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Effects of Temperature, Sowing Depth and Soil Hardness on Seedling Establishment and Yield of Cambodian Rice Direct-seeded in Flood Paddy Fields

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Abstract: Rice is the most important crop for supporting Cambodian economy, however the cultivated area is limited due to the rice production system. Rice is transplanted by hand and yet the direct-seeding technology and proper cultivars for direct-seeding have not been established. The aim of this study is to find the adaptability of Cambodian cultivars for direct seeding. First, we determined the seedling establishment of rice direct-seeded in a flooded paddy field, and examined their growth and yield. The seedling establishment of Koshihikari and W42 were significantly higher than those of Rumpe and Sen Pidao at both medium and low temperatures, but not significantly different among cultivars at high temperature. Koshihikari and W42 showed significantly higher seedling establishment than Sen Pidao at 0 cm deep sowing. And Koshihikari also showed significantly higher seedling establishment than both Rumpe and Sen Pidao at 1 cm and 2 cm deep sowing. The percentage of seedling establishment from the seeds sown after 4, 1 and 0 day of drainage was higher in Rohat than in the other cultivars. The percentage of seedling establishment in 0 day drainage was 51% in Rohat, but only 28% in Sen Pidao, which was the lowest among the cultivars. Cambodian rice cultivars had a short plant length and short basal low internodes, which contributed to strong lodging resistance. Crossing of Cambodian cultivars with Koshihikari to obtain cultivars adapted to direct-seeding in Cambodia was proposed.

Keywords: [Growth](#), [Low temperature](#), [Seedling establishment](#), [Sowing depth](#), [Water drainage before sowing](#), [Yield](#)

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