EFFECT OF SEEDLING AGE X SEEDLING NUMBER X VARIETY ON YIELD AND YIELD COMPONENT OF RICE
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Purpose:
Delay in transplanting is a common situation in the paddy fields under rainfed condition. Delayed transplanting extends the growth of seedlings in the seedbed and shortens its growth period in the main field, hence, may result in yield reduction. We hypothesized that higher seedling density at transplanting, use of high tillering varieties and good N management reduce the negative impact of transplanting delay.

Approach and methods used:
A field experiment was conducted at the Agricultural Research Center in Vientiane, Lao PDR during 2013 WS and 2014 DS to investigate the effect of seedling age (A), seedling density (D) and variety (V) on post--transplanting crop performance in terms of crop growth and grain yield. The experiment was laid out in split-split plot design with 4 replicates. Main plot was seedling age in four levels (15, 25, 35 and 45 d-old), sub-plot was number of seedling per hill in three levels (1, 3 and 5 seedlings hill⁻¹) and sub-sub plot was variety. Three types of varieties were tested: IRUBN0300-63-5-4 (V1); TDK10239-SSD4-303-1 (V2); TDk 8 (V3).

Key results:
Results indicated a significant A x V and A x D interactions on yields in 2013 WS. V1 and V2 performed well with 25 to 45-d-old seedlings than with 15-d-old seedlings. However, grain yields of V3 collapsed with 45-d-old seedlings. When transplanting older seedlings (40 d-old), better yields were achieved at higher seedling density (5 seedlings hill⁻¹) than at lower seedling densities. In 2014 DS, grain yield was significantly affected by A, D and V; but not with the interactions. Among seedling age treatments, highest yield was recorded with 15-d-old seedlings, and lowest with 45-d-old seedlings. Transplanting with more seedlings (3 and 5 seedlings per hill) gave significantly higher yields than with 1 seedling per hill. V3 gave the highest yields among the varieties tested in 2014 DS.

Synthesis and Applications:
Transplanting using higher seedling density and appropriate varieties could help improve the yields of “older” seedlings in the main field. Our findings provide guidance to farmers in managing their rice crop at establishment if transplanting older seedlings is inevitable.