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The spectral assessment of pasture biomass and nutrient status is influenced by floristic composition. The accurate estimation of the nutrient status in a pasture throughout the growing season is challenging and a critical step to establish a site-specific management strategy for the improvement of productivity and profitability as well as the mitigation of the environmental impact. Remote sensing technologies have been widely applied to vegetation surveys because they can quickly retrieve the *in situ* biophysical and biochemical information of a field. Recent advances in sensing technologies, especially in a hyperspectral sensor system that has a higher spectral resolution of less than 10-nm bandwidth, have significantly improved predictive ability for the estimated biomass quantification in comparison with the conventional broad-band sensor system. Not only the biomass quantification but also other information about the pasture, such as forage nutrient content and the floristic composition, can also be estimated using its abundant spectral information, which is difficult to achieve on a broad-band sensor system. In this mini-review, we discuss the use of hyperspectral assessment to estimate the forage parameters of a pasture. Recent improvements in the analysis methodology of hyperspectral data have been reviewed and include (i) a univariate statistical approach based on narrow-band vegetation indices, (ii) multivariate statistical approaches, especially using partial least squares (PLS) regression, (iii) waveband selection to enhance the predictive performance of PLS regression, and (iv) the spatial interpolation of predicted values from ground-based hyperspectral measurements.