This data set was collected as part of a study to determine the viability of using an open-source spectral sensor for forage quality determination. A SparkFun ESP32 Thing Plus microprocessor, SparkFun Triad Spectroscopy Sensor, and SparkFun Garmin LIDAR-Lite v4 LED Distance Measurement Sensor comprised the sensing system designed for this study (SparkFun Electronics, Niwot, CO). Arduino IDE v 2.0.4 (Arduino Core Team, 2024) was used to program the sensor suite. Forage samples were scanned and collected weekly between May 1, 2023 and October 30, 2023. Twelve fields were used for this study with two random samples collected weekly from each field, resulting in a total of **648** samples. Each sample was scanned with the spectral system in-field, harvested, and scanned again in-lab prior to chemical analyses. The data presented in this paper represent the 18 individual light spectra and lidar-measured distance collected via the spectral sensing system as well as the ground truth measurements of neutral detergent fiber (NDF), one of the forage quality parameters of interest. Traditional bench chemistry methods were employed using the ANKOM 200 fiber analyzer system to determine the ground truth NDF content of each sample (ANKOM Technology, Macedon, NY). Collection date, field number, sample number, cloud cover, grazing species, and type of spectral scan (in-field versus in-lab) were also included in the data set.