

# E4 manuscript Results - Using ggplot

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September 26, 2014

Filename: *e4\_ms\_results.Rmd*

A. This code needs the following files:

1. *'e4Data'* folder

- *'e4\_potData.txt'*
- *'e4\_potData\_dictionary.txt'*

2. *'e4Code'* folder

- *'e4\_cleanCode.R'*
- *'e4\_calcsiCode.R'*
- *'mytheme.R'*
- *'statFxn.R'*
- *'e4\_Fig2stats.R'* and *'e4\_makeFig2.R'* -> both reference -> *'e4\_prepdfFig2.R'*
- *'e4\_Fig3stats.R'* and *'e4\_makeFig3.R'* -> both reference -> *'e4\_prepdfFig3n4.R'*
- *'e4\_Fig4stats.R'* and *'e4\_makeFig4.R'* -> both reference -> *'e4\_prepdfFig3n4.R'*
- *'e4\_Fig5stats.R'* and *'e4\_makeFig5.R'* -> both reference -> *'e4\_prepdfFig5.R'*

B. This code does the following things:

1. Clean raw dataset (run external code)
2. *'e4Output\_figures'* folder has Results section figures
  - Fig2. Species' biomass
  - Fig3. Soil measures vs Pot monoculture type
  - Fig4. Soil measures vs M.v. biomass w/o neighbors
  - Fig5. Soil measures vs M.v. biomass w/ neighbors, vs relative Mv abundance, vs total biomass
3. *'e4Output\_tables'* folder has txt tables that hold anova results and mean values

C. R-related citations

```
citation()
```

```
##
## To cite R in publications use:
##
## R Core Team (2014). R: A language and environment for
## statistical computing. R Foundation for Statistical Computing,
## Vienna, Austria. URL http://www.R-project.org/.
##
## A BibTeX entry for LaTeX users is
##
```

```
## @Manual{,
##   title = {R: A Language and Environment for Statistical Computing},
##   author = {{R Core Team}},
##   organization = {R Foundation for Statistical Computing},
##   address = {Vienna, Austria},
##   year = {2014},
##   url = {http://www.R-project.org/},
## }
##
## We have invested a lot of time and effort in creating R, please
## cite it when using it for data analysis. See also
## 'citation("pkgname")' for citing R packages.
```

```
citation("lme4")
```

```
##
## Bates D, Maechler M, Bolker B and Walker S (2014). _lme4: Linear
## mixed-effects models using Eigen and S4_. R package version 1.1-7,
## <URL: http://CRAN.R-project.org/package=lme4>.
##
## Bates D, Maechler M, Bolker BM and Walker S (2014). "lme4: Linear
## mixed-effects models using Eigen and S4." ArXiv e-print; submitted
## to _Journal of Statistical Software_, <URL:
## http://arxiv.org/abs/1406.5823>.
```

```
citation("lmerTest")
```

```
##
## To cite package 'lmerTest' in publications use:
##
## Alexandra Kuznetsova, Per Bruun Brockhoff and Rune Haubo Bojesen
## Christensen (2014). lmerTest: Tests for random and fixed effects
## for linear mixed effect models (lmer objects of lme4 package)..
## R package version 2.0-11.
## http://CRAN.R-project.org/package=lmerTest
##
## A BibTeX entry for LaTeX users is
##
## @Manual{,
##   title = {lmerTest: Tests for random and fixed effects for linear mixed effect
## models (lmer objects of lme4 package).},
##   author = {Alexandra Kuznetsova and Per {Bruun Brockhoff} and Rune {Haubo Bojesen Christensen}},
##   year = {2014},
##   note = {R package version 2.0-11},
##   url = {http://CRAN.R-project.org/package=lmerTest},
## }
```

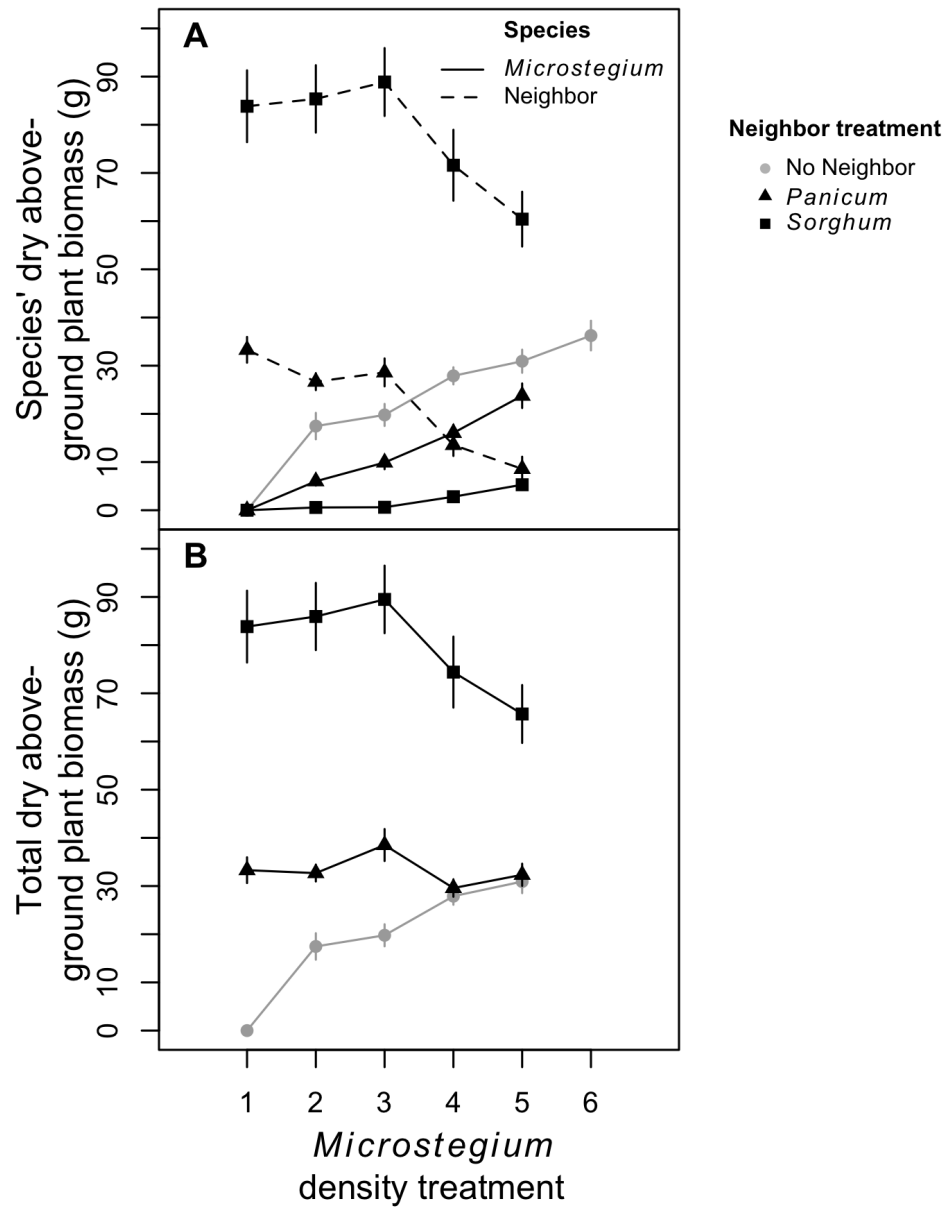
---

## 1. Clean raw dataset (run external code)

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## 2. Plot

Fig2 : Plant biomasses vs density trt



*e4Output\_tables/fig2\_means.txt* – Figure 2 Means

*e4Output\_tables/fig2\_lme\_anova.txt* – Microstegium biomass, relative abundance, and total plant biomass were shaped by the density treatment, neighbor treatment, and their interaction

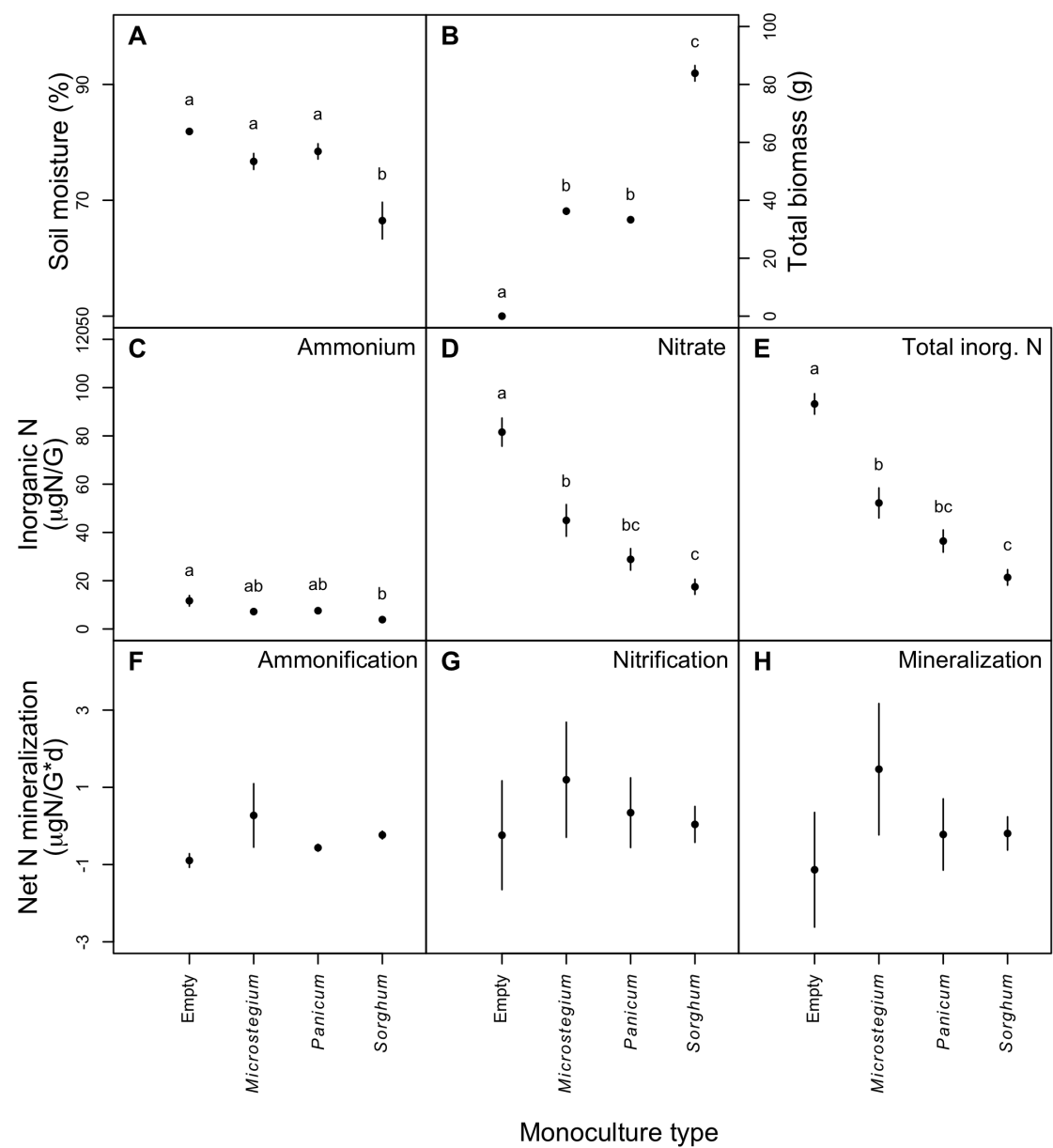
Microstegium biomass and relative abundance were X to X times lower in the presence of Sorghum than Panicum across density treatments (Fig 2)

##	INNERID	XgreaterthanNP	XgreaterthanPS
## 1	1	2.905826	10.505245
## 2	2	1.997375	16.128664
## 3	4	1.738686	5.727240
## 4	5	1.301545	4.490833

Pots with Sorghum also had X to X times more total plant biomass than those given the Panicum neighbor treatment and X to X times more total plant biomass than the no neighbor treatment (Fig 2)

##	INNERID	XgreaterthanPN	XgreaterthanSP
## 1	1	1.871588	2.629804
## 2	2	1.946967	2.323700
## 3	4	1.060591	2.515111
## 4	5	1.045528	2.032164

Fig3 : Monocultures vs total biomass and soil measurements

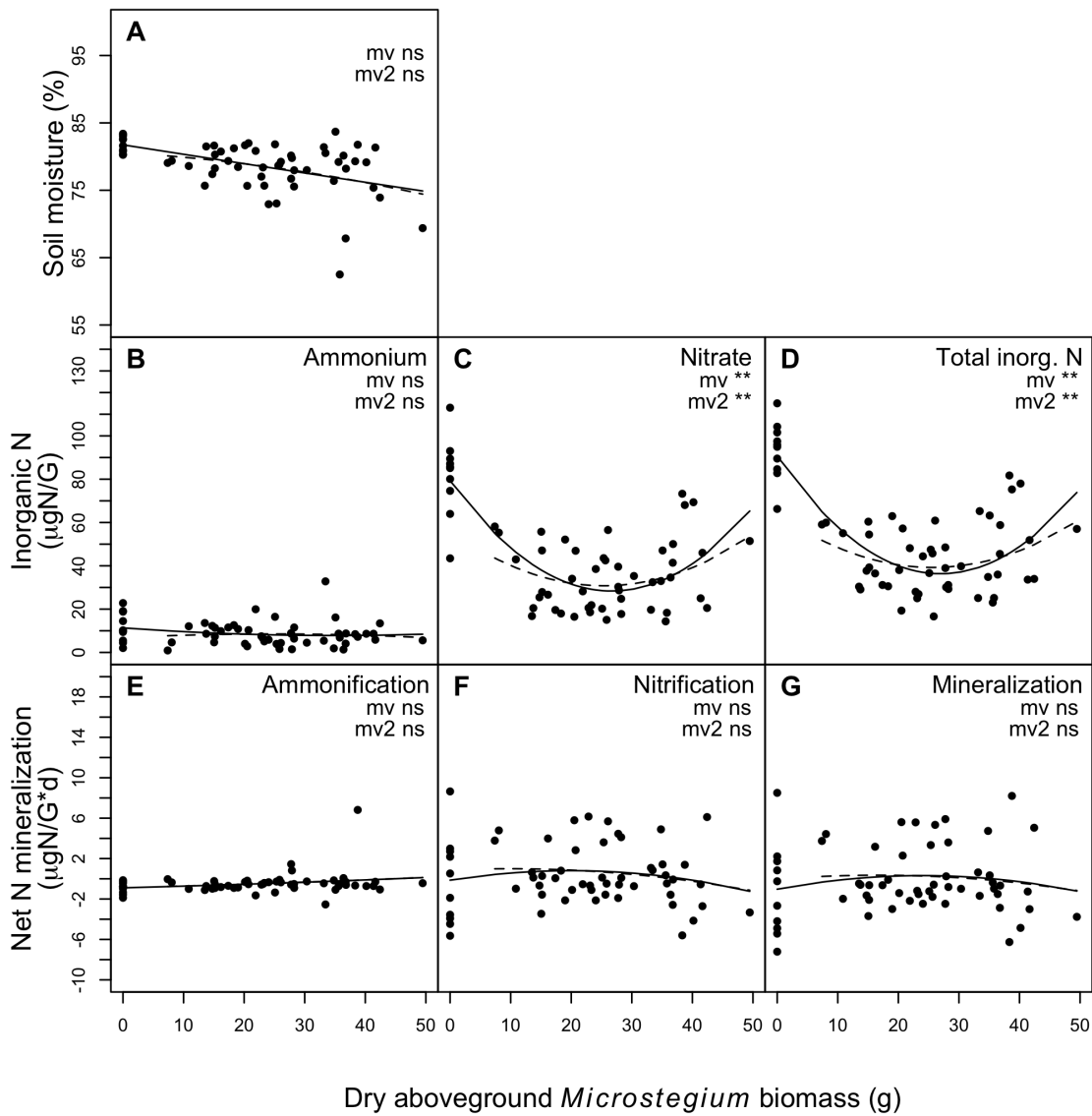


*e4Output\_tables/fig3a\_means.txt* – Figure 3a Means

*e4Output\_tables/fig3b\_means.txt* – Figure 3b Means

*e4Output\_tables/fig3\_lme\_anova.txt* – Soil measures and total biomass were shaped by the plant type

Fig4 : Mivi biomass vs soil measures w/o neighbors



*e4Output\_tables/fig4\_lme\_anova.txt* and *e4Output\_tables/fig4\_lme\_fe.txt* – Soil measures varied by Mivi

```
##          rownames  .id Estimate Std..Error    df t.value Pr...t..
## nodi1 (Intercept) nodi    79.24      4.86 30.04   16.29      0
## nodi2          mivi nodi    -3.81      0.39 47.40   -9.70      0
## nodi3  I(mivi^2) nodi     0.07      0.01 48.03    7.76      0

##          rownames  .id Estimate Std..Error    df t.value Pr...t..
## nodi1 (Intercept) nodi    56.19     11.23 44.41    5.00     0.00
## nodi2          mivi nodi    -2.00      0.84 38.86   -2.37     0.02
## nodi3  I(mivi^2) nodi     0.04      0.02 38.92    2.56     0.01

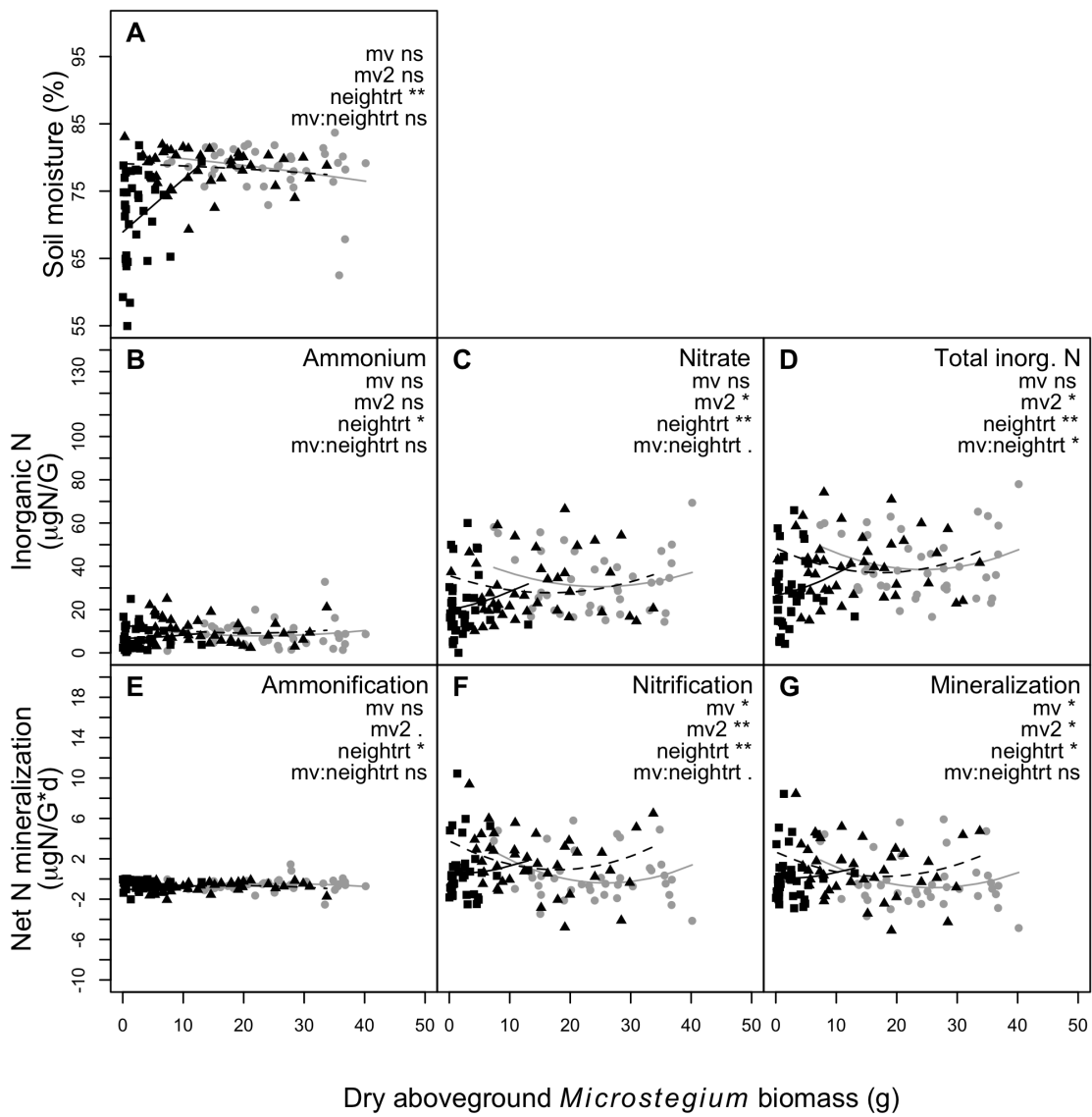
##          rownames  .id Estimate Std..Error    df t.value Pr...t..
## totdi1 (Intercept) totdi    90.61      4.70 34.03   19.30      0
## totdi2          mivi totdi    -4.02      0.40 47.59  -10.11      0
## totdi3  I(mivi^2) totdi     0.07      0.01 48.35    8.01      0

##          rownames  .id Estimate Std..Error    df t.value Pr...t..
## totdi1 (Intercept) totdi    63.92     12.01 44.09    5.32     0.00
## totdi2          mivi totdi    -1.92      0.91 39.42   -2.11     0.04
## totdi3  I(mivi^2) totdi     0.04      0.02 39.49    2.26     0.03
```

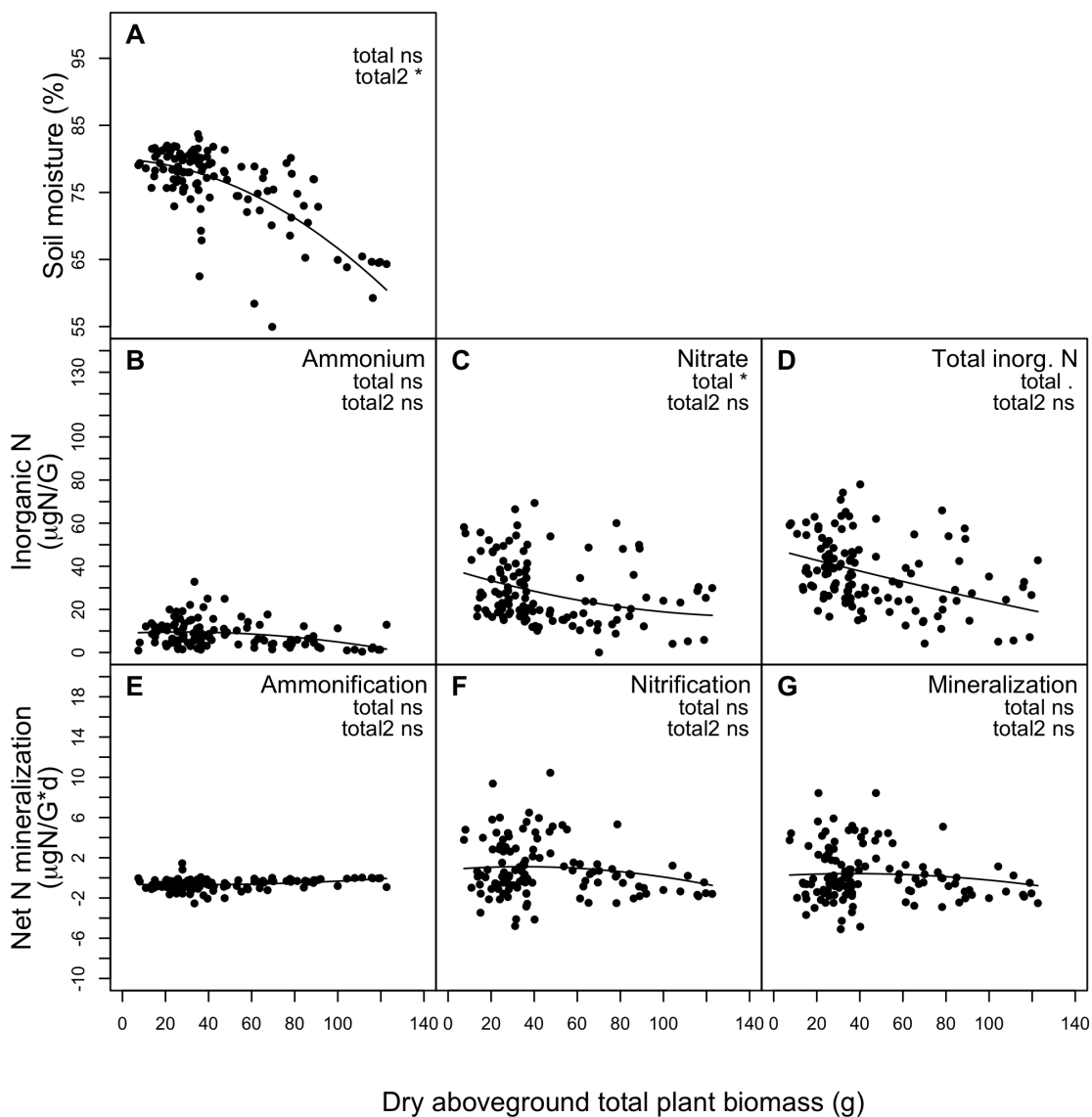
## Fig5 and 6. Mixture plant biomass vs soil measures

- Exclude pots without 2 species present

```
## NULL
```







*e4Output\_tables/fig5\_lme\_mivi\_anova.txt* and *e4Output\_tables/fig5\_lme\_mivi\_fe.txt* – Soil measures varied by mivi and comptrt

*e4Output\_tables/fig5\_lme\_total\_anova.txt* and *e4Output\_tables/fig5\_lme\_total\_fe.txt* – Soil measures varied by total biomass

*e4Output\_tables/fig5\_means.txt* – Mean soil measurement values by comptrt in mvtrt=1,2,4,5