



Figure S1. Forage harvest activities at the Richmond, UT site in 2023.



Figure S2. Examples of poor canopy conditions due to defoliation by grasshoppers at the Millville, UT site in 2023.

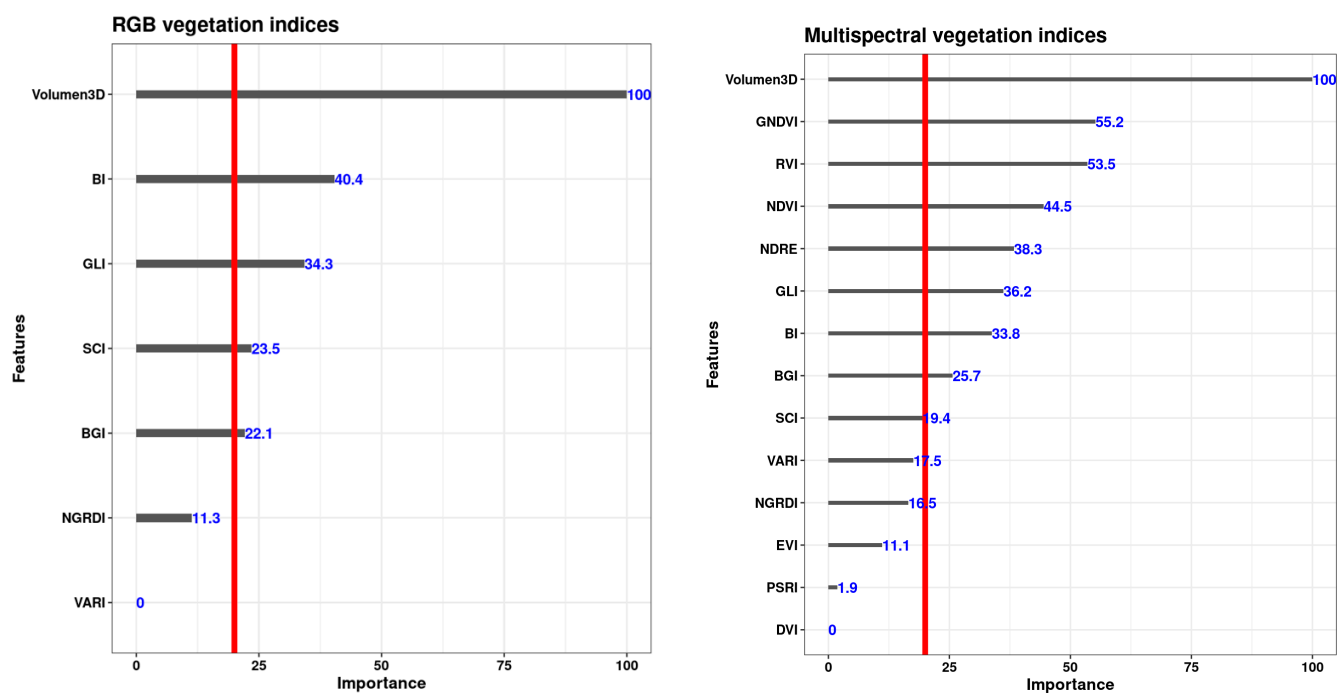


Figure S3. Variable importance plots for the RGB (left panel) and Multispectral (right panel) derivatives. Red line indicates the threshold (20%) that was arbitrarily used to choose predictors to include in the stratified cross validation models.

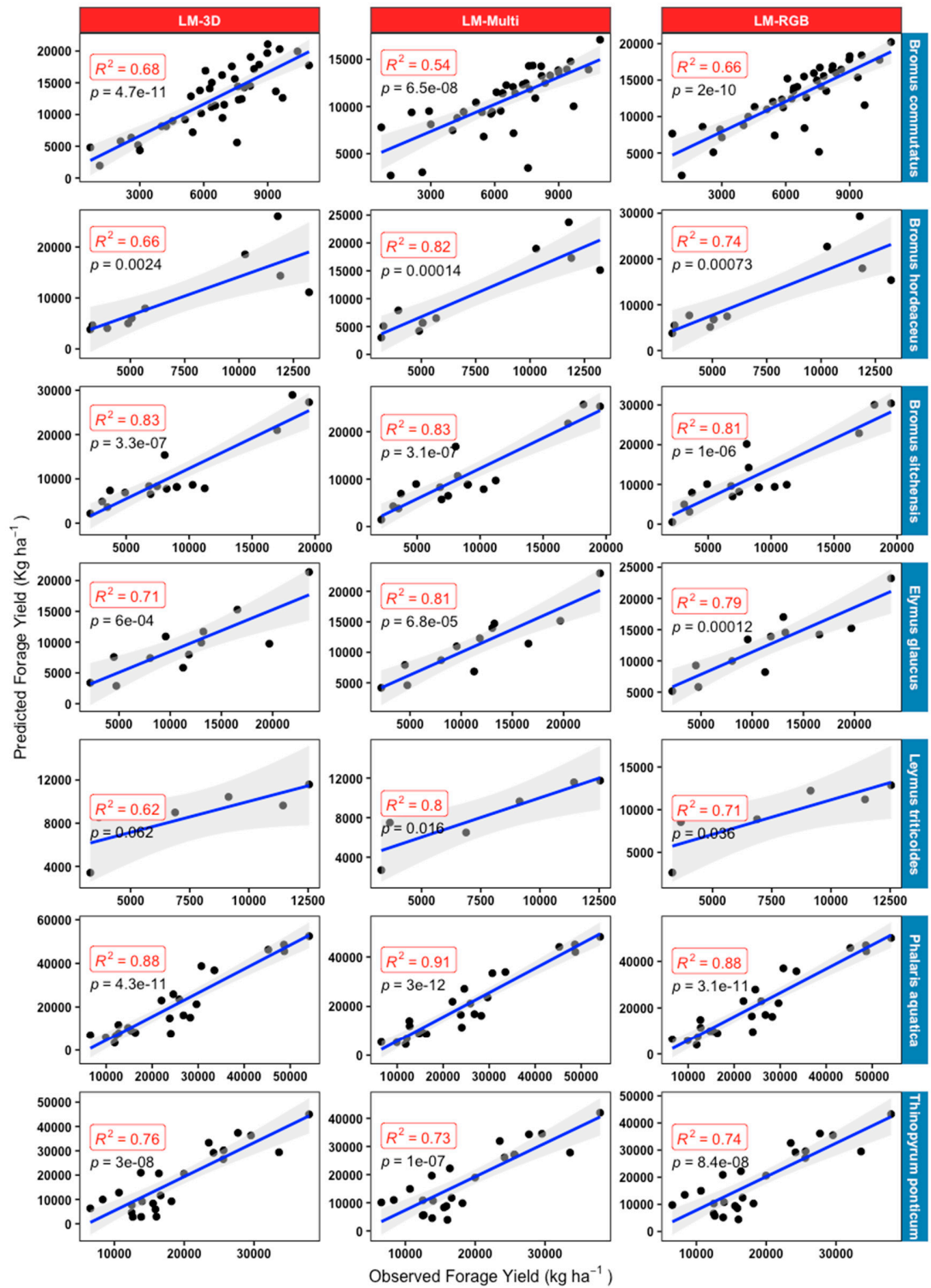


Figure S4. Linear models LM-3D, LM-RGB and LM-Multi scatterplots and adjusted R^2 for the different model structures (red panels) using the grasses (blue rows) that were not included during model fit using cross validation.

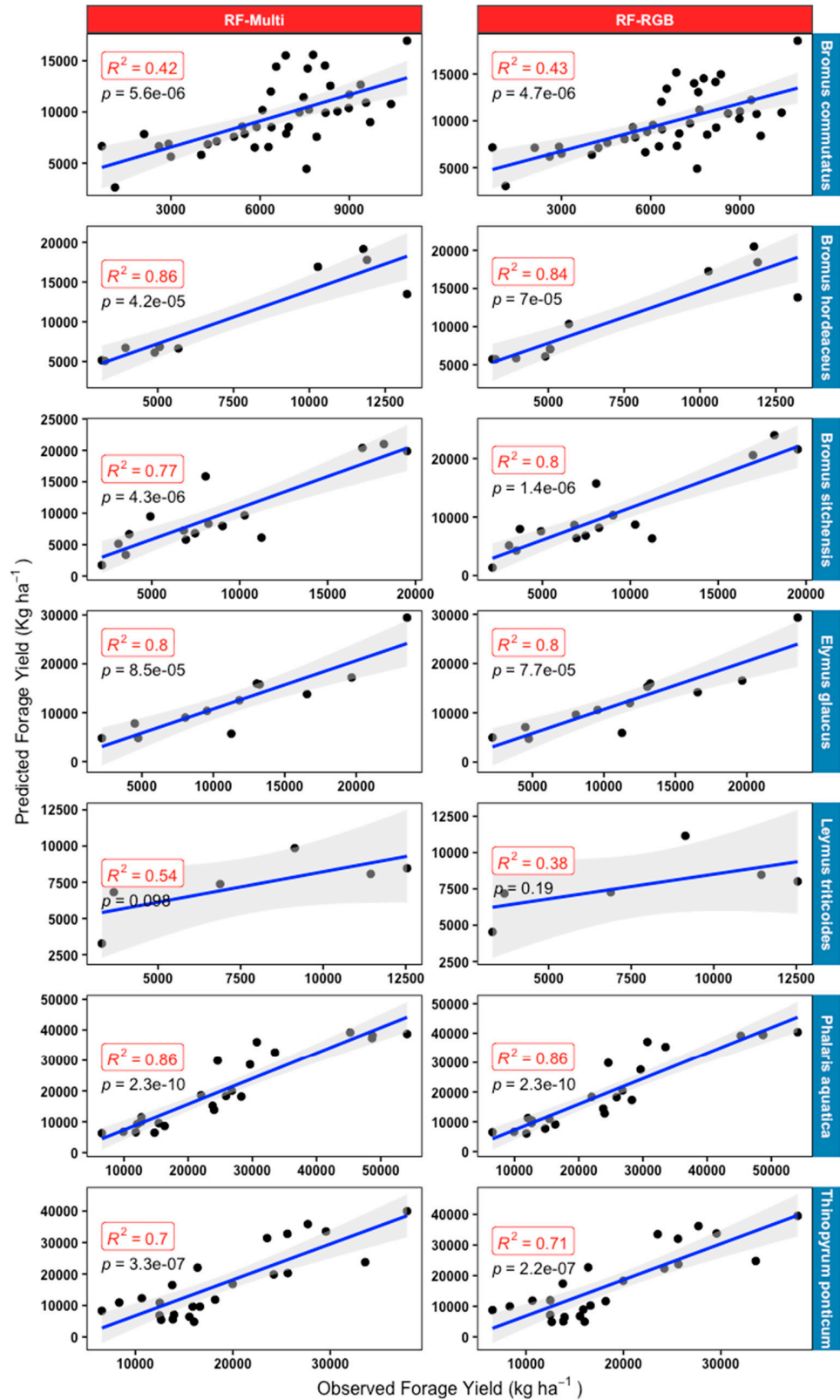


Figure S5. Random Forest RF models scatterplots and adjusted R^2 for the different model structures (red panels) using the grasses (blue rows) that were not included during model fit using cross validation.

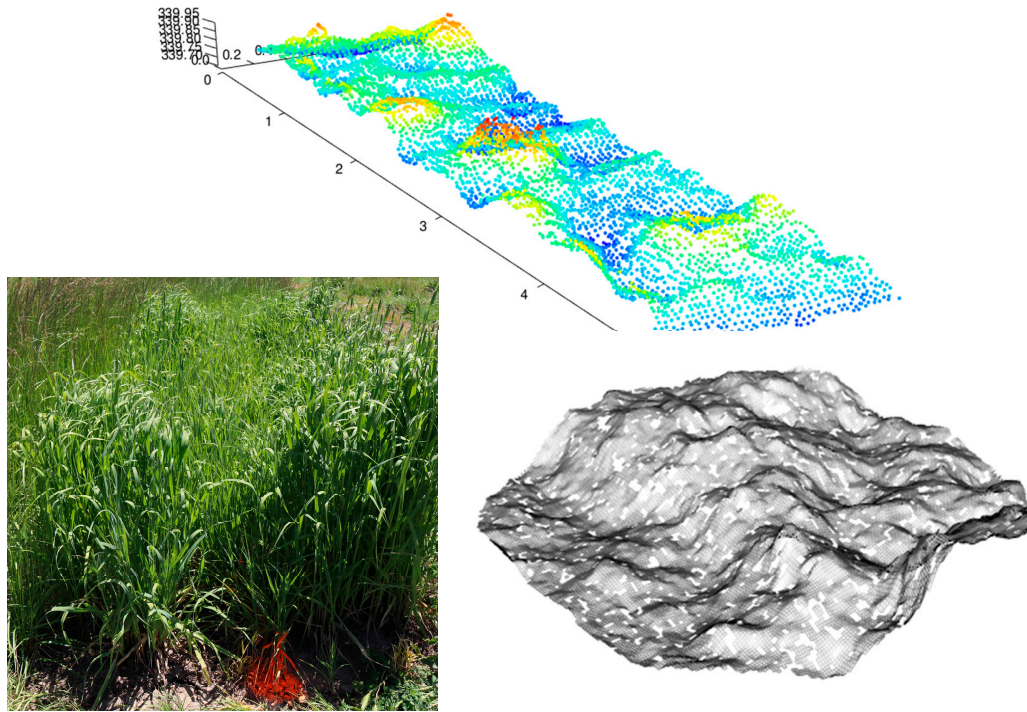


Figure S6. Schematic representation of the dense point cloud for a 5x1 m plot of a dense canopy grass *Phalaris aquatica* with a fraction of the derived digital surface model DSM. A picture taken prior to the first harvest is also included.

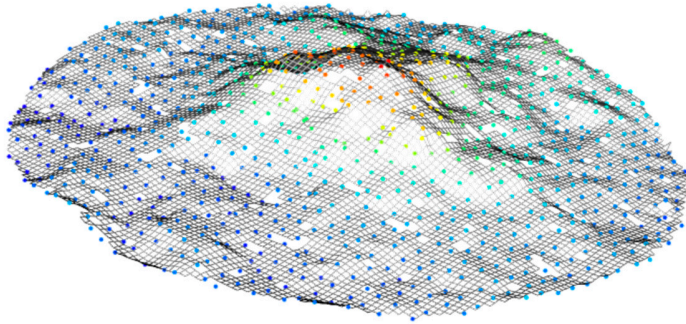
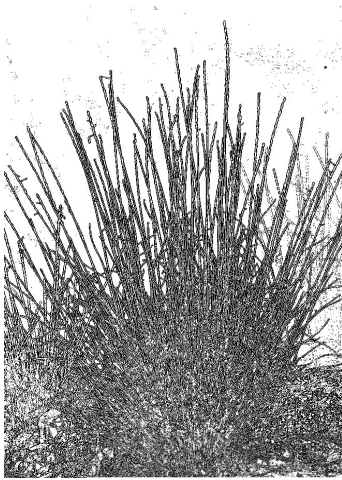


Figure S7. Schematic representation of a typical sparse canopy grass *Pseudoroegneria spicata* that shows the multiple empty spaces that cannot be depicted in the dense point cloud and thus in the corresponding digital surface model DSM.

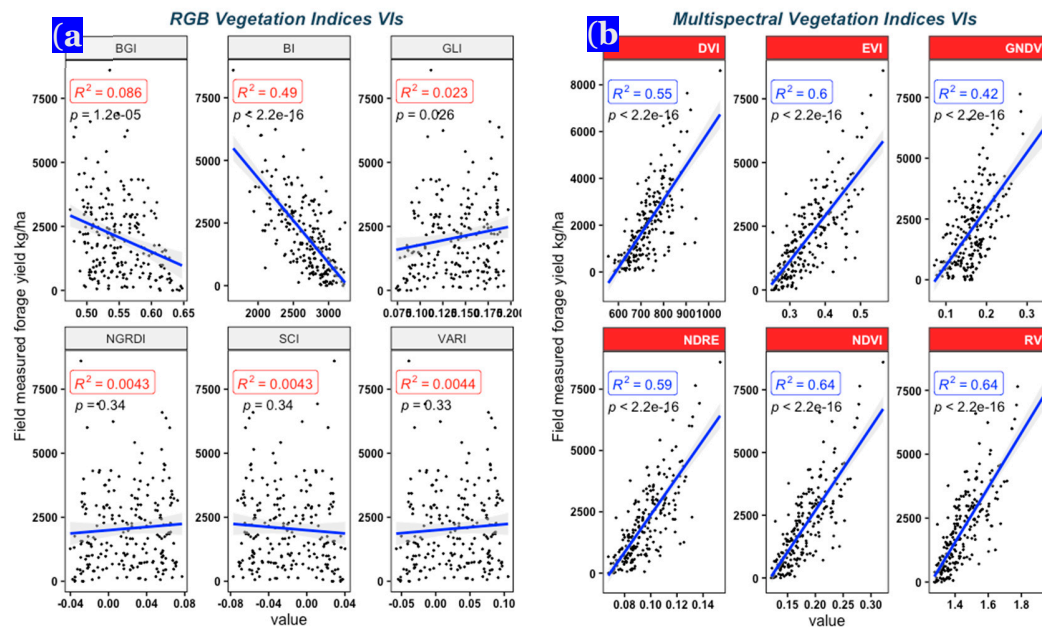


Figure S8. Linear relationships and coefficients of determination between the response variable forage yield and: (a) RGB VI, (b) Multispectral red edge and NIR VIs.