

# EFFECT OF NURSERY FERTILIZER APPLICATION AND SEEDLING AGE ON THE GROWTH AND YIELD OF A TRADITIONAL RICE CULTIVAR IN THE RAINFED LOWLANDS OF CAMBODIA

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Rice is grown in the rainfed lowlands of Cambodia with low input levels on poorly fertile soils and uncertain rainfall. Cow manure (CM), one of the few inputs available, is applied generally to the nursery on which seedlings are prepared before transplanting. Seedlings are transplanted only after sufficient rain falls for crop establishment. Seedling age may range between three weeks and three months. We investigated the effect of fertilizer applied to the nursery and seedling age at transplanting on rice yield.

## MATERIALS AND METHODS

The effects of three levels of combined N, P and CM (N0-P0-CM0, N0-P0-CM20 t/ha; and N60-P45 kg/ha-CM 20 t/ha) applied to the nursery and three ages of seedlings (4, 6 and 9 weeks after sowing: WAS) on growth and yield of traditional photoperiod sensitive rice cv. Chhmar Laeat were investigated. The field experiment was conducted 20 km south west of Phnom Penh.

## RESULTS AND DISCUSSION

Increasing fertilizer application to the nursery increased shoot and straw dry weights 5% and grain yield for each time of transplanting (Table 1 - only data for 6 WAS is presented). Highest shoot and straw dry weight and grain yield were from seedlings transplanted at 6 WAS which was 10-20% higher than 4 and 9 WAS (data not shown). Seedlings transplanted at 4 WAS were sensitive to flooding which occurred 3 days after transplanting and caused 5% mortality. Transplanting at 9 WAS greatly reduced tillering.

Table 1. Effect of nursery fertilizer application to 6-week-old seedling on shoot dry weight, straw yield, and grain yield of cv. Chhmar Laeat. Values are mean of four replicates.

Treatment Mortality Shoot dry weight Straw yield Grain yield

Nursery Age of seedling (%) at PI (g/hill) (kg/ha) (kg/ha)

CM0N0P0 6 WAS 3.9 5.0 1721 1292

CM20N0P0 6 WAS 0.7 6.0 1908 1455

CM20N60P45 6 WAS 0.3 6.4 1996 1535

l.s.d.(0.05): nursery treatment 0.5\*\* 0.2\*\* 112\* 142\*\*

cv (%) 26 5 10 10

CM -(t/ha); N, P -(kg/ha); \*\* = significant at 1 % level; \* = significant at 5% level

The results suggest that optimizing fertilizer rate in the nursery and seedling age at transplanting offer good prospects for improved management and increased yields for Cambodian rainfed lowland rice farmers. Further work is continuing to account for variable rainfall patterns from year to year.