

Title: Effects of seedling age on transplanting shock, growth and yield of pearl millet (*Pennisetum glaucum* L.) varieties in semi-arid Zimbabwe

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Abstract

Recent studies on pearl millet transplanting have shown that early harvesting is possible through establishment of nurseries and transplanting with early rains. These studies also showed that age of transplants and the time of transplanting are important issues requiring further consideration. The objective of the study was to investigate the effect of age of transplants on growth, yield and yield components of pearl millet. The study also quantified transplanting shock by comparing performance of transplants against non-transplants. The study was carried out over two seasons, the 2001/2002 and 2002/2003 seasons at Save Valley Experiment Station in a semi arid area of Zimbabwe. There were three factors in the experiment, three nursery sowing dates (2 November-SD1; 12 November-SD2 and 22 November-SD3), variety and method of planting (direct or transplanting). Varieties used were PMV2 and PMV3. The design was a 3x2x2 factorial in a Randomised Complete Block Design replicated three times. Seeds of the two varieties were also sown on the day of transplanting (12 December-SD4) resulting in two additional treatments. Days to flowering and maturity, dry weight, grains per panicle, 1000 seed weight and grain yield (kg ha⁻¹) were measured. There were significant sowing date x planting method interactions on time to flowering and maturity. Transplanting increased time to flowering and maturity while delayed sowing decreased time to flowering and maturity. Transplants had lesser dry weights compared to non-transplants though relative growth rate appeared to be the same between transplants and non-transplants. In the 2001/2002 season there was a significant ($p < 0.05$) interaction between Sowing Date (SD) and planting method on yield. Thirty and 40-day-old transplants performed better than 20-day-old transplants. For non-transplants, delayed sowing reduced yields by about 900 kg ha⁻¹ from SD1 to SD4. A similar trend was observed in the 2002/2003 season. Thirty-day-old transplants out yielded SD4 non-transplants by 63 and 26% in the first and second seasons, respectively. It was concluded that for late planting (12 December onwards) transplanting with 30-day-old transplants may yield better than direct sowing in pearl millet.