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Germination characteristics of imported chinese milk vetch (*Astragalus sinicus* L.) seeds

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Germination characteristics of imported chinese milk vetch(CMV) seeds like yearly variation, light requirement, seed coat color and seed weight influence, and time of seed viability loss were investigated to provide the basic information with the CMV grown farmer. The germination of the imported CMV seed was varied according to importation year(79~95%) and seed collection regions(79~95%). The germination of seed with black coat color was lower than the light green color of seed coat and the seed germination according to seed weight was not significantly different. Although the seed germination was also lower in the darkness than the light but it was not significantly different. The germination of imported CMV seed was declined to only less than 6% after the one-year storage in natural environment condition regardless of seed importation years but it was significantly decreased after two-year storage. However, when the seed was stored at the 5°C temperature, the seed germination was not different even after two-year storage. This result indicates that the imported CMV seed do not required light for germination and the seed is recommended to use within one-year after seed imported for stable CMV seedling establishment in the CMV-rice cropping system.

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D-D3-12

Breaking physical dormancy of chinese milk vetch (*Astragalus sinicus* L.) seed by heat treatment

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Since seed of chinese-milk vetch(CMV) has been totally imported from China, our own CMV seed production has been trying for environmental friendly agriculture in rice. Freshly harvested CMV seed on May 30 was strongly dormant due to high hard seed coat(87%) and the seed dormancy was gradually broken in the natural environmental condition but the germination percentage was less than 40% in September, the time of seed to be sown in the paddy field. The seed dormancy was only broken after November to December which could not utilize the seed produced in the same cropping year. To utilize the CMV seed in the September, artificial treatment for breaking physical dormancy of CMV seed is necessary. Of the methods tested, the dry heat treatment was found to be rapid and efficient in breaking physical dormancy of CMV. Exposure of the freshly harvested seed to temperature of 70°C and 80°C for 5 to 6days a gave maximum germination of 86~87% germination while exposure of the 120-day stored seed to 70°C and 80°C for 5 days showed highest germination of 91%. A scanning electron microscope reveled that dry heat treatment improved germination because of the subsequent formation of cracks in the seed coat surface, which served as water entry points.

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