

## Abstract

### Background

Globally, there is great concern about expanding agricultural activities due to their impact in the conservation of agrobiodiversity. African continent is known for its richness in biodiversity. In Kenya, there is a continuous unabated expansion of agriculture into natural habitats due to demographic and economic pressures posing a significant threat to biodiversity. Therefore, there is a need to study biodiversity loss and its regain through practices in agricultural landscapes. In this study, we assessed the status of agrobiodiversity and its contribution to food security in four agroecological zones of Eastern Kenya. Sixty households were sampled from two selected agroecological zones (upper and lower midland zones) in Embu and Tharaka-Nithi counties. Structured questionnaires and checklists were used to collect the data.

### Results

Thirty-nine crop species were identified dominated by vegetables, fruits, legumes and cereals with relative densities of 28.8, 20.5, 18.3 and 8.3 %, respectively. Embu Lower Midland and Tharaka-Nithi Lower Midland zones had relatively higher crop species richness of 243 and 240, respectively, and Shannon–Wiener diversity indices ( $H'$ ) of 3.403 and 3.377, respectively, compared with Embu Upper Midland and Tharaka-Nithi Upper Midland zones with species richness of 229 and 207, respectively, and  $H'$  of 3.298 and 3.204, respectively.

### Conclusions

Households from lower midland zones with high crop diversity and richness were more food secure compared with those from the Upper Midland zones with low crop diversity and richness. These findings suggest that farm production systems with high agrobiodiversity contributed more toward food security among smallholder farmers in the selected sites.