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PROVINCE OF KWAZULU-NATAL

THE PRODUCTION OF SWEET POTATOES

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Introduction

This report looks at a brief review of the cultivation of sweet potatoes and then considers some of the research that is being undertaken to establish fertilizer norms (especially P) for sweet potatoes.

The sweet potato (*Ipomoea batatas*) is a dicotyledonous plant that belongs to the family *Convolvulaceae*. Its large, starchy, sweet tasting tuberous roots are an important root vegetable. Sweet potatoes are used for human consumption, as livestock feed, and in industrial processes to make alcohol and starch, and products such as noodles, candy, desserts, and flour. The green leaves of the plant may also be consumed by humans and animals.

The sweet potato is high in carbohydrates and vitamin A and can produce more edible energy per hectare per day than maize, wheat, rice or cassava. The yellow-orange flesh varieties also provide Vitamins A and C. Sweet potato varieties with dark orange flesh have more beta carotene than those with light coloured flesh, and their increased cultivation is being encouraged in Africa, where vitamin A deficiency is a serious health problem. Additionally, the green leaves of the plant can be consumed, providing additional protein, vitamins and minerals.

Sweet potatoes are grown on a variety of soils, but well-drained light and medium textured soils with a pH(H_20) range of 4.5 - 7.0 are more favourable for the plant. They can be grown in poor soils with little fertilizer and have a good tolerance of drought.

Sweet potatoes are not tolerant of frost. This results in the production of cuttings for spring plantings being limited to frost-free areas or in tunnels. Build-up of viruses in sweet potato plants can severely limit production. It is essential to use virus free material and not use the same material year in and year out.

The production of sweet potato has increased dramatically in KwaZulu-Natal, and it has potential to greatly increase household food security as well as become an alternative crop for commercial production. However, the minimum soil P for this crop under KwaZulu-Natal conditions is not known. The response to P applications is also not known. The research component of this talk reports on a project aimed at establishing the minimum soil P requirement of sweet potatoes and the response to additional P fertilization.

Materials and Methods

The trial is laid out as a factorial (2x5) in a randomised block design with 4 reps. Treatments are 2 sweet potato cultivars (A40 and 19090) and 5 levels of P applied (0, 15, 30, 45 and 60 kg P/ha).

Results

There was a significant response to applied P ($P < 0.01$). However, this response was to a very low level of applied P of 15 kg/ha, although there was an upward trend to 30 kg P/ha applied. Considering the low soil P this indicates that sweet potatoes are highly efficient at extracting P from the soil.

Discussion and Conclusions

Sweet potatoes have the potential to greatly alleviate household food security shortages. They are a crop that requires low fertility and has good drought tolerance. The production of cuttings over winter and the build-up of viruses can be limitations to production.