2.0 ABSTRACT

Experiments were conducted to compare the performance of two sweet potato cultivars, in shade and intercropping with corn and to assess whether their performance was modified in any way by added nitrogen and potassium. The effect of shade, nitrogen and potassium was evaluated in experiments, in which sweet potato cultivars 049 and TIS2328/6 were grown in full sunlight, 25,55, or 73 percent shade and subjected to three levels of nitrogen and potassium. The performance of the two sweet potato cultivars were also compared, in intercropping with corn, at three levels of nitrogen and potassium.

In the shade house experiments at twelve weeks after planting, total dry matter of plants grown in 73 percent shade lower than that of plants grown in full sunlight. Tuber dry matter declined and shoot: root ratio increased. Tuber dry matter of 049 was more markedly reduced by shade than TIS2328/6. Nitrogen decreased tuber dry matter of 049 but not of TIS2328/6 and potassium increased tuber dry matter of both cultivars. In the field experiments, tuber dry matter yield of TIS2328/6 in monoculture was greater than 049, at twelve weeks after planting; there was however no significant difference between the two cultivars at twenty weeks after planting. TIS2328/6 was therefore an early maturing cultivar and 049 a later maturing cultivar. TIS2328/6 was more adversely effected by the presence of corn than was 049. Nitrogen increased tuber yield of TIS2328/6 but not of 049, while potassium increased tuber yield of both cultivars.

Corn dry matter yield also increased with added nitrogen and potassium. Intercropping with TIS2328/6 decreased the yield of corn, but, intercropping with 049 had no effect on the yield of corn. The reduction in yields of TIS 2328/6 and corn, in intercropping, were apparently due to competition between them for both nitrogen and potassium.

It was shown that in intercropping of sweet potato and corn, competition for nutrients may be more important than competition for light. It is also suggested that the relatively earlier maturity of TIS2328/6 compared to 049 resulted in greater competitive stress between TIS2328/6 and corn.