A sweet potato time of planting trial in Papua New Guinea

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In the Papua New Guinea Highlands production of the staple food sweet potato (<u>Ipomoea batatas</u>) fluctuates considerably and may be seasonal, although environmental seasonality (mainly rainfall seasonality) within the region is only small to moderate. A series of trials were conducted to examine seasonal variation in tuber yield. One such trial is reported here.

Methods

A time of planting trial with 12 treatments was conducted at Aiyura (1620 m a.s.1.) in the Eastern Highlands. Each treatment was a planting date, at monthly intervals. A randomized block design was used with 5 replicates. The cultivar Merikan was planted at 80,000 plants/ha density in plots of 9 m², The trial was located on a colluvial soil with a dark topsoil with a strong granular structure (loam to clay loam texture), classed as a Humic Brown Clay by CSIRO. Similar soils are widely used for sweet potato production in the Eastern Highlands. No fertilizer, pest or disease controls were applied. Each planting followed a crop of peanuts so that preplanting treatments were identical for each treatment. Growing period was 8 months.

Results and discussion

Total tuber yields are presented in the Figure. Yields ranged from 16.6 to 26.2 t/ha and treatments differences were significant at p=0.05 (s.e.d. 2.9 t/ha). The relationship between tuber yield and the following was examined: rainfall, bright sunshine, total sunshine (solarimeter) for the first 90 days of the growing period, last 90 days and total growing period; yield of preceding peanut crop; and number of plants surviving one month after planting. The only significant relationship was a positive correlation between tuber yield and rainfall over the total growing period (r=0.80"). Rainfall over the growing period for each treatment are given in the Figure.

These results suggest that on this soil, sweet potato yields increase with increasing rainfall, at least as high as 2000 mm over the crop life. The implication is that soil moisture stress is an important determinant of crop yield, even under these high rainfall conditions. Variable rainfall between months and years may account for part of the observed fluctuation in supply.

