

# Nutritional Characteristics of Forbs and Tree Leaves and Their Contribution to Animal Production in Species-rich Vegetation

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**1-1. Nutritional Characteristics of Forbs and Tree Leaves and Their Contribution to Animal Production in Species-rich Vegetation**

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Species-rich ecosystems provide us multi-functions such as supporting, provisioning, regulating and cultural services (Millennium Ecosystem Assessment 2005). In agricultural ecosystems, however, the effect of species richness on food production has not been fully understood. In species-rich grasslands, grazing animals encounter and consume a wide range of plant species, which likely affects the amount and proportion of dietary nutrients for grazing animals, because the nutrient composition of plants varies among species and access to a wider range of species provides animals a wider range of choices. To prove this hypothesis, grazing experiments were carried out by using beef cows in paddocks with different plant species count. Foraging behavior and botanical composition of diets in the cows, chemical composition of plants were measured. From these data, the concentration of nutrients in the diet and the amount nutrient intake per cow were estimated. The results showed that 1) the number of plant species foraged by grazing animals increased with increase of species richness of vegetation, 2) chemical composition of nutrients greatly differed among plant species; some minerals (Ca, Mg, Mn, Co and Se) concentration was higher in some forbs and tree leaves, 3) amino acid concentration was also high in some forbs, 4) higher amount of daily uptake was estimated in some minerals and amino acids in cows which grazed in species-rich paddocks than in grass dominant pasture. This study suggests that species rich vegetation including monocots, forbs and trees improve nutrient balance of grazing animals, due to the contribution of forbs and tree leaves which have high concentration of minerals and amino acids.