ABSTRACT

Although barley, oats and rye have a wide range of uses and show economic significance to Zambia, especially considering importation of barley from Zimbabwe by the brewing industry, there are currently very few varieties that grow favourably under tropical environments. The cereals in question are better adapted to moist, cool, temperate climates. There are currently efforts being directed towards breeding of such cereals for tropical conditions. This involves the breeding of these otherwise temperate crops for greater adaptation to the drier, warmer conditions of the tropics (in this case Zambia) and testing of such germplasm to ensure adaptability.

This study was conducted at the University of Zambia, School of Agricultural Sciences Field Station, during the 2004/2005 growing season to evaluate the agronomic performance of a single line each of barley, oats and rye under Zambian conditions. The experiment was arranged as a Randomized Complete Block Design with three replications of the crops under two fertiliser treatments.

The following parameters were measured: plant height and leaf area, tillering increase, disease infestation, biomass and grain yield and one thousand grain weight. Grain and biomass yields varied with crop. Barley and oats gave grain yields of approximately 1.1 and 2.4 tonnes per hectare respectively, while rye failed to produce any grain. Biomass yields for barley and oats were 12.9 and 29.3 tonnes per hectare respectively. Yields were also seen to vary across fertiliser treatments as well. The half dose treatments consistently gave lower yields than the full dose treatments and differences in yields were more significant over the barley than the oats.

In this study, results obtained indicate that the ‘temperate cereals’ barley, oats and rye can, with the right adaptations, be grown in tropical environments and produce yields even under stress conditions generally common to the tropics.