Abstract:

Drylands have a several livelihood problems where food insecurity features as one of the most serious impediments. Food security is among the key problems faced by semiarid people of Ethiopia in general and East Shewa in particular. Wild edible plants which can provide supplementary diet and alternatives are underutilized. Their use and managements were not properly documented to inform policy for their sustainable utilization. Hence, a comparative study was conducted to analyse the use and management of Wild Edible Plants (WEPs) and assess their contribution to food security among transhumance and settled farmers in two districts of east Shewa in Ethiopia. The specific objectives were to: 1) characterize the habitats of WEP species, 2) identify key WEPs species, their uses and seasonal preferences for inclusion in Drylands agrobiodiversity management,3) identify indigenous knowledge practices for use and management of WEPs and their implications for food security and stability of livelihood systems, 4) determine the density, availability and contribution to food security of the most preferred wild edible species among transhumance and settled farmers,5) determine the nutritional contents of commonly used nutraceutical WEPs in the study area. This study was conducted in three sites of Fantalle (Qobo, Galcha and Dheebiti) and Boosat (Xadachaa, TiriiBiretti and DigaluTiyo) districts. Data for characterization of WEPs habitats were collected by ecological field inspection, participatory observations and recording of the dominant species along six transects. Alpha and beta diversity data was used to measure diversity species in study area. Frequency distribution of plants and those of WEPs were recorded along 6 transects to measure abundance and densities of WEPs. The major soil physical and chemical variables were determined by laboratory analysis across land uses from composite soil samples. Climate variability was analysed from rainfall and temperature data for the two districts for a period of 30 (Fantalle) and 44 (Boosat) years. Interviews, focus group discussions and key informants interviews were undertaken to identify WEPs. Proximate, metallic and tannin contents of five key WEPs was analysed using standard laboratory procedures. Shannon-Weiner, Simpson and Whittaker diversity (Bw) were used to measure diversity plant species. Density of WEPs species was calculated along transects. Plant communities were analysed using PC-Ord Software 5.1. Analysis of variance (ANOVA) was performed for soil variables between land uses using SAS software. Means, frequencies, percentages, use value rankings and Chi-square test for plant habits, indigenous knowledge of the uses and management of WEPs were analysed using SPSS Software version 16. Jaccard's similarity coefficient was calculated for species composition across the land uses. ANOV A was performed for nutrient and anti nutrient content of WEPs across land uses using GenStat Software. Ninety tree and shrub plant species were identified as major components of the vegetation of the study area distributed in 36 genera and 35 families. Four plant communities were identified. Shannon-Weiner, Simpson diversity indices were not significantly different between study sites and along the two land uses. Whitthaker beta (Bw) diversity showed little turnover of species composition along the study sites. Jaccard's similarity coefficient between districts was 66.7%. Lantana camara, Ziziphus spina-christi and Acacia senegal ranked I', 2nd and 3rd respectively in abundance and density with more densities in transhumance than settled farmers land use. Mean annual rainfall of 511.6 mm and 952.8mm with standard deviation (SD) of 87.80mm and 264.21mm was recorded for Metahara (Fantalle) and Welenchiti (Boosat) for 30 and 44 years respectively. Standardized rainfall and temperature anomalies indicate climate variablity. Key species of WEPs preferred and used for adaptation as human food and other multiple uses during dry seasons include Balanites aegyptiaca, Ziziphus

spina-christi, Berchemia discolor, Ximenia americana and Tamarindus indica. There was significant variation between community preference for WEPs (P<0.05). Transhumance used more WEPs (95%) while settled farmers used fewer (65%). Increased transhumance seasonal mobility and diversification of herds were some of the innovative adaptation strategies noted. Of the 40 species ofWEPs identified, 87.5% were used as forage/fodder and 92.5% for fuel wood, 50% of the species are nutraceuticals used for human food, livestock feed and medicine. Nutrientionally the fruits of five key WEPs have potential nutritional value for human and livestock use in terms of major food substances, macro and micro nutrients. Better soil fertility in transhumance land use system was observed. Bulk density of transhumance ranged 0.94-19 while in settled farmers land use ranged 0.77-1.01. There were significant variations (P<0.05) in transferring indigenous knowledge between the two communities. Transhumance have strong traditional set-up for knowledge transfer through community responsibility while this is left to family in the case of settled fanners. Transhumance conserves WEPs in pastureland and natural vegetation, while settled farmers conserve in traditional dryland agroforestry and living quarters. Ziziphus spina-christi has multipurpose roles and most preferred by people. Its average fruit yield was 200 kg year' tree--1 and total price of 30.21 USD. In spite of climate variability in the study area with greater deviation in transhumance district, people are adapting by using local resources including WEPs which are available, accessible and affordable to local community. Despite high potential of WEPs, their full potentials were underutilized and some species are declining. Hence, conservation of the natural habitats of WEPs and raising public awareness to promote their utilization is recommended. Further research on nutritional value ofWEPs and their adaptability to other ecological conditions through cultivation trials, value chain addition analysis and technology development should be enhanced through policy intervention.