

Effects of elevation and season on nutrient composition of leaves and green pods of *Moringa stenopetala* and *Moringa oleifera*

Aberra Melesse, H. Steingass, J. Boguhn, M. Schollenberger, M. Rodehutschord

Abstract

Moringa stenopetala and *Moringa oleifera* are multipurpose trees widely grown in the tropics and sub-tropics. The aim of this study was to investigate the variability in nutritive values of leaves and green pods of *M. stenopetala* and *M. oleifera* as influenced by species, elevation and season. Leaves and green pods were collected from each three trees of *M. stenopetala* and *M. oleifera* grown at two different elevations in rainy and dry seasons. In leaves, crude protein (CP) content (g/kg DM) averaged 263 in *M. stenopetala* and 290 in *M. oleifera*. In green pods, the highest and lowest CP concentrations (g/kg DM) were 184 and 153 for *M. stenopetala* at low and mid elevations, respectively. Leaves contained higher fat concentration than green pods. Compared to leaves, green pods had a high level of structural carbohydrates. At low elevation, the concentrations of calcium (Ca), phosphorus (P), potassium (K), magnesium (Mg) and trace minerals zinc (Zn) and copper (Cu) were highest whereas that of sodium (Na) and trace mineral manganese (Mn) were lowest in *M. stenopetala* leaves compared to those of *M. oleifera*. Green pods of *M. oleifera* contained higher concentrations of P and trace minerals iron (Fe), Mn, Zn and Cu. Leaves contained greater concentrations of essential amino acids than green pods and levels generally were comparable to concentrations found in soybean. In leaves, except for lysine and arginine, essential amino acid concentrations were similar across *Moringa* species. Except for aspartic acid, phenylalanine and serine, amino acid concentrations in *M. stenopetala* leaves at mid elevation were higher than those at low elevation. However, the amino acid concentrations in *M. oleifera* leaves were similar between low and mid elevations. In conclusion, leaves and green pods could serve as valuable sources of protein supplement for ruminants in the tropics during the dry season. Moreover, due to their excellent amino acid profiles, leaves could be used as potential sources of feed for non-ruminants and humans.

Keywords : *Moringa* species , Nutrient composition, Leaves, Green pods, Elevation, Season