which take up storage space and require much labor.

Keywords: [Cover of soil](#), [Dormancy](#), [Germination](#), [Hardening](#), [Rice](#), [Seedling](#), [Seed-mat](#), [Storage life](#)

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