Supplementary materials

Texture analysis method

Laser diffraction analysis was performed with a light scattering apparatus (Malvern Mastersizer 2000, England), equipped with a lowpower (2 mW) Helium-Neon laser with a wavelength of 633 nm (Bittelli et al., 2019). The apparatus has active beam length of 2.4 mm, and it operates in the range 0.02 to 2000 µm. For each sample, four sub-samples of the soil suspension prepared according to Gee and Or (2002) were introduced into the sample bath in small increments until the obscuration value fell within the range of 10–20%. The Mie theory used to render the data requires the adoption of an absorption coefficient and a refraction index. According to Ozer et al. (2010) the values of RI and AC of 1.55 and 0.1, respectively are suggested for laser diffraction in naturally soils.

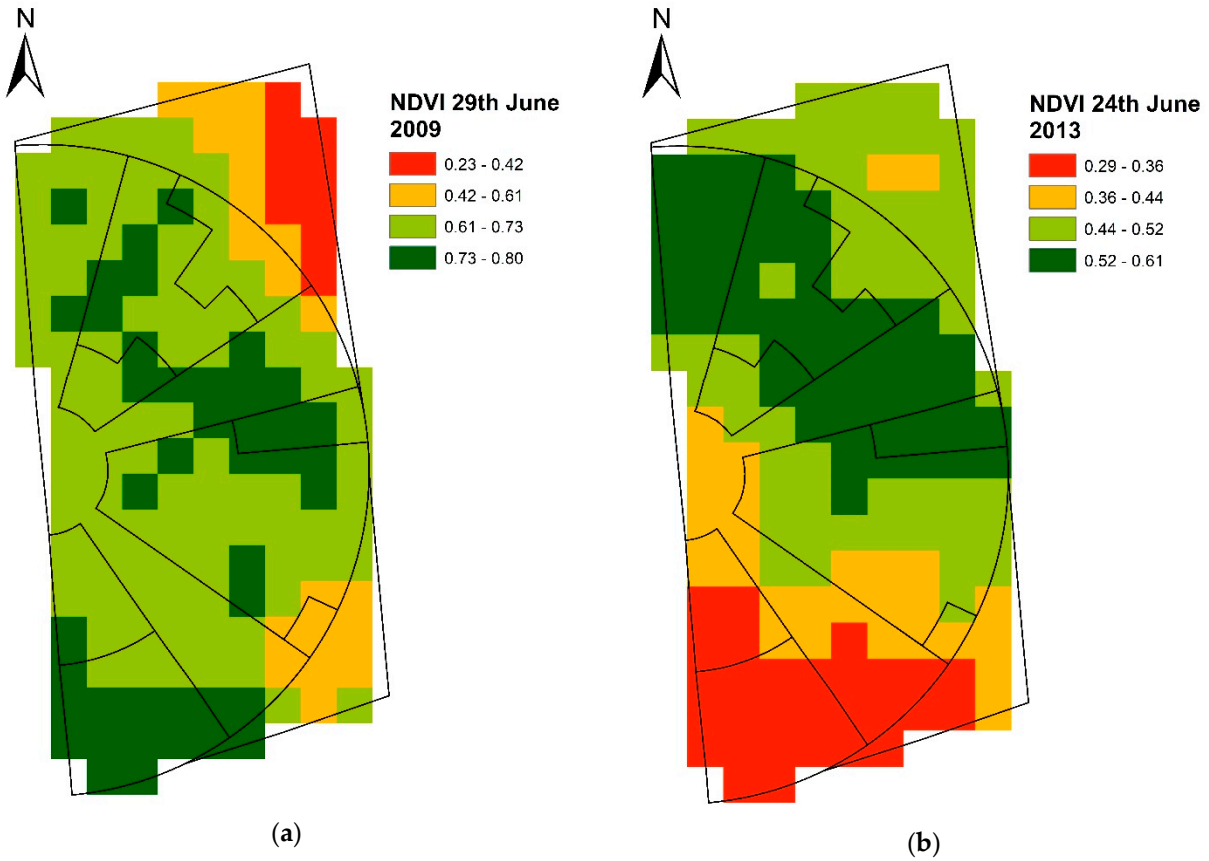
References:

Bittelli, M., Andrenelli, M.C., Simonetti, G., Pellegrini, S., Artioli, G.,Piccoli, I., Morari, F., 2019. Shall we abandon sedimentation methods for particle size analysis in soils?. Soil & Tillage Research, 185, pp. 36 – 46.

Gee, G.W., Or, D., 2002. Particle-size analysis. In: Dane, J.H., Topp, G.C. (Eds.), Methods of Soil Analysis, Part 1, Physical Methods. Soil Science Society of America Book Series, pp. 255–293.

Ozer, M., Mehmet, O., Nihat, S.I., 2010. Effect of particle optical properties on size distribution of soils obtained by laser diffraction environment. Engineering Geoscience, 16 (2), 163–173.

Figures:



(**a**) (**b**)

Figure S1. Normalized Difference Vegetation Index (NDVI) maps from June 29th, 2009 and June 24th, 2013 utilized for the definition of the irrigation management zones in the experimental area.

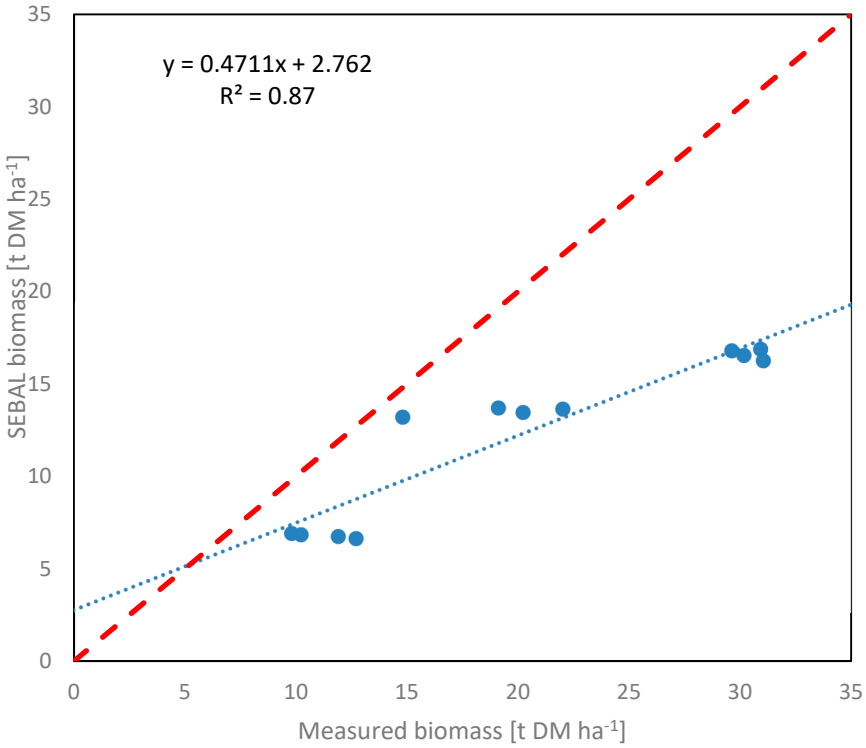
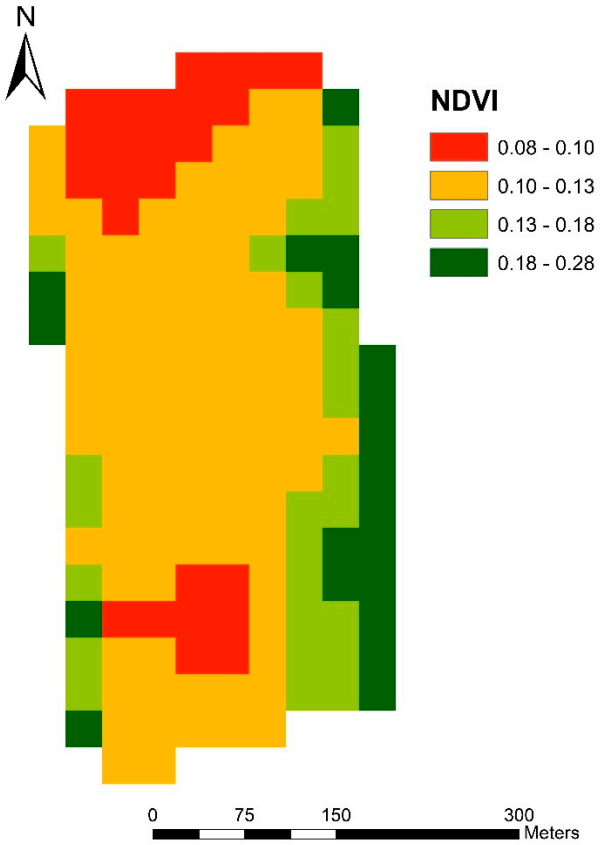
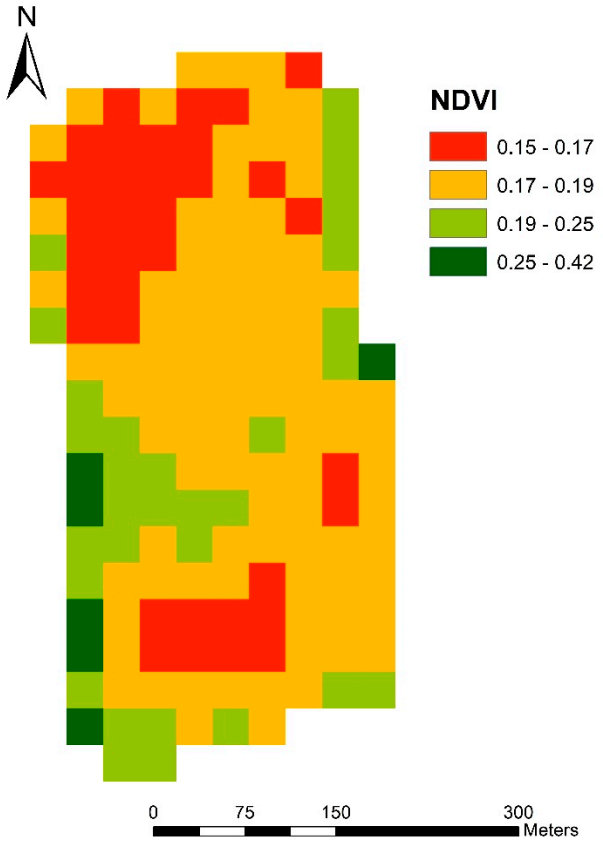


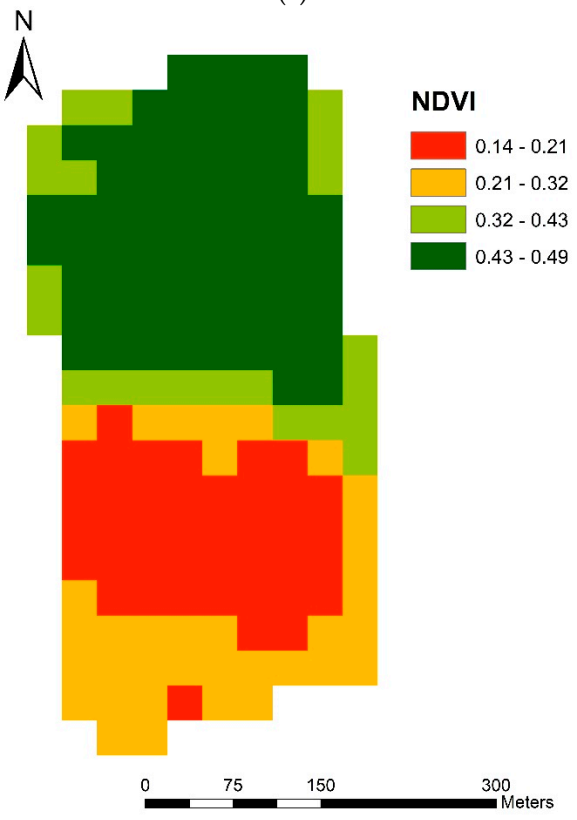
Figure S2. Comparison between measured biomass and SEBAL biomass estimates in the three irrigation management zones at 72, 102 and 115 days after planting.


N
NDVI
0.08 - 0.10
0.10 - 0.13
0.13 - 0.18
0.18 - 0.28
0
75
150
300
Meters

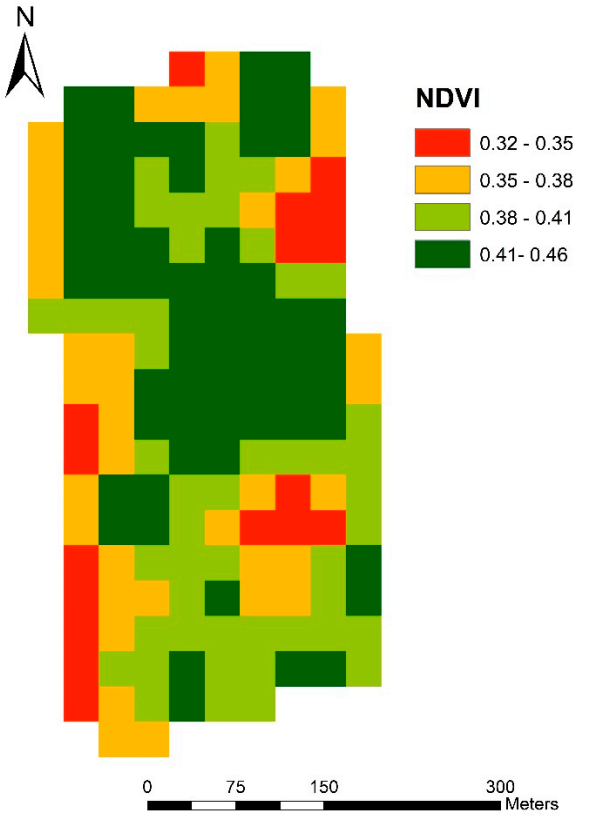
(a)


N
NDVI
0.15 - 0.17
0.17 - 0.19
0.19 - 0.25
0.25 - 0.42
0
75
150
300
Meters

(b)


N
NDVI
0.14 - 0.21
0.21 - 0.32
0.32 - 0.43
0.43 - 0.49
0
75
150
300
Meters

(c)


N
NDVI
0.32 - 0.35
0.35 - 0.38
0.38 - 0.41
0.41- 0.46
0
75
150
300
Meters

(d)

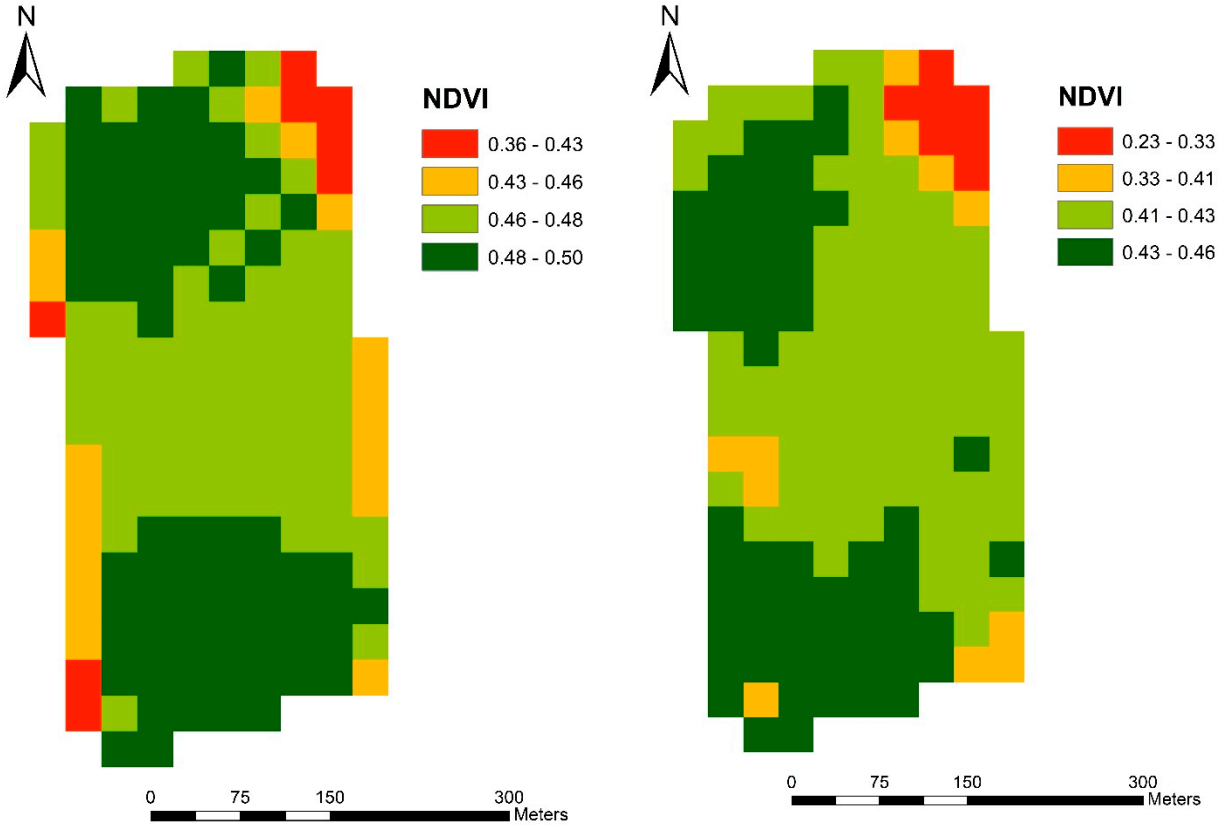


Figure S3. Normalized Difference Vegetation Index (NDVI) maps from April 19th (a), May 14th (b), June 6th (c), July 8th (d), July 24th (e), August 9th (f), 2015 used to calculate actual evapotranspiration (ET_r).