

## Abstract

Temporal variation in allele frequencies in a natural population of wild *Vigna unguiculata* was studied by making monthly collections of seeds over a two-year period. Using starch gelelectrophoresis, four out of seven loci analysed were shown to be polymorphic (Enp, Fdh, Fle 3 and Pgd 2). These four loci showed significant variation in allele frequencies over time. Changes in population structure over time were analysed using F-statistic estimators. Although heterogeneity was evident between loci, the analysis showed significant differentiation among months within a year for all polymorphic loci. Fixation indexes were all positive and statistically different from zero, highlighting a significant departure from random mating. Using analysis of variance (ANOVA), the pattern of inbreeding ( $f$ ) showed significant changes over time (season); among the polymorphic loci, Enp most strongly contributed to this significance. Significant correlations were found between allele frequencies at different loci. The monthly average gene diversity ( $H_e$ ) and allele frequencies at the Enp locus were found to be significantly correlated with weather conditions (temperature and rainfall distribution). These allele frequency deviations over time can be attributed to changes in pollinator behaviour, and frequent genetic bottlenecks that are associated with changes in environmental conditions.