

Table S1. Summary of *in-situ* and GDSE soil information for 61 CONUS study sites (see supplemental material zip file).

Table S2. Summary of observed standing wet biomass and MODIS derived *GrWDRVI* for each of the 3 fields near Mead, NE (see supplemental material zip file).

Table S3. Summary of derived equations estimating standing wet biomass from *GrWDRVI* for maize and soybean partitioned into irrigated and rainfed areas and green-up (DOY < 210 for maize, DOY < 230 for soybean) and senescence. Destructive biomass data is aggregated from 3 fields near Mead, NE between 2003-2013 (Table S2). We note that the maize and soybean functions were bounded to provide realistic behavior at the observed *GrWDRVI* and destructive vegetation sampling bounds. See main text for details.