Abstract:

A field experiment was conducted in the summer and winter for two consecutive seasons (1997/98 and 1998/99) in the Experimental Farm of the Faculty of Agriculture at Shambat in order to study the effect of genotype, nitrogen, phosphorus and sulphur on the chemical composition of roselle (Hibiscus sabdariffa var. sabdariffa L.). The treatments consisted of two roselle genotypes (CV1 and Line 24), three nitrogen levels (0, 50, 100 kg N/ha.), three phosphorus levels (0, 75, 150 kg P2O5/ha.) and two sulphur levels (0, 50 kg S/ha.). Urea (46%N), triple superphosphate (48% P2O5) and elemental sulphur were used as sources of nitrogen, phosphorus and sulphur, respectively. The experiment was laid out in a split-plot design with four replications. The genotypes were allotted to the main plots, whereas the fertilizer treatments were designated to the subplots. The results showed that in both seasons Line 24 had significantly higher anthocyanin and citric acid content than CV1, otherwise, the two genotypes showed no differences in calyx chemical composition. Moreover, the genotypes showed no significant differences in leaf or seed chemical composition. Nitrogen caused a slight, but significant increase in calyx citric acid and phosphorus content in the first season, and in protein content in both seasons. It also significantly increased leaf protein and phosphorus and seed protein content in both seasons. In addition, nitrogen significantly increased seed oil content in the first season only. Phosphorus significantly increased citric acid, oxalate, phosphorus and protein content in the calices in both seasons, but it increased anthocyanin content in the first season only. Moreover, phosphorus significantly increased protein and phosphorus content of leaves and seeds in both seasons, but it increased seed oil content in the first season only. On the other hand, sulphur significantly increased sulphur content of the calices, leaves and seeds and leaf protein content in both seasons. Interactions between the various treatments significantly affected chemical composition of roselle calices and seeds to varying degrees.