Harvard Forest Data Archive HF112−01

Data File:

Name = hf112−01−measure.csv
Description = measurements
Rows = 297 Columns = 25
MD5 checksum = f5825141c86d61db1b3aa8280fc8d780

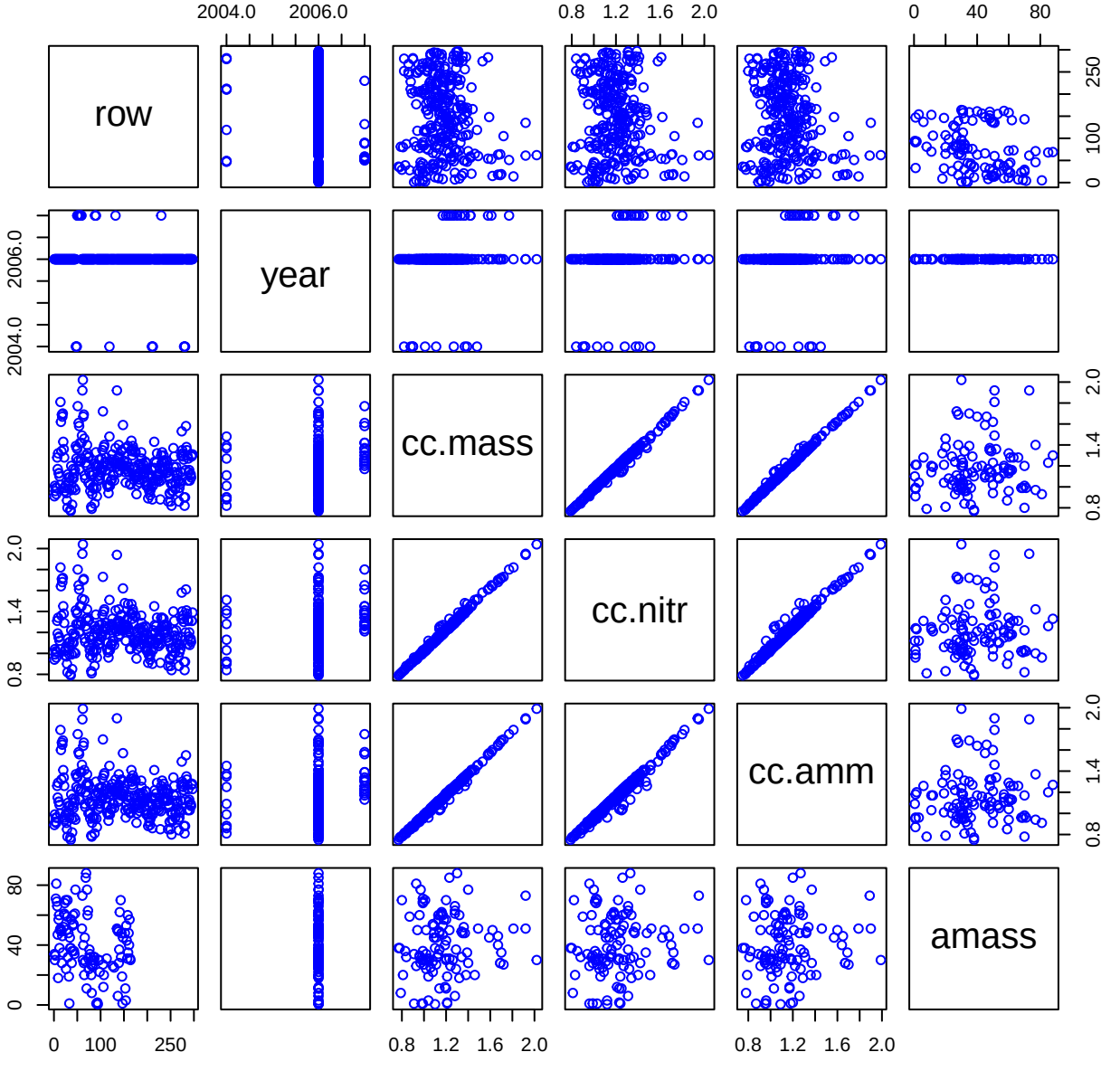
Variables:

year = year of sampling
cc.mass = the average tissue construction cost (grams glucose per gram ash−free dry mass [AFDM]) using the heat of combustion method and based on plant uptake of nitrate and ammonium in equal proportions. Williams, K., Percival, F., Merino, J., & Mooney, H.A. (1987) Estimation of tissue construction cost from heat of combustion and organic nitrogen content. Plant, Cell and Environment, 10, 725−734. (gramsPerGram)
cc.nitr = tissue construction cost (grams glucose per gram ash−free dry mass [AFDM]) using the heat of combustion method and plant uptake of nitrate (gramsPerGram)
cc.amm = tissue construction cost (grams glucose per gram ash−free dry mass [AFDM]) using the heat of combustion method and plant uptake of ammonium (gramsPerGram)
amass = mass−based photosynthetic rate (nmol CO2 g−1 s−1) measured at photosynthetic photon flux density = 1200 umol m−2 s−1 (nanomolesPerGramPerSecond)
a.area = leaf−area based photosynthetic rate (µmol CO2 m−2 s−1) at photosynthetic photon flux density = 1200 umol m−2 s−1 (micromolePerMeterSquaredPerSecond)
payback = leaf mass area. The quotient of leaf mass and leaf area (g m−2). Precision = 0.1. (gramsPerSquareMeter)
pnue.nitr = payback time (hours) represents the time to recover the carbon investment in a structure. It was estimated as the quotient of CCmass / Amass after conversion of CCmass from g glucose g−1 AFDM to nmol C g−1 AFDM and of Amass from nmol CO2 g−1 dry mass s−1 to nmol C g−1 AFDM h−1. Note that calculations are included elsewhere in the spreadsheet for payback times of pitcher construction for Nepenthes were also made using Amass of the attached lamina.. (hour)
lma = photosynthetic nutrient−use efficiency for nitrogen (nmol CO2 mol−1 N s−1) calculated as total photosynthesis for a leaf divided by total nitrogen content in the leaf. (nanomolePerMolePerSecond)
lf.area = leaf area (squareCentimeters)
dry.fresh = ratio of dry mass to fresh mass (number)
ash = tissue ash content as g ash per g dry mass (gramsPerGram)
hc = heat of combustion (energy content) as kJ g−1 ash−free dry mass (kilojoulePerGram)
n = nitrogen concentration (%) of oven−dried (70°C for 72 hours) tissue (dimensionless)
c = carbon concentration (%) of oven−dried (70°C for 72 hours) tissue (dimensionless)

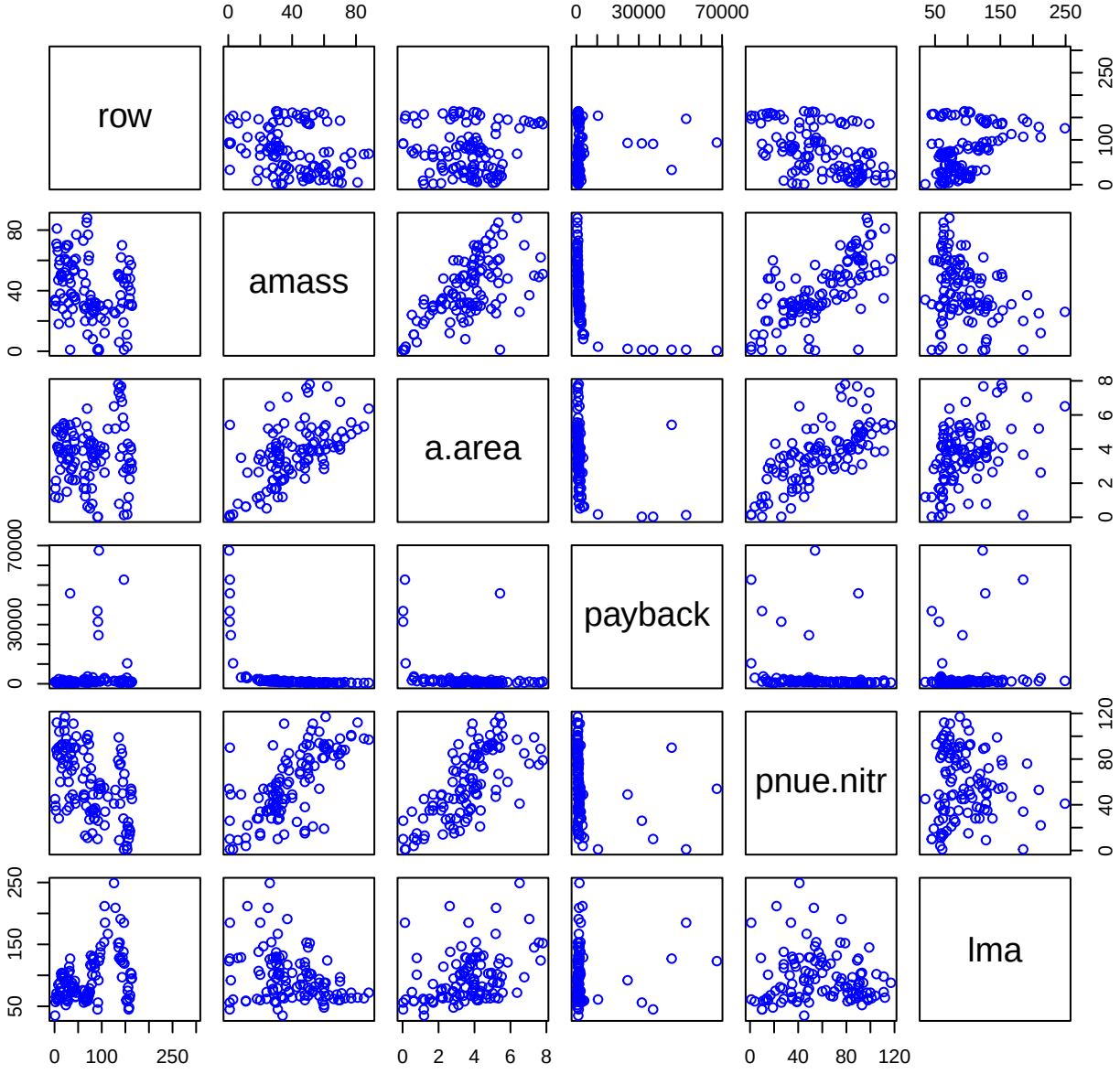
dm = dry mass of structure analyzed (e.g., dry mass of one pitche
harvested from a plant) (gram)
tot.dm = the total dry mass of that structure for an individual
plant (e.g., dry mass of all pitchers on a plant) (gram)

Variable	Min	Median	Mean	Max	NAs
year	2004.000	2006.000	2005.983	2007.000	0
cc.mass	0.770	1.160	1.176	2.020	0
cc.nitr	0.790	1.190	1.202	2.040	0
cc.amm	0.750	1.130	1.150	1.990	0
amass	0.500	36.500	39.722	88.000	185
a.area	0.030	3.775	3.629	7.800	187
payback	380.000	984.000	3451.126	67484.000	186
pnue.nitr	1.000	56.000	58.705	117.000	185
lma	35.000	85.500	95.528	249.000	185
lf.area	1.610	41.690	61.843	256.290	186
dry.fresh	0.100	0.190	0.194	0.400	187
ash	0.002	0.023	0.029	0.142	0
hc	10.700	15.700	15.980	26.400	0
n	0.440	0.920	1.047	4.490	0
c	37.800	45.800	45.656	58.000	0
dm	0.016	0.384	0.622	3.251	183
tot.dm	0.007	0.728	1.047	6.860	19

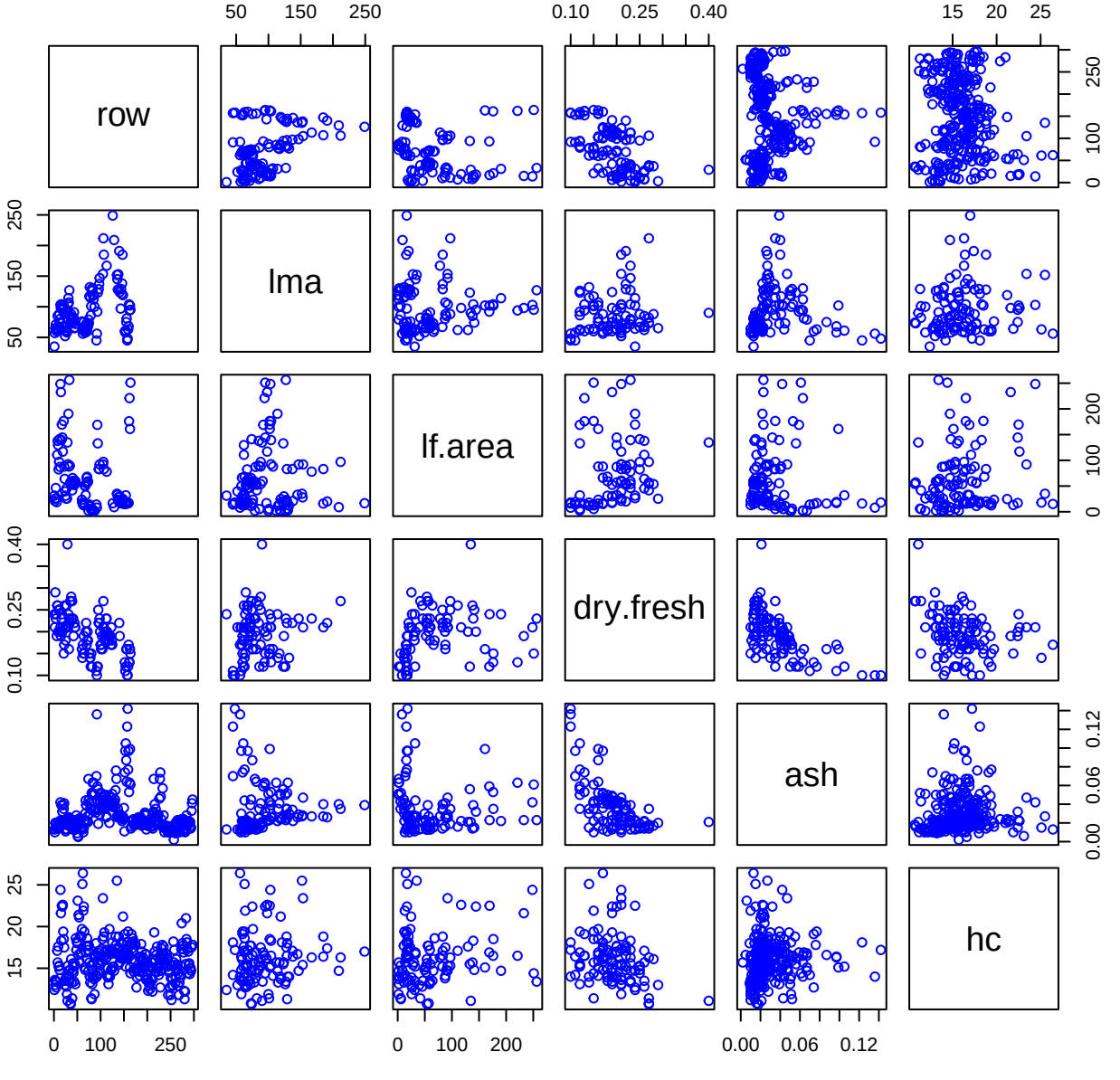
HF112−01 Plot 1



HF112−01 Plot 2



HF112−01 Plot 3



HF112−01 Plot 4