# Detecting Forage Biomass and Nitrogen Concentration Using False Color Infrared Photography. (C03-white165350-Poster)

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## Abstract:

Our objectives were to determine if false-color infrared (FCIR) aerial photography could be used to estimate biomass and N concentration of warm-season forage canopies. In July, 2000, we took a FCIR aerial photograph of a three-way factorial experiment: two N sources (swine effluent, ammonium nitrate), four N rates (0, 224, 449, 674 kg N/ha/yr), and three forages (bermudagrass (BG) (Cynodon dactylon L.), crabgrass (CG) (Digitaria sanguinalis L.), volunteer warm-season grass (VWS) (80% crabgrass/20% forbs)). Forage biomass, N concentration, and N uptake were regressed against spectral variables and vegetation indices derived from the scanned photograph. Source of N affected the relationship between BG biomass and green (G) Normalized Difference Vegetation Index (NDVI), and many of the relationships in VWS. GNDVI was a consistently strong estimator of N uptake. Biomass was best estimated by: near infrared (NIR) in BG, NDVI in CG, and normalized NIR in VWS. Nitrogen was best estimated by NDVI in BG, NIR in CG, and G in VWS. Forage biomass, N concentration, and N uptake can be estimated from FCIR aerial photography; further research should investigate the effects of N source.

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