

Analysis of three way split-split plot design

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1 Analysis of 2 factorial RCBD

Since you have 3 levels for one factor and 3 levels for the other, data from an RCBD with 3 replications would be analysed as follows:

2 Analysis

```
## # A tibble: 9 x 7
##   term                df  sumsq  meansq statistic p.value significance
##   <chr>             <int>  <dbl>  <dbl>    <dbl>  <dbl>  <chr>
## 1 Rep                2 2.08e-1 1.04e-1    2.35    0.132  <NA>
## 2 MainPlot_A          1 2.93e-1 2.93e-1    6.60    0.0222 *
## 3 SubPlot_B           1 1.04e-4 1.04e-4    0.00235 0.962  <NA>
## 4 SubSubPlot_C        1 3.01e-2 3.01e-2    0.680    0.424  <NA>
## 5 MainPlot_A:SubPlot~  1 9.37e-4 9.37e-4    0.0212  0.886  <NA>
## 6 SubPlot_B:SubSubPl~  1 1.58e-1 1.58e-1    3.58    0.0795 .
## 7 MainPlot_A:SubSubP~  1 2.60e-3 2.60e-3    0.0588  0.812  <NA>
## 8 MainPlot_A:SubPlot~  1 7.59e-2 7.59e-2    1.71    0.212  <NA>
## 9 Residuals         14 6.20e-1 4.43e-2    NA      NA      <NA>

## Linear mixed-effects model fit by REML
## Data: monica_thesis1
##   AIC  BIC logLik
##   32 42.1 -3.02
##
## Random effects:
## Formula: ~1 | Rep
##          (Intercept)
## StdDev:      0.0864
##
## Formula: ~1 | MainPlot_A %in% Rep
##          (Intercept)
## StdDev:      2.44e-06
```

Table 1: Design field book of a two factorial RCBD experiment

Rep	Main plot factor	Sub plot factor	Sub sub plot factor
1	Zero	Primed	Mulched
1	Zero	Primed	Nonmulched
1	Zero	Nonprimed	Mulched
1	Zero	Nonprimed	Nonmulched
1	Minimum	Primed	Mulched
1	Minimum	Primed	Nonmulched
1	Minimum	Nonprimed	Mulched
1	Minimum	Nonprimed	Nonmulched
2	Zero	Primed	Mulched
2	Zero	Primed	Nonmulched
2	Zero	Nonprimed	Mulched
2	Zero	Nonprimed	Nonmulched
2	Minimum	Primed	Mulched
2	Minimum	Primed	Nonmulched
2	Minimum	Nonprimed	Mulched
2	Minimum	Nonprimed	Nonmulched
3	Zero	Primed	Mulched
3	Zero	Primed	Nonmulched
3	Zero	Nonprimed	Mulched
3	Zero	Nonprimed	Nonmulched
3	Minimum	Primed	Mulched
3	Minimum	Primed	Nonmulched
3	Minimum	Nonprimed	Mulched
3	Minimum	Nonprimed	Nonmulched

```
##
## Formula: ~1 | SubPlot_B %in% MainPlot_A %in% Rep
##      (Intercept)
## StdDev:      2.14e-07
##
## Formula: ~1 | SubSubPlot_C %in% SubPlot_B %in% MainPlot_A %in% Rep
##      (Intercept) Residual
## StdDev:      0.21 0.000236
##
## Fixed effects: GY_per_net_plot ~ MainPlot_A * SubPlot_B * SubSubPlot_C
##                                     Value Std.Error DF
## (Intercept)                       1.433    0.131  8
## MainPlot_AZero                     -0.117    0.172  2
## SubPlot_BPrimed                    -0.033    0.172  4
## SubSubPlot_CNonmulched              0.000    0.172  8
## MainPlot_AZero:SubPlot_BPrimed     -0.250    0.243  4
## MainPlot_AZero:SubSubPlot_CNonmulched -0.183    0.243  8
## SubPlot_BPrimed:SubSubPlot_CNonmulched 0.100    0.243  8
## MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched 0.450    0.344  8
##                                     t-value p-value
## (Intercept)                       10.91  0.000
```

```

## MainPlot_AZero -0.68 0.567
## SubPlot_BPrimed -0.19 0.856
## SubSubPlot_CNonmulched 0.00 1.000
## MainPlot_AZero:SubPlot_BPrimed -1.03 0.362
## MainPlot_AZero:SubSubPlot_CNonmulched -0.75 0.472
## SubPlot_BPrimed:SubSubPlot_CNonmulched 0.41 0.692
## MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched 1.31 0.227
## Correlation:
## (Intr) MnP_AZ SbP_BP
## MainPlot_AZero -0.654
## SubPlot_BPrimed -0.654 0.500
## SubSubPlot_CNonmulched -0.654 0.500 0.500
## MainPlot_AZero:SubPlot_BPrimed 0.463 -0.707 -0.707
## MainPlot_AZero:SubSubPlot_CNonmulched 0.463 -0.707 -0.354
## SubPlot_BPrimed:SubSubPlot_CNonmulched 0.463 -0.354 -0.707
## MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched -0.327 0.500 0.500
## SSP_CN MnP_AZ:SP_BP
## MainPlot_AZero
## SubPlot_BPrimed
## SubSubPlot_CNonmulched
## MainPlot_AZero:SubPlot_BPrimed -0.354
## MainPlot_AZero:SubSubPlot_CNonmulched -0.707 0.500
## SubPlot_BPrimed:SubSubPlot_CNonmulched -0.707 0.500
## MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched 0.500 -0.707
## MP_AZ:SS SP_BP:
## MainPlot_AZero
## SubPlot_BPrimed
## SubSubPlot_CNonmulched
## MainPlot_AZero:SubPlot_BPrimed
## MainPlot_AZero:SubSubPlot_CNonmulched
## SubPlot_BPrimed:SubSubPlot_CNonmulched 0.500
## MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched -0.707 -0.707
##
## Standardized Within-Group Residuals:
## Min Q1 Med Q3 Max
## -0.001545 -0.000668 0.000112 0.000539 0.001728
##
## Number of Observations: 24
## Number of Groups:
## Rep
## 3
## MainPlot_A %in% Rep
## 6
## SubPlot_B %in% MainPlot_A %in% Rep
## 12
## SubSubPlot_C %in% SubPlot_B %in% MainPlot_A %in% Rep
## 24
##
## (Intercept) MainPlot_AZero SubPlot_BPrimed
## 1/Minimum/Nonprimed/Mulched 1.70 -0.117 -0.0333
## 1/Minimum/Nonprimed/Nonmulched 1.30 -0.117 -0.0333
## 1/Minimum/Primed/Mulched 1.33 -0.117 -0.0333
## 1/Minimum/Primed/Nonmulched 1.73 -0.117 -0.0333
## 1/Zero/Nonprimed/Mulched 1.62 -0.117 -0.0333

```

## 1/Zero/Nonprimed/Nonmulched	1.40	-0.117	-0.0333
## 1/Zero/Primed/Mulched	1.60	-0.117	-0.0333
## 1/Zero/Primed/Nonmulched	1.83	-0.117	-0.0333
## 2/Minimum/Nonprimed/Mulched	1.50	-0.117	-0.0333
## 2/Minimum/Nonprimed/Nonmulched	1.40	-0.117	-0.0333
## 2/Minimum/Primed/Mulched	1.43	-0.117	-0.0333
## 2/Minimum/Primed/Nonmulched	1.43	-0.117	-0.0333
## 2/Zero/Nonprimed/Mulched	1.22	-0.117	-0.0333
## 2/Zero/Nonprimed/Nonmulched	1.50	-0.117	-0.0333
## 2/Zero/Primed/Mulched	1.40	-0.117	-0.0333
## 2/Zero/Primed/Nonmulched	1.13	-0.117	-0.0333
## 3/Minimum/Nonprimed/Mulched	1.10	-0.117	-0.0333
## 3/Minimum/Nonprimed/Nonmulched	1.60	-0.117	-0.0333
## 3/Minimum/Primed/Mulched	1.53	-0.117	-0.0333
## 3/Minimum/Primed/Nonmulched	1.13	-0.117	-0.0333
## 3/Zero/Nonprimed/Mulched	1.47	-0.117	-0.0333
## 3/Zero/Nonprimed/Nonmulched	1.40	-0.117	-0.0333
## 3/Zero/Primed/Mulched	1.30	-0.117	-0.0333
## 3/Zero/Primed/Nonmulched	1.33	-0.117	-0.0333
##	SubSubPlot_CNonmulched		
## 1/Minimum/Nonprimed/Mulched		-4.64e-16	
## 1/Minimum/Nonprimed/Nonmulched		-4.64e-16	
## 1/Minimum/Primed/Mulched		-4.64e-16	
## 1/Minimum/Primed/Nonmulched		-4.64e-16	
## 1/Zero/Nonprimed/Mulched		-4.64e-16	
## 1/Zero/Nonprimed/Nonmulched		-4.64e-16	
## 1/Zero/Primed/Mulched		-4.64e-16	
## 1/Zero/Primed/Nonmulched		-4.64e-16	
## 2/Minimum/Nonprimed/Mulched		-4.64e-16	
## 2/Minimum/Nonprimed/Nonmulched		-4.64e-16	
## 2/Minimum/Primed/Mulched		-4.64e-16	
## 2/Minimum/Primed/Nonmulched		-4.64e-16	
## 2/Zero/Nonprimed/Mulched		-4.64e-16	
## 2/Zero/Nonprimed/Nonmulched		-4.64e-16	
## 2/Zero/Primed/Mulched		-4.64e-16	
## 2/Zero/Primed/Nonmulched		-4.64e-16	
## 3/Minimum/Nonprimed/Mulched		-4.64e-16	
## 3/Minimum/Nonprimed/Nonmulched		-4.64e-16	
## 3/Minimum/Primed/Mulched		-4.64e-16	
## 3/Minimum/Primed/Nonmulched		-4.64e-16	
## 3/Zero/Nonprimed/Mulched		-4.64e-16	
## 3/Zero/Nonprimed/Nonmulched		-4.64e-16	
## 3/Zero/Primed/Mulched		-4.64e-16	
## 3/Zero/Primed/Nonmulched		-4.64e-16	
##	MainPlot_AZero:SubPlot_BPrimed		
## 1/Minimum/Nonprimed/Mulched		-0.25	
## 1/Minimum/Nonprimed/Nonmulched		-0.25	
## 1/Minimum/Primed/Mulched		-0.25	
## 1/Minimum/Primed/Nonmulched		-0.25	
## 1/Zero/Nonprimed/Mulched		-0.25	
## 1/Zero/Nonprimed/Nonmulched		-0.25	
## 1/Zero/Primed/Mulched		-0.25	
## 1/Zero/Primed/Nonmulched		-0.25	
## 2/Minimum/Nonprimed/Mulched		-0.25	

## 2/Minimum/Nonprimed/Nonmulched	-0.25
## 2/Minimum/Primed/Mulched	-0.25
## 2/Minimum/Primed/Nonmulched	-0.25
## 2/Zero/Nonprimed/Mulched	-0.25
## 2/Zero/Nonprimed/Nonmulched	-0.25
## 2/Zero/Primed/Mulched	-0.25
## 2/Zero/Primed/Nonmulched	-0.25
## 3/Minimum/Nonprimed/Mulched	-0.25
## 3/Minimum/Nonprimed/Nonmulched	-0.25
## 3/Minimum/Primed/Mulched	-0.25
## 3/Minimum/Primed/Nonmulched	-0.25
## 3/Zero/Nonprimed/Mulched	-0.25
## 3/Zero/Nonprimed/Nonmulched	-0.25
## 3/Zero/Primed/Mulched	-0.25
## 3/Zero/Primed/Nonmulched	-0.25
##	MainPlot_AZero:SubSubPlot_CNonmulched
## 1/Minimum/Nonprimed/Mulched	-0.183
## 1/Minimum/Nonprimed/Nonmulched	-0.183
## 1/Minimum/Primed/Mulched	-0.183
## 1/Minimum/Primed/Nonmulched	-0.183
## 1/Zero/Nonprimed/Mulched	-0.183
## 1/Zero/Nonprimed/Nonmulched	-0.183
## 1/Zero/Primed/Mulched	-0.183
## 1/Zero/Primed/Nonmulched	-0.183
## 2/Minimum/Nonprimed/Mulched	-0.183
## 2/Minimum/Nonprimed/Nonmulched	-0.183
## 2/Minimum/Primed/Mulched	-0.183
## 2/Minimum/Primed/Nonmulched	-0.183
## 2/Zero/Nonprimed/Mulched	-0.183
## 2/Zero/Nonprimed/Nonmulched	-0.183
## 2/Zero/Primed/Mulched	-0.183
## 2/Zero/Primed/Nonmulched	-0.183
## 3/Minimum/Nonprimed/Mulched	-0.183
## 3/Minimum/Nonprimed/Nonmulched	-0.183
## 3/Minimum/Primed/Mulched	-0.183
## 3/Minimum/Primed/Nonmulched	-0.183
## 3/Zero/Nonprimed/Mulched	-0.183
## 3/Zero/Nonprimed/Nonmulched	-0.183
## 3/Zero/Primed/Mulched	-0.183
## 3/Zero/Primed/Nonmulched	-0.183
##	SubPlot_BPrimed:SubSubPlot_CNonmulched
## 1/Minimum/Nonprimed/Mulched	0.1
## 1/Minimum/Nonprimed/Nonmulched	0.1
## 1/Minimum/Primed/Mulched	0.1
## 1/Minimum/Primed/Nonmulched	0.1
## 1/Zero/Nonprimed/Mulched	0.1
## 1/Zero/Nonprimed/Nonmulched	0.1
## 1/Zero/Primed/Mulched	0.1
## 1/Zero/Primed/Nonmulched	0.1
## 2/Minimum/Nonprimed/Mulched	0.1
## 2/Minimum/Nonprimed/Nonmulched	0.1
## 2/Minimum/Primed/Mulched	0.1
## 2/Minimum/Primed/Nonmulched	0.1
## 2/Zero/Nonprimed/Mulched	0.1

```

## 2/Zero/Nonprimed/Nonmulched 0.1
## 2/Zero/Primed/Mulched 0.1
## 2/Zero/Primed/Nonmulched 0.1
## 3/Minimum/Nonprimed/Mulched 0.1
## 3/Minimum/Nonprimed/Nonmulched 0.1
## 3/Minimum/Primed/Mulched 0.1
## 3/Minimum/Primed/Nonmulched 0.1
## 3/Zero/Nonprimed/Mulched 0.1
## 3/Zero/Nonprimed/Nonmulched 0.1
## 3/Zero/Primed/Mulched 0.1
## 3/Zero/Primed/Nonmulched 0.1
## MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched
## 1/Minimum/Nonprimed/Mulched 0.45
## 1/Minimum/Nonprimed/Nonmulched 0.45
## 1/Minimum/Primed/Mulched 0.45
## 1/Minimum/Primed/Nonmulched 0.45
## 1/Zero/Nonprimed/Mulched 0.45
## 1/Zero/Nonprimed/Nonmulched 0.45
## 1/Zero/Primed/Mulched 0.45
## 1/Zero/Primed/Nonmulched 0.45
## 2/Minimum/Nonprimed/Mulched 0.45
## 2/Minimum/Nonprimed/Nonmulched 0.45
## 2/Minimum/Primed/Mulched 0.45
## 2/Minimum/Primed/Nonmulched 0.45
## 2/Zero/Nonprimed/Mulched 0.45
## 2/Zero/Nonprimed/Nonmulched 0.45
## 2/Zero/Primed/Mulched 0.45
## 2/Zero/Primed/Nonmulched 0.45
## 3/Minimum/Nonprimed/Mulched 0.45
## 3/Minimum/Nonprimed/Nonmulched 0.45
## 3/Minimum/Primed/Mulched 0.45
## 3/Minimum/Primed/Nonmulched 0.45
## 3/Zero/Nonprimed/Mulched 0.45
## 3/Zero/Nonprimed/Nonmulched 0.45
## 3/Zero/Primed/Mulched 0.45
## 3/Zero/Primed/Nonmulched 0.45

## Level: Rep
## (Intercept)
## 1 0.0754
## 2 -0.0323
## 3 -0.0431
##
## Level: MainPlot_A %in% Rep
## (Intercept)
## 1/Minimum 4.29e-12
## 1/Zero 5.60e-11
## 2/Minimum 2.19e-11
## 2/Zero -4.78e-11
## 3/Minimum -2.62e-11
## 3/Zero -8.23e-12
##
## Level: SubPlot_B %in% MainPlot_A %in% Rep
## (Intercept)

```

```

## 1/Minimum/Nonprimed -1.79e-14
## 1/Minimum/Primed 5.07e-14
## 1/Zero/Nonprimed -7.73e-16
## 1/Zero/Primed 4.28e-13
## 2/Minimum/Nonprimed 1.01e-13
## 2/Minimum/Primed 6.65e-14
## 2/Zero/Nonprimed -8.79e-14
## 2/Zero/Primed -2.77e-13
## 3/Minimum/Nonprimed -8.29e-14
## 3/Minimum/Primed -1.17e-13
## 3/Zero/Nonprimed 8.87e-14
## 3/Zero/Primed -1.52e-13
##
## Level: SubSubPlot_C %in% SubPlot_B %in% MainPlot_A %in% Rep
## (Intercept)
## 1/Minimum/Nonprimed/Mulched 0.19129
## 1/Minimum/Nonprimed/Nonmulched -0.20871
## 1/Minimum/Primed/Mulched -0.17538
## 1/Minimum/Primed/Nonmulched 0.22462
## 1/Zero/Nonprimed/Mulched 0.10796
## 1/Zero/Nonprimed/Nonmulched -0.10871
## 1/Zero/Primed/Mulched 0.09129
## 1/Zero/Primed/Nonmulched 0.32462
## 2/Minimum/Nonprimed/Mulched 0.09897
## 2/Minimum/Nonprimed/Nonmulched -0.00103
## 2/Minimum/Primed/Mulched 0.03230
## 2/Minimum/Primed/Nonmulched 0.03230
## 2/Zero/Nonprimed/Mulched -0.18436
## 2/Zero/Nonprimed/Nonmulched 0.09897
## 2/Zero/Primed/Mulched -0.00103
## 2/Zero/Primed/Nonmulched -0.26770
## 3/Minimum/Nonprimed/Mulched -0.29026
## 3/Minimum/Nonprimed/Nonmulched 0.20974
## 3/Minimum/Primed/Mulched 0.14307
## 3/Minimum/Primed/Nonmulched -0.25693
## 3/Zero/Nonprimed/Mulched 0.07640
## 3/Zero/Nonprimed/Nonmulched 0.00974
## 3/Zero/Primed/Mulched -0.09026
## 3/Zero/Primed/Nonmulched -0.05693
##
## (Intercept)
## 1.43e+00
## MainPlot_AZero
## -1.17e-01
## SubPlot_BPrimed
## -3.33e-02
## SubSubPlot_CNonmulched
## -4.64e-16
## MainPlot_AZero:SubPlot_BPrimed
## -2.50e-01
## MainPlot_AZero:SubSubPlot_CNonmulched
## -1.83e-01
## SubPlot_BPrimed:SubSubPlot_CNonmulched
## 1.00e-01

```

```

## MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched
##                                     4.50e-01

##                               numDF denDF F-value p-value
## (Intercept)                   1      8    409 <.0001
## MainPlot_A                     1      2      7 0.1239
## SubPlot_B                      1      4      0 0.9636
## SubSubPlot_C                   1      8      1 0.4336
## MainPlot_A:SubPlot_B           1      4      0 0.8914
## MainPlot_A:SubSubPlot_C        1      8      0 0.8145
## SubPlot_B:SubSubPlot_C         1      8      4 0.0953
## MainPlot_A:SubPlot_B:SubSubPlot_C 1      8      2 0.2268

##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C   : Mulched Nonmulched
## Rep    : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
## Df Sum Sq Mean Sq F value Pr(>F)
## Rep      2   93.0    46.5    5.81   0.15
## MainPlot_A 1    0.0     0.0    0.00   1.00
## Ea        2   16.0     8.0    1.14   0.35
## SubPlot_B  1    6.0     6.0    1.14   0.35
## MainPlot_A:SubPlot_B 1    6.0     6.0    1.14   0.35
## Eb        4   21.0     5.3    0.76   0.41
## SubSubPlot_C 1    2.7     2.7    0.76   0.41
## SubSubPlot_C:MainPlot_A 1    2.7     2.7    0.76   0.41
## SubSubPlot_C:SubPlot_B 1    0.0     0.0    0.00   1.00
## SubSubPlot_C:MainPlot_A:SubPlot_B 1    2.7     2.7    0.76   0.41
## Ec        8   28.0     3.5
##
## cv(a) = 3.4 %, cv(b) = 2.7 %, cv(c) = 2.2 %, Mean = 84
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C   : Mulched Nonmulched
## Rep    : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##

```



```

## Response: get(.x)
##
## Df Sum Sq Mean Sq F value Pr(>F)
## Rep 2 66.1 33.0 4.69 0.18
## MainPlot_A 1 0.0 0.0 0.01 0.95
## Ea 2 14.1 7.0
## SubPlot_B 1 15.0 15.0 1.68 0.26
## MainPlot_A:SubPlot_B 1 3.4 3.4 0.38 0.57
## Eb 4 35.8 9.0
## SubSubPlot_C 1 0.0 0.0 0.02 0.90
## SubSubPlot_C:MainPlot_A 1 0.0 0.0 0.02 0.90
## SubSubPlot_C:SubPlot_B 1 0.0 0.0 0.02 0.90
## SubSubPlot_C:MainPlot_A:SubPlot_B 1 3.4 3.4 1.35 0.28
## Ec 8 20.0 2.5
##
## cv(a) = 2.3 %, cv(b) = 2.6 %, cv(c) = 1.4 %, Mean = 116
##
##
## ANALYSIS SPLIT-SPLIT PLOT: get(.x)
## Class level information
##
## MainPlot_A : Zero Minimum
## SubPlot_B : Primed Nonprimed
## SubSubPlot_C : Mulched Nonmulched
## Rep : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
## Df Sum Sq Mean Sq F value Pr(>F)
## Rep 2 82.1 41.1 1.00 0.50
## MainPlot_A 1 145.0 145.0 3.55 0.20
## Ea 2 81.8 40.9
## SubPlot_B 1 1.9 1.9 0.17 0.70
## MainPlot_A:SubPlot_B 1 2.9 2.9 0.27 0.63
## Eb 4 43.6 10.9
## SubSubPlot_C 1 2.3 2.3 0.31 0.59
## SubSubPlot_C:MainPlot_A 1 16.3 16.3 2.19 0.18
## SubSubPlot_C:SubPlot_B 1 15.8 15.8 2.12 0.18
## SubSubPlot_C:MainPlot_A:SubPlot_B 1 0.4 0.4 0.05 0.83
## Ec 8 59.8 7.5
##
## cv(a) = 6.8 %, cv(b) = 3.5 %, cv(c) = 2.9 %, Mean = 94.7
##
##
## ANALYSIS SPLIT-SPLIT PLOT: get(.x)
## Class level information
##
## MainPlot_A : Zero Minimum
## SubPlot_B : Primed Nonprimed
## SubSubPlot_C : Mulched Nonmulched
## Rep : 1 2 3
##

```

```

## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##


|                                      | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
|--------------------------------------|----|--------|---------|---------|--------|
| ## Rep                               | 2  | 1.70   | 0.849   | 1.23    | 0.449  |
| ## MainPlot_A                        | 1  | 0.45   | 0.454   | 0.66    | 0.503  |
| ## Ea                                | 2  | 1.38   | 0.691   |         |        |
| ## SubPlot_B                         | 1  | 1.81   | 1.815   | 1.65    | 0.269  |
| ## MainPlot_A:SubPlot_B              | 1  | 0.00   | 0.000   | 0.00    | 0.985  |
| ## Eb                                | 4  | 4.41   | 1.102   |         |        |
| ## SubSubPlot_C                      | 1  | 1.17   | 1.170   | 1.80    | 0.217  |
| ## SubSubPlot_C:MainPlot_A           | 1  | 2.53   | 2.535   | 3.90    | 0.084  |
| ## SubSubPlot_C:SubPlot_B            | 1  | 0.51   | 0.510   | 0.78    | 0.402  |
| ## SubSubPlot_C:MainPlot_A:SubPlot_B | 1  | 1.81   | 1.815   | 2.79    | 0.133  |
| ## Ec                                | 8  | 5.21   | 0.651   |         |        |


## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 3.7 %, cv(b) = 4.6 %, cv(c) = 3.6 %, Mean = 22.7
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep  : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##


|                                      | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
|--------------------------------------|----|--------|---------|---------|--------|
| ## Rep                               | 2  | 0.173  | 0.087   | 0.33    | 0.750  |
| ## MainPlot_A                        | 1  | 0.240  | 0.240   | 0.92    | 0.438  |
| ## Ea                                | 2  | 0.520  | 0.260   |         |        |
| ## SubPlot_B                         | 1  | 0.327  | 0.327   | 5.16    | 0.086  |
| ## MainPlot_A:SubPlot_B              | 1  | 0.060  | 0.060   | 0.95    | 0.386  |
| ## Eb                                | 4  | 0.253  | 0.063   |         |        |
| ## SubSubPlot_C                      | 1  | 0.007  | 0.007   | 0.02    | 0.898  |
| ## SubSubPlot_C:MainPlot_A           | 1  | 0.007  | 0.007   | 0.02    | 0.898  |
| ## SubSubPlot_C:SubPlot_B            | 1  | 0.027  | 0.027   | 0.07    | 0.798  |
| ## SubSubPlot_C:MainPlot_A:SubPlot_B | 1  | 0.107  | 0.107   | 0.28    | 0.611  |
| ## Ec                                | 8  | 3.053  | 0.382   |         |        |


## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 14.3 %, cv(b) = 7.1 %, cv(c) = 17.3 %, Mean = 3.57
##
##

```

```
## ANALYSIS SPLIT-SPLIT PLOT: get(.x)
## Class level information
##
## MainPlot_A : Zero Minimum
## SubPlot_B : Primed Nonprimed
## SubSubPlot_C : Mulched Nonmulched
## Rep : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
## Rep	2	1028	514	3.08	0.25
## MainPlot_A	1	26	26	0.16	0.73
## Ea	2	334	167		
## SubPlot_B	1	30	30	0.14	0.73
## MainPlot_A:SubPlot_B	1	126	126	0.57	0.49
## Eb	4	885	221		
## SubSubPlot_C	1	7	7	0.02	0.90
## SubSubPlot_C:MainPlot_A	1	155	155	0.36	0.57
## SubSubPlot_C:SubPlot_B	1	610	610	1.40	0.27
## SubSubPlot_C:MainPlot_A:SubPlot_B	1	145	145	0.33	0.58
## Ec	8	3484	436		

```
##
## cv(a) = 9.2 %, cv(b) = 10.6 %, cv(c) = 14.8 %, Mean = 141
##
##
## ANALYSIS SPLIT-SPLIT PLOT: get(.x)
## Class level information
##
## MainPlot_A : Zero Minimum
## SubPlot_B : Primed Nonprimed
## SubSubPlot_C : Mulched Nonmulched
## Rep : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
## Rep	2	19.75	9.88	1.00	0.500
## MainPlot_A	1	0.38	0.38	0.04	0.863
## Ea	2	19.75	9.88		
## SubPlot_B	1	22.04	22.04	6.22	0.067 .
## MainPlot_A:SubPlot_B	1	5.04	5.04	1.42	0.299
## Eb	4	14.17	3.54		
## SubSubPlot_C	1	0.37	0.37	0.13	0.731
## SubSubPlot_C:MainPlot_A	1	0.38	0.38	0.13	0.731
## SubSubPlot_C:SubPlot_B	1	1.04	1.04	0.35	0.569
## SubSubPlot_C:MainPlot_A:SubPlot_B	1	2.04	2.04	0.69	0.430
## Ec	8	23.67	2.96		

```

## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 26.5 %, cv(b) = 15.8 %, cv(c) = 14.5 %, Mean = 11.9
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep  :  1 2 3
##
## Number of observations:  24
##
## Analysis of Variance Table
##
## Response: get(.x)
##


|                                      | Df | Sum Sq | Mean Sq | F value | Pr(>F)  |
|--------------------------------------|----|--------|---------|---------|---------|
| ## Rep                               | 2  | 112.1  | 56.0    | 1.15    | 0.466   |
| ## MainPlot_A                        | 1  | 9.4    | 9.4     | 0.19    | 0.703   |
| ## Ea                                | 2  | 97.7   | 48.8    |         |         |
| ## SubPlot_B                         | 1  | 8.5    | 8.5     | 0.70    | 0.451   |
| ## MainPlot_A:SubPlot_B              | 1  | 12.3   | 12.3    | 1.01    | 0.372   |
| ## Eb                                | 4  | 49.0   | 12.2    |         |         |
| ## SubSubPlot_C                      | 1  | 92.8   | 92.8    | 4.42    | 0.069 . |
| ## SubSubPlot_C:MainPlot_A           | 1  | 12.7   | 12.7    | 0.61    | 0.458   |
| ## SubSubPlot_C:SubPlot_B            | 1  | 14.6   | 14.6    | 0.70    | 0.428   |
| ## SubSubPlot_C:MainPlot_A:SubPlot_B | 1  | 15.1   | 15.1    | 0.72    | 0.421   |
| ## Ec                                | 8  | 167.7  | 21.0    |         |         |


## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 20.2 %, cv(b) = 10.1 %, cv(c) = 13.2 %, Mean = 34.7
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep  :  1 2 3
##
## Number of observations:  24
##
## Analysis of Variance Table
##
## Response: get(.x)
##


|               | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
|---------------|----|--------|---------|---------|--------|
| ## Rep        | 2  | 133    | 67      | 0.15    | 0.87   |
| ## MainPlot_A | 1  | 63     | 63      | 0.14    | 0.74   |
| ## Ea         | 2  | 903    | 452     |         |        |


```

```

## SubPlot_B          1  1247  1247  3.13  0.15
## MainPlot_A:SubPlot_B  1   234   234  0.59  0.49
## Eb                 4  1593   398
## SubSubPlot_C       1   570   570  2.16  0.18
## SubSubPlot_C:MainPlot_A  1   210   210  0.80  0.40
## SubSubPlot_C:SubPlot_B  1    22    22  0.08  0.78
## SubSubPlot_C:MainPlot_A:SubPlot_B  1   532   532  2.02  0.19
## Ec                 8  2112   264
##
## cv(a) = 18.1 %, cv(b) = 17 %, cv(c) = 13.9 %, Mean = 117
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A      : Zero Minimum
## SubPlot_B       : Primed Nonprimed
## SubSubPlot_C    : Mulched Nonmulched
## Rep : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
##      Df Sum Sq Mean Sq F value Pr(>F)
## Rep      2    0.6    0.29   0.05  0.95
## MainPlot_A  1  28.2  28.17   4.86  0.16
## Ea        2  11.6   5.79
## SubPlot_B  1  16.7  16.67   1.13  0.35
## MainPlot_A:SubPlot_B  1   1.5   1.50   0.10  0.77
## Eb        4  58.8  14.71
## SubSubPlot_C  1   4.2   4.17   0.32  0.59
## SubSubPlot_C:MainPlot_A  1   6.0   6.00   0.46  0.52
## SubSubPlot_C:SubPlot_B  1   4.2   4.17   0.32  0.59
## SubSubPlot_C:MainPlot_A:SubPlot_B  1   0.7   0.67   0.05  0.83
## Ec        8 105.0  13.12
##
## cv(a) = 22.6 %, cv(b) = 36 %, cv(c) = 34 %, Mean = 10.7
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A      : Zero Minimum
## SubPlot_B       : Primed Nonprimed
## SubSubPlot_C    : Mulched Nonmulched
## Rep : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)

```

```

##                                Df Sum Sq Mean Sq F value Pr(>F)
## Rep                          2   1.83   0.915    0.64   0.61
## MainPlot_A                   1   1.65   1.654    1.15   0.40
## Ea                           2   2.87   1.434
## SubPlot_B                    1   0.70   0.700    1.83   0.25
## MainPlot_A:SubPlot_B         1   0.07   0.070    0.18   0.69
## Eb                           4   1.53   0.383
## SubSubPlot_C                 1   0.00   0.004    0.01   0.94
## SubSubPlot_C:MainPlot_A      1   0.07   0.070    0.10   0.76
## SubSubPlot_C:SubPlot_B       1   1.08   1.084    1.60   0.24
## SubSubPlot_C:MainPlot_A:SubPlot_B 1   0.01   0.010    0.02   0.90
## Ec                           8   5.42   0.677
##
## cv(a) = 7.4 %, cv(b) = 3.8 %, cv(c) = 5.1 %, Mean = 16.1
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##                                Df Sum Sq Mean Sq F value Pr(>F)
## Rep                          2  15.18   7.59    1.87   0.35
## MainPlot_A                   1   1.26   1.26    0.31   0.63
## Ea                           2   8.14   4.07
## SubPlot_B                    1   0.15   0.15    0.05   0.83
## MainPlot_A:SubPlot_B         1   5.05   5.05    1.79   0.25
## Eb                           4  11.26   2.81
## SubSubPlot_C                 1   4.33   4.33    1.35   0.28
## SubSubPlot_C:MainPlot_A      1   1.76   1.76    0.55   0.48
## SubSubPlot_C:SubPlot_B       1   2.44   2.44    0.76   0.41
## SubSubPlot_C:MainPlot_A:SubPlot_B 1   7.89   7.89    2.45   0.16
## Ec                           8  25.72   3.22
##
## cv(a) = 7.5 %, cv(b) = 6.2 %, cv(c) = 6.7 %, Mean = 27
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep : 1 2 3
##
## Number of observations: 24

```

```

##
## Analysis of Variance Table
##
## Response: get(.x)
##
##      Df Sum Sq Mean Sq F value Pr(>F)
## Rep      2  1.075    0.538    3.86  0.206
## MainPlot_A 1  1.511    1.511   10.85  0.081 .
## Ea        2  0.279    0.139
## SubPlot_B  1  0.001    0.001    0.01  0.941
## MainPlot_A:SubPlot_B 1  0.005    0.005    0.06  0.825
## Eb        4  0.347    0.087
## SubSubPlot_C 1  0.155    0.155    0.48  0.507
## SubSubPlot_C:MainPlot_A 1  0.013    0.013    0.04  0.843
## SubSubPlot_C:SubPlot_B 1  0.818    0.818    2.54  0.150
## SubSubPlot_C:MainPlot_A:SubPlot_B 1  0.392    0.392    1.22  0.302
## Ec        8  2.578    0.322
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 12.3 %, cv(b) = 9.7 %, cv(c) = 18.8 %, Mean = 3.03
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep  : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
##      Df Sum Sq Mean Sq F value Pr(>F)
## Rep      2  0.208    0.1041    3.86  0.206
## MainPlot_A 1  0.293    0.2926   10.85  0.081 .
## Ea        2  0.054    0.0270
## SubPlot_B  1  0.000    0.0001    0.01  0.941
## MainPlot_A:SubPlot_B 1  0.001    0.0009    0.06  0.825
## Eb        4  0.067    0.0168
## SubSubPlot_C 1  0.030    0.0301    0.48  0.507
## SubSubPlot_C:MainPlot_A 1  0.003    0.0026    0.04  0.843
## SubSubPlot_C:SubPlot_B 1  0.158    0.1584    2.54  0.150
## SubSubPlot_C:MainPlot_A:SubPlot_B 1  0.076    0.0759    1.22  0.302
## Ec        8  0.499    0.0624
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 12.3 %, cv(b) = 9.7 %, cv(c) = 18.8 %, Mean = 1.33
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)

```

```
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep   : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
##      Df Sum Sq Mean Sq F value Pr(>F)
## Rep      2  0.602   0.301    0.56  0.641
## MainPlot_A 1  1.260   1.260    2.34  0.265
## Ea         2  1.076   0.538
## SubPlot_B   1  0.010   0.010    0.04  0.857
## MainPlot_A:SubPlot_B 1  0.120   0.120    0.43  0.548
## Eb         4  1.122   0.280
## SubSubPlot_C 1  0.004   0.004    0.03  0.877
## SubSubPlot_C:MainPlot_A 1  0.050   0.050    0.35  0.573
## SubSubPlot_C:SubPlot_B 1  0.634   0.634    4.35  0.071 .
## SubSubPlot_C:MainPlot_A:SubPlot_B 1  0.020   0.020    0.14  0.718
## Ec         8  1.167   0.146
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 25.4 %, cv(b) = 18.3 %, cv(c) = 13.2 %, Mean = 2.89
##
##
## ANALYSIS SPLIT-SPLIT PLOT: get(.x)
## Class level information
##
## MainPlot_A    : Zero Minimum
## SubPlot_B     : Primed Nonprimed
## SubSubPlot_C  : Mulched Nonmulched
## Rep   : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
##      Df Sum Sq Mean Sq F value Pr(>F)
## Rep      2  3.10   1.55    0.58  0.63
## MainPlot_A 1  6.34   6.34    2.38  0.26
## Ea         2  5.34   2.67
## SubPlot_B   1  0.05   0.05    0.04  0.86
## MainPlot_A:SubPlot_B 1  0.62   0.62    0.42  0.55
## Eb         4  5.95   1.49
## SubSubPlot_C 1  0.01   0.01    0.02  0.90
## SubSubPlot_C:MainPlot_A 1  0.25   0.25    0.34  0.57
## SubSubPlot_C:SubPlot_B 1  3.18   3.18    4.35  0.07 .
## SubSubPlot_C:MainPlot_A:SubPlot_B 1  0.09   0.09    0.12  0.74
```



```

## Ec                      8    5.85    0.73
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 25 %, cv(b) = 18.7 %, cv(c) = 13.1 %, Mean = 6.52
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A   : Zero Minimum
## SubPlot_B    : Primed Nonprimed
## SubSubPlot_C : Mulched Nonmulched
## Rep   : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##


|                                      | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
|--------------------------------------|----|--------|---------|---------|--------|
| ## Rep                               | 2  | 3.98   | 1.99    | 0.51    | 0.663  |
| ## MainPlot_A                        | 1  | 14.05  | 14.05   | 3.59    | 0.199  |
| ## Ea                                | 2  | 7.84   | 3.92    |         |        |
| ## SubPlot_B                         | 1  | 0.07   | 0.07    | 0.03    | 0.873  |
| ## MainPlot_A:SubPlot_B              | 1  | 0.52   | 0.52    | 0.23    | 0.657  |
| ## Eb                                | 4  | 8.97   | 2.24    |         |        |
| ## SubSubPlot_C                      | 1  | 0.25   | 0.25    | 0.13    | 0.725  |
| ## SubSubPlot_C:MainPlot_A           | 1  | 0.38   | 0.38    | 0.20    | 0.667  |
| ## SubSubPlot_C:SubPlot_B            | 1  | 7.23   | 7.23    | 3.77    | 0.088  |
| ## SubSubPlot_C:MainPlot_A:SubPlot_B | 1  | 0.85   | 0.85    | 0.45    | 0.523  |
| ## Ec                                | 8  | 15.35  | 1.92    |         |        |


## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 20.7 %, cv(b) = 15.7 %, cv(c) = 14.5 %, Mean = 9.55
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A   : Zero Minimum
## SubPlot_B    : Primed Nonprimed
## SubSubPlot_C : Mulched Nonmulched
## Rep   : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##


|               | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
|---------------|----|--------|---------|---------|--------|
| ## Rep        | 2  | 98.9   | 49.5    | 5.80    | 0.147  |
| ## MainPlot_A | 1  | 0.1    | 0.1     | 0.01    | 0.922  |


```

```

## Ea                2    17.0      8.5
## SubPlot_B         1     1.3      1.3    0.25  0.642
## MainPlot_A:SubPlot_B 1    12.4    12.4    2.45  0.193
## Eb                4    20.3      5.1
## SubSubPlot_C       1     7.0      7.0    1.90  0.206
## SubSubPlot_C:MainPlot_A 1    0.0      0.0    0.00  0.982
## SubSubPlot_C:SubPlot_B 1    0.0      0.0    0.01  0.928
## SubSubPlot_C:MainPlot_A:SubPlot_B 1  15.4    15.4    4.15  0.076 .
## Ec                8    29.6      3.7
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 9.2 %, cv(b) = 7.1 %, cv(c) = 6.1 %, Mean = 31.8
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A      : Zero Minimum
## SubPlot_B       : Primed Nonprimed
## SubSubPlot_C    : Mulched Nonmulched
## Rep   : 1 2 3
##
## Number of observations: 24
##
## Analysis of Variance Table
##
## Response: get(.x)
##
##      Df Sum Sq Mean Sq F value Pr(>F)
## Rep      2 219300   109650    1.12   0.47
## MainPlot_A 1 158600   158600    1.62   0.33
## Ea        2 195268    97634
## SubPlot_B 1 128042   128042    1.08   0.36
## MainPlot_A:SubPlot_B 1 101790   101790    0.86   0.41
## Eb        4 474614   118653
## SubSubPlot_C 1 319935   319935    2.58   0.15
## SubSubPlot_C:MainPlot_A 1 108407   108407    0.87   0.38
## SubSubPlot_C:SubPlot_B 1 131868   131868    1.06   0.33
## SubSubPlot_C:MainPlot_A:SubPlot_B 1 101530   101530    0.82   0.39
## Ec        8 993653   124207
##
## cv(a) = 162 %, cv(b) = 178 %, cv(c) = 182 %, Mean = 193
##
##
## ANALYSIS SPLIT-SPLIT PLOT:  get(.x)
## Class level information
##
## MainPlot_A      : Zero Minimum
## SubPlot_B       : Primed Nonprimed
## SubSubPlot_C    : Mulched Nonmulched
## Rep   : 1 2 3
##
## Number of observations: 24
##

```

```

## Analysis of Variance Table
##
## Response: get(.x)
##
## Df Sum Sq Mean Sq F value Pr(>F)
## Rep 2 1193 597 0.41 0.71
## MainPlot_A 1 3651 3651 2.53 0.25
## Ea 2 2890 1445
## SubPlot_B 1 400 400 0.60 0.48
## MainPlot_A:SubPlot_B 1 193 193 0.29 0.62
## Eb 4 2674 668
## SubSubPlot_C 1 49323 49323 54.54 7.7e-05 ***
## SubSubPlot_C:MainPlot_A 1 88 88 0.10 0.76
## SubSubPlot_C:SubPlot_B 1 1014 1014 1.12 0.32
## SubSubPlot_C:MainPlot_A:SubPlot_B 1 840 840 0.93 0.36
## Ec 8 7235 904
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## cv(a) = 41.3 %, cv(b) = 28.1 %, cv(c) = 32.7 %, Mean = 92.1
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error: 8
##
## MainPlot_A, means and individual ( 95 %) CI
##
## get..x. std r LCL UCL Min Max
## Minimum 84 2.3 12 80.5 87.5 80 87
## Zero 84 3.3 12 80.5 87.5 80 88
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 4.97
##
## Treatments with the same letter are not significantly different.
##
## get(.x) groups
## Minimum 84 a
## Zero 84 a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error: 7.04
##
## MainPlot_A, means and individual ( 95 %) CI
##
## get..x. std r LCL UCL Min Max
## Minimum 116 2.48 12 113 119 112 120

```

```

## Zero      116 2.86 12 113 120 112 121
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 4.66
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero      116      a
## Minimum    116      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  40.9
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL UCL  Min  Max
## Minimum    97.1 2.45 12 89.2 105 91.7 101.5
## Zero       92.2 4.68 12 84.3 100 85.3  98.7
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 11.2
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Minimum    97.1      a
## Zero       92.2      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.691
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Minimum    22.9 0.891 12 21.8 23.9 21.6 25.1
## Zero       22.6 1.036 12 21.6 23.6 20.1 24.0
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 1.46
##
## Treatments with the same letter are not significantly different.

```

```

##
##      get(.x) groups
## Minimum    22.9      a
## Zero       22.6      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.26
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL UCL Min Max
## Minimum    3.47 0.446 12 2.83 4.1 2.6 4.2
## Zero       3.67 0.462 12 3.03 4.3 3.0 4.6
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 0.896
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero       3.67      a
## Minimum    3.47      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  167
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL UCL Min Max
## Minimum    142 16.2 12 126 158 114 180
## Zero       140 18.9 12 124 156 110 169
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 22.7
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Minimum    142      a
## Zero       140      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)

```

```

##
## Mean Square Error:  9.88
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL Min Max
## Minimum    11.8 2.09 12  7.85 15.7   9 16
## Zero       12.0 2.34 12  8.10 15.9   8 15
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 5.52
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero       12.0      a
## Minimum    11.8      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  48.8
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Minimum    34.0 4.46 12 25.4 42.7 26.0 44.2
## Zero       35.3 5.75 12 26.6 44.0 27.1 48.3
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 12.3
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero       35.3      a
## Minimum    34.0      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  452
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL Min Max
## Minimum    116 24.4 12 89.1 142  77 160
## Zero       119  9.7 12 92.4 145 104 135

```

```

##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 37.3
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero      119      a
## Minimum    116      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  5.79
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL Min Max
## Minimum      9.58 3.58 12 6.59 12.6  5 15
## Zero         11.75 2.49 12 8.76 14.7  8 15
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 4.23
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero      11.75      a
## Minimum     9.58      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  1.43
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Minimum      15.9 0.779 12 14.4 17.4 14.8 17.3
## Zero         16.4 0.793 12 14.9 17.9 15.2 17.7
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 2.1
##
## Treatments with the same letter are not significantly different.
##

```

```

##          get(.x) groups
## Zero      16.4      a
## Minimum    15.9      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  4.07
##
## MainPlot_A, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Minimum    27.2 1.98 12 24.7 29.7 21.9 29.4
## Zero       26.7 1.88 12 24.2 29.2 22.2 30.0
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 3.54
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Minimum    27.2      a
## Zero       26.7      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.139
##
## MainPlot_A, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Minimum    3.28 0.459 12 2.81 3.74 2.50 4.09
## Zero       2.77 0.551 12 2.31 3.24 2.05 4.09
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 0.656
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Minimum    3.28      a
## Zero       2.77      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##

```



```

## Mean Square Error: 0.027
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.   std  r  LCL  UCL Min Max
## Minimum      1.44 0.202 12 1.24 1.65 1.1 1.8
## Zero          1.22 0.243 12 1.02 1.42 0.9 1.8
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 0.289
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Minimum      1.44      a
## Zero          1.22      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error: 0.538
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.   std  r  LCL  UCL Min Max
## Minimum      3.12 0.366 12 2.21 4.03 2.3 3.5
## Zero          2.66 0.550 12 1.75 3.57 2.0 3.9
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 1.29
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Minimum      3.12      a
## Zero          2.66      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error: 2.67
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.   std  r  LCL  UCL Min Max
## Minimum      7.04 0.835 12 5.01 9.07 5.2 7.9
## Zero          6.01 1.235 12 3.98 8.04 4.5 8.8
##

```

```

## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 2.87
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Minimum    7.04      a
## Zero       6.01      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  3.92
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Minimum    10.31 1.09 12  7.85 12.8  8.15 11.6
## Zero       8.78 1.72 12  6.32 11.2  7.00 12.9
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 3.48
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Minimum    10.31      a
## Zero       8.78      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error:  8.52
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Minimum    31.8 3.31 12 28.2 35.4 24.5 36.2
## Zero       31.7 2.72 12 28.1 35.3 26.9 35.7
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 5.13
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups

```

```

## Minimum      31.8      a
## Zero         31.7      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error: 97634
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.   std  r  LCL UCL Min  Max
## Minimum      112  58.2 12 -276 500  58  182
## Zero         275 498.8 12 -113 663  59 1850
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 549
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero         275      a
## Minimum      112      a
##
## Study: get(.x) ~ MainPlot_A
##
## LSD t Test for get(.x)
##
## Mean Square Error: 1445
##
## MainPlot_A, means and individual ( 95 %) CI
##
##      get..x.   std  r  LCL UCL Min Max
## Minimum      79.8 58.8 12 32.5 127  4 150
## Zero         104.4 50.3 12 57.2 152 39 151
##
## Alpha: 0.05 ; DF Error: 2
## Critical Value of t: 4.3
##
## least Significant Difference: 66.8
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Zero         104.4      a
## Minimum      79.8      a
##
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##

```

```

## Mean Square Error:  5.25
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL Min Max
## Nonprimed    84.5 2.47 12 82.7 86.3  80  88
## Primed       83.5 3.09 12 81.7 85.3  80  88
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 2.6
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Nonprimed    84.5    a
## Primed       83.5    a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  8.96
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.  std  r LCL UCL Min Max
## Nonprimed    117 2.41 12 115 119 112 121
## Primed       115 2.68 12 113 118 112 119
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 3.39
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Nonprimed    117    a
## Primed       115    a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error: 10.9
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min   Max
## Nonprimed    95.0 3.79 12 92.3 97.6 89.1  99.8
## Primed       94.4 5.15 12 91.8 97.0 85.3 101.5
##

```

```

## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 3.74
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonprimed    95.0      a
## Primed       94.4      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  1.1
##
## SubPlot_B, means and individual ( 95 %) CI
##
##           get..x.   std  r  LCL  UCL  Min  Max
## Nonprimed    23.0 0.862 12 22.2 23.8 21.6 25.1
## Primed       22.4 1.001 12 21.6 23.3 20.1 24.0
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 1.19
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonprimed    23.0      a
## Primed       22.4      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.0633
##
## SubPlot_B, means and individual ( 95 %) CI
##
##           get..x.   std  r  LCL  UCL  Min  Max
## Nonprimed    3.45 0.284 12 3.25 3.65 3.0 4.0
## Primed       3.68 0.569 12 3.48 3.89 2.6 4.6
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 0.285
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups

```

```

## Primed      3.68      a
## Nonprimed   3.45      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  221
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r LCL UCL Min Max
## Nonprimed      140 15.2 12 128 152 116 168
## Primed          142 19.6 12 130 154 110 180
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 16.9
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Primed          142      a
## Nonprimed        140      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  3.54
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL Min Max
## Nonprimed      12.8 1.85 12 11.32 14.3  10  16
## Primed          10.9 2.11 12  9.41 12.4   8  14
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 2.13
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonprimed      12.8      a
## Primed          10.9      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  12.2

```

```

##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed    34.1 5.42 12 31.3 36.9 26.0 48.3
## Primed       35.3 4.87 12 32.5 38.1 27.1 44.2
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 3.97
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Primed       35.3      a
## Nonprimed    34.1      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  398
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed    110 15.0 12  93.9 126  77 134
## Primed       124 18.8 12 108.3 140  77 160
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 22.6
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Primed       124      a
## Nonprimed    110      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  14.7
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed     9.83 3.13 12  6.76 12.9   5  15
## Primed       11.50 3.21 12  8.43 14.6   6  15
##
## Alpha: 0.05 ; DF Error: 4

```

```

## Critical Value of t: 2.78
##
## least Significant Difference: 4.35
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Primed      11.50      a
## Nonprimed    9.83      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error: 0.383
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed      16.3 0.687 12 15.8 16.8 15.3 17.4
## Primed          16.0 0.922 12 15.5 16.5 14.8 17.7
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 0.701
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonprimed      16.3      a
## Primed          16.0      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error: 2.81
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed      26.9 2.11 12 25.5 28.2 21.9 30.0
## Primed          27.0 1.75 12 25.7 28.4 22.2 29.4
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 1.9
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Primed          27.0      a

```



```

## Nonprimed      26.9      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.0866
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.   std  r  LCL  UCL  Min  Max
## Nonprimed    3.02 0.486 12 2.78 3.26 2.50 3.86
## Primed       3.03 0.645 12 2.79 3.27 2.05 4.09
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 0.334
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Primed      3.03      a
## Nonprimed   3.02      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.0168
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.   std  r  LCL  UCL Min Max
## Nonprimed    1.33 0.214 12 1.23 1.43 1.1 1.7
## Primed       1.33 0.284 12 1.23 1.44 0.9 1.8
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 0.147
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Primed      1.33      a
## Nonprimed   1.33      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.28
##

```

```

## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL Min Max
## Nonprimed    2.87 0.503 12 2.44 3.29 2.0 3.5
## Primed       2.91 0.545 12 2.48 3.33 2.2 3.9
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 0.6
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Primed       2.91      a
## Nonprimed    2.87      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  1.49
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL Min Max
## Nonprimed    6.47 1.14 12 5.50 7.45 4.5 7.9
## Primed       6.57 1.22 12 5.59 7.55 5.0 8.8
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 1.38
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Primed       6.57      a
## Nonprimed    6.47      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  2.24
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed    9.5 1.49 12 8.3 10.7 7.00 11.6
## Primed       9.6 1.79 12 8.4 10.8 7.25 12.9
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78

```

```

##
## least Significant Difference: 1.7
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Primed      9.6      a
## Nonprimed    9.5      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error:  5.07
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed    32.0 3.29 12 30.2 33.8 24.5 35.7
## Primed       31.5 2.73 12 29.7 33.3 27.9 36.2
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 2.55
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonprimed    32.0      a
## Primed       31.5      a
##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error: 118653
##
## SubPlot_B, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Nonprimed    120 57.3 12 -155.75 396  59 182
## Primed       266 501.7 12  -9.67 542  58 1850
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 390
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Primed       266      a
## Nonprimed    120      a

```

```

##
## Study: get(.x) ~ SubPlot_B
##
## LSD t Test for get(.x)
##
## Mean Square Error: 668
##
## SubPlot_B, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL UCL Min Max
## Nonprimed    88.0 53.4 12 67.3 109 35 150
## Primed       96.2 58.5 12 75.4 117 4 151
##
## Alpha: 0.05 ; DF Error: 4
## Critical Value of t: 2.78
##
## least Significant Difference: 29.3
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Primed      96.2      a
## Nonprimed   88.0      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 3.5
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##      get..x.  std  r  LCL  UCL Min Max
## Mulched      84.3 2.90 12 83.1 85.6 80 88
## Nonmulched    83.7 2.74 12 82.4 84.9 80 88
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 1.76
##
## Treatments with the same letter are not significantly different.
##
##      get(.x) groups
## Mulched      84.3      a
## Nonmulched    83.7      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 2.5
##

```

```

## SubSubPlot_C, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Mulched          116 2.90 12 115 117 112 120
## Nonmulched        116 2.44 12 115 117 113 121
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 1.49
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Mulched          116      a
## Nonmulched        116      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  7.48
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Mulched          94.4 4.98 12 92.5 96.2 87.6 101.5
## Nonmulched        95.0 4.01 12 93.2 96.8 85.3  98.3
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 2.57
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonmulched        95.0      a
## Mulched           94.4      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.651
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Mulched          22.5 1.206 12 22.0 23.0 20.1 25.1
## Nonmulched        22.9 0.591 12 22.4 23.5 21.6 24.0
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31

```

```

##
## least Significant Difference: 0.759
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonmulched    22.9      a
## Mulched       22.5      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.382
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##           get..x.  std  r  LCL  UCL Min Max
## Mulched          3.58 0.463 12 3.17 3.99 3.0 4.6
## Nonmulched       3.55 0.468 12 3.14 3.96 2.6 4.2
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 0.582
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Mulched          3.58      a
## Nonmulched       3.55      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  436
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##           get..x.  std  r  LCL  UCL Min Max
## Mulched          141 18.6 12 127 155 110 180
## Nonmulched       140 16.6 12 126 154 116 169
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 19.6
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Mulched          141      a
## Nonmulched       140      a

```

```

##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 2.96
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL Min Max
## Mulched          11.8 2.22 12 10.6 12.9  8 15
## Nonmulched       12.0 2.22 12 10.9 13.1  9 16
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 1.62
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonmulched       12.0      a
## Mulched          11.8      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 21
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Mulched          36.6 6.20 12 33.6 39.7 26.0 48.3
## Nonmulched       32.7 2.63 12 29.7 35.8 27.1 36.0
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 4.31
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Mulched          36.6      a
## Nonmulched       32.7      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 264
##
## SubSubPlot_C, means and individual ( 95 %) CI

```

```

##
##          get..x.  std  r LCL UCL Min Max
## Mulched      122 19.2 12 111 133  77 160
## Nonmulched    112 16.5 12 101 123  77 135
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 15.3
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Mulched      122      a
## Nonmulched    112      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  13.1
##
## SubSubPlot_C,  means and individual ( 95 %) CI
##
##          get..x.  std  r LCL  UCL Min Max
## Mulched      11.1 3.32 12 8.67 13.5   5  15
## Nonmulched    10.2 3.19 12 7.84 12.7   6  15
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 3.41
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Mulched      11.1      a
## Nonmulched    10.2      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.677
##
## SubSubPlot_C,  means and individual ( 95 %) CI
##
##          get..x.  std  r LCL  UCL Min Max
## Mulched      16.1 0.756 12 15.6 16.7 14.8 17.1
## Nonmulched    16.2 0.902 12 15.6 16.7 14.8 17.7
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##

```



```

## least Significant Difference: 0.775
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonmulched    16.2      a
## Mulched       16.1      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  3.22
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##           get..x.  std  r  LCL  UCL  Min  Max
## Mulched           27.4 1.03 12 26.2 28.6 26.2 29.4
## Nonmulched        26.5 2.47 12 25.3 27.7 21.9 30.0
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 1.69
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Mulched          27.4      a
## Nonmulched        26.5      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  0.322
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##           get..x.  std  r  LCL  UCL  Min  Max
## Mulched           2.95 0.545 12 2.57 3.32 2.05 3.86
## Nonmulched         3.11 0.584 12 2.73 3.48 2.50 4.09
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 0.534
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonmulched         3.11      a
## Mulched             2.95      a
##

```

```

## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 0.0624
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##          get..x.   std  r  LCL  UCL Min Max
## Mulched          1.30 0.240 12 1.13 1.46 0.9 1.7
## Nonmulched       1.37 0.257 12 1.20 1.53 1.1 1.8
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 0.235
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonmulched       1.37      a
## Mulched          1.30      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 0.146
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##          get..x.   std  r  LCL  UCL Min Max
## Mulched          2.88 0.490 12 2.62 3.13 2.2 3.4
## Nonmulched       2.90 0.558 12 2.65 3.15 2.0 3.9
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 0.36
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonmulched       2.90      a
## Mulched          2.88      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error: 0.731
##
## SubSubPlot_C, means and individual ( 95 %) CI
##

```

```

##          get..x.  std  r  LCL  UCL Min Max
## Mulched          6.50 1.10 12 5.93 7.07 5.0 7.7
## Nonmulched       6.54 1.26 12 5.98 7.11 4.5 8.8
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 0.805
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonmulched       6.54      a
## Mulched          6.50      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  1.92
##
## SubSubPlot_C,  means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Mulched          9.45 1.52 12 8.52 10.4 7.25 11.6
## Nonmulched       9.65 1.75 12 8.73 10.6 7.00 12.9
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 1.3
##
## Treatments with the same letter are not significantly different.
##
##          get(.x) groups
## Nonmulched       9.65      a
## Mulched          9.45      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  3.7
##
## SubSubPlot_C,  means and individual ( 95 %) CI
##
##          get..x.  std  r  LCL  UCL  Min  Max
## Mulched          31.2 3.11 12 29.9 32.5 24.5 36.2
## Nonmulched       32.3 2.83 12 31.0 33.6 26.9 36.2
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 1.81

```

```

##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonmulched    32.3      a
## Mulched       31.2      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  124207
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##           get..x.  std  r    LCL UCL Min  Max
## Mulched           77.9  32.8 12 -156.7 313  58  150
## Nonmulched       308.8 486.3 12  74.2 543  73 1850
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 332
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonmulched    308.8      a
## Mulched       77.9      a
##
## Study: get(.x) ~ SubSubPlot_C
##
## LSD t Test for get(.x)
##
## Mean Square Error:  904
##
## SubSubPlot_C, means and individual ( 95 %) CI
##
##           get..x.  std  r    LCL  UCL Min Max
## Mulched           46.8 28.0 12  26.7  66.8  4 105
## Nonmulched       137.4 32.4 12 117.4 157.4 35 151
##
## Alpha: 0.05 ; DF Error: 8
## Critical Value of t: 2.31
##
## least Significant Difference: 28.3
##
## Treatments with the same letter are not significantly different.
##
##           get(.x) groups
## Nonmulched    137.4      a
## Mulched       46.8      b

```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu

% Date and time: Tue, Jul 31, 2018 - 8:31:10 AM

Table 2: Summary of Three factorial RCBD for trait

	<i>Dependent variable:</i>
	‘PH(cm)’
Rep2	−0.469 (1.820)
Rep3	3.670* (1.820)
MainPlot_AZero	−5.620* (2.970)
SubPlot_BPrimed	−1.230 (2.970)
SubSubPlot_CNonmulched	−2.400 (2.970)
MainPlot_AZero:SubPlot_BPrimed	−1.900 (4.200)
MainPlot_AZero:SubSubPlot_CNonmulched	2.800 (4.200)
SubPlot_BPrimed:SubSubPlot_CNonmulched	2.750 (4.200)
MainPlot_AZero:SubPlot_BPrimed:SubSubPlot_CNonmulched	1.000 (5.940)
Constant	97.200*** (2.350)
Observations	24
R ²	0.590
Adjusted R ²	0.327
Residual Std. Error	3.640 (df = 14)
F Statistic	2.240* (df = 9; 14)
<i>Note:</i>	
*p<0.1; **p<0.05; ***p<0.01	

3 All results summary

4 Correlation matrix of numeric variables

Table 3: ANOVA of Grain yield per net plot

Treatment	DF	SS	MSS	F-value	<i>Significance^a</i>
MainPlot A	1	0.293	0.293	10.846	.
Subplot					
SubPlot B	1	0.000	0.000	0.006	
MainPlot A:SubPlot B	1	0.001	0.001	0.056	
SubSubplot					
SubSubPlot C	1	0.030	0.030	0.482	
MainPlot A:SubSubPlot C	1	0.003	0.003	0.042	
SubPlot B:SubSubPlot C	1	0.158	0.158	2.539	
MainPlot A:SubPlot B:SubSubPlot C	1	0.076	0.076	1.217	
Residuals					
Rep	2	0.208	0.104		
Rep:MainPlot A	2	0.054	0.027		
Rep:MainPlot A:SubPlot B	4	0.067	0.017		
Rep:MainPlot A:SubPlot B:SubSubPlot C	8	0.499	0.062		

Table 4: Pearson correlation coefficients of Post harvest traits

	Tong	Toty	PHm)	Pam)	Pam)	Nosq	Nosq	Flm)	Nole	Nole	Mont	TWm)	EYa)	GYot	SYq)	SYa)	BY	HI	Weng
Total_days_to_heading																			
Total_days_to_maturity	0.95****																		
PH(cm)	0.37	0.36																	
Panicle_length(cm)	-0.03	0.16	0.14																
Panicle_weight(gm)	0.07	0.01	0.04	-0.38															
No_of_effective_tillers_per_msq	-0.02	0.05	0.12	0.04	0.43*														
No_of_non_effective_tillers_per_msq	-0.28	-0.16	-0.25	0.30	-0.43*	-0.07													
Flag_leaf_area(cm)	0.07	-0.03	0.15	-0.25	0.20	-0.11	-0.37												
No_of_effective_grains_per_panicle	-0.34	-0.44*	-0.04	-0.37	0.37	-0.08	-0.43*	0.34											
No_of_non_effective_grains_per_panicle	-0.05	-0.08	-0.40*	-0.35	0.24	-0.07	-0.31	-0.09	0.51*										
Moisture_percent	0.29	0.36	0.01	0.07	0.06	0.19	0.08	-0.20	0.00	-0.08									
TW(1000_grain_weight_in_gm)	0.35	0.36	0.12	-0.09	-0.06	0.05	-0.30	0.01	0.01	0.16	0.24								
EY(T_per_ha)	-0.22	-0.18	0.50*	0.42*	0.08	0.19	-0.02	0.05	0.04	-0.25	-0.18	-0.16							
GY_per_net_plot	-0.22	-0.18	0.50*	0.42*	0.08	0.19	-0.02	0.05	0.04	-0.25	-0.18	-0.16	1.00****						
SY_per_net_plot(msq)	0.13	0.12	0.75****	0.16	0.07	0.26	-0.04	0.01	-0.09	-0.28	-0.03	-0.05	0.73****	0.73****					
SY(T_per_Ha)	0.14	0.13	0.74****	0.16	0.06	0.27	-0.04	0.01	-0.10	-0.28	-0.03	-0.05	0.72****	0.72****	1.00****				
BY	0.02	0.03	0.71****	0.26	0.07	0.26	-0.04	0.03	-0.06	-0.28	-0.09	-0.09	0.87****	0.87****	0.97****	0.97****			
HI	-0.52**	-0.45*	-0.33	0.41*	-0.05	-0.09	0.06	0.02	0.19	0.02	-0.19	-0.17	0.37	0.37	-0.36	-0.37	-0.14		
Weed_num_per_area_at_1st_weeding	-0.23	-0.17	0.13	0.31	0.00	-0.09	0.11	-0.05	0.04	0.08	-0.23	-0.51*	0.39	0.39	0.39	0.39	0.42*	0.02	
Weed_num_per_area_at_2nd_weeding	-0.05	0.04	-0.04	0.24	-0.12	-0.08	0.04	-0.27	-0.20	0.03	0.06	0.01	0.03	0.03	-0.08	-0.09	-0.05	0.17	0.37

Note:

p < .0001: **** ; p < .001: *** ; p < .01: ** ; p < .05: *

5 Scatterplots with with regression equation