

Article

Comparison of Hyperspectral Imaging and Near-Infrared Spectroscopy to Determine Nitrogen and Carbon Concentrations in Wheat

Iman Tahmasbian ^{1,*}, Natalie K Morgan ², Shahla Hosseini Bai ³, Mark W Dunlop ¹ and Amy F Moss ²

¹ Department of Agriculture and Fisheries, Queensland Government, Toowoomba, QLD 4350, Australia; Scopus affiliation ID: 60028929; mark.dunlop@daf.qld.gov.au

² School of Environmental and Rural Science, University of New England, Armidale, NSW, 2351, Australia; nmorga20@une.edu.au (N.K.M.); amos22@une.edu.au (A.F.M.)

³ Centre for Planetary Health and Food Security, School of Environment and Science, Griffith University, Brisbane, QLD 4111, Australia; s.hosseini-bai@griffith.edu.au

* Correspondence: iman.tahmasbian@daf.qld.gov.au

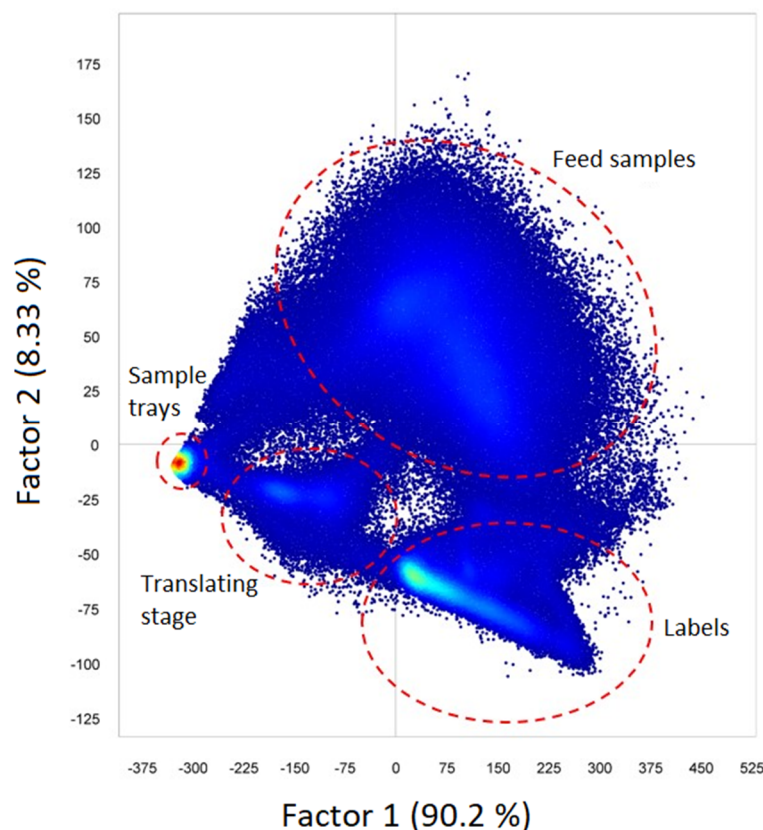


Figure S1. Principle component analysis (PCA) of the reflectance measured using shortwave infrared (SWIR) hyperspectral imaging (HSI) system. The figure has been created using Evince software (version 2.7.11) and labelled in Microsoft Paint.

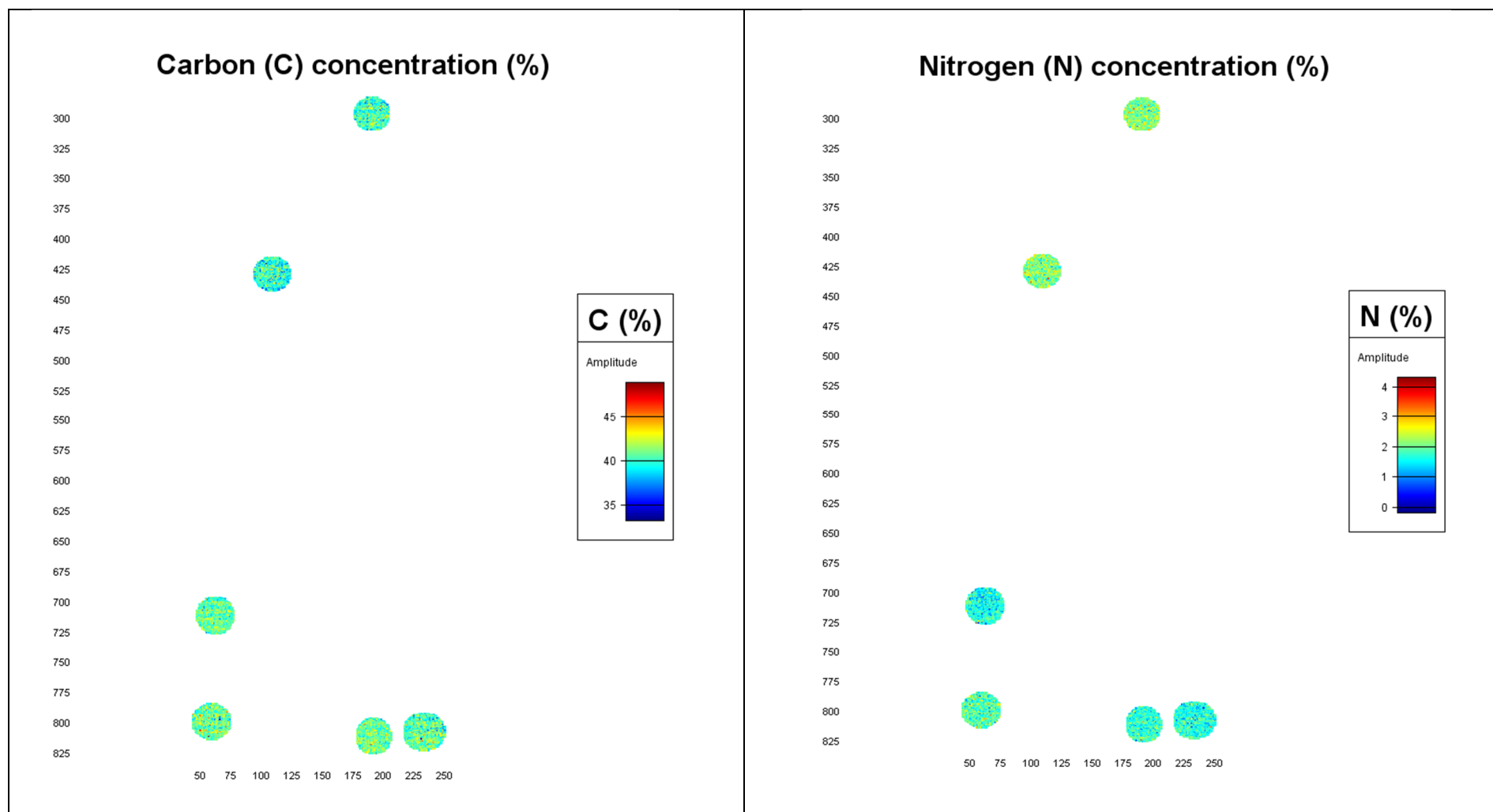


Figure S2. Spatial distribution of carbon (C) and nitrogen (N) concentrations in the test feed samples predicted using full wavelengths of shortwave infrared (SWIR) hyperspectral imaging data.

Table S1. Comparing the spectral reflectance of six test samples captured using the visible to near infrared hyperspectral imaging (VNIR HSI, 400–1000 nm) system in December 2019 (before) and February 2020 (after). This test was conducted to verify that refrigeration period between scanning the samples with VNIR HSI in December 2019 and shortwave infrared (SWIR) HSI in February 2020 did not introduce a bias to the preformed analysis.

