

Relationships between Substrate, Surface Characteristics, and Vegetation in an Initial Ecosystem

by

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This supplement gives an extensive graphical presentation of the data used in this study. While the Figures listed here are not necessary to understand the main article, they may be helpful for readers who would like to get a more detailed view. Each supplemental figure is referenced in the main text, corresponding variable definitions and summarizing tables can be taken there from Tables 1, 2, and 3. Unused grid points as shown in some figures were not measured due to intensive monitoring instrumentation in these places.

Figure Captions

Figure S1: Total degree of plant cover COVTOT [%] (cf. Tables 1, 3) in spatio-temporal display.

Figure S2: Degree of cover by annual plants COVANN [%] (cf. Table 3) in spatio-temporal display.

Figure S3: Degree of cover by herbaceous plants COVHERB [%] (cf. Table 3) in spatio-temporal display.

Figure S4: Degree of cover by *Fabaceae* COVFAB [%] (cf. Table 3) in spatio-temporal display.

Figure S5: Degree of cover by perennial plants COVPER [%] (cf. Table 3) in spatio-temporal display.

Figure S6: Degree of cover by grasslike plants COVGRASS [%] (cf. Table 3) in spatio-temporal display.

Figure S7: Degree of cover by woody plants COVWOOD [%] (cf. Table 3) in spatio-temporal display.

Figure S8: Proportion of annual plant cover related to total plant cover (PROPANN, cf. Tables 1, 2) in spatio-temporal display.

Figure S9: Proportion of herbaceous plant cover related to total plant cover (PROPHERB, cf. Tables 1, 2) in spatio-temporal display.

Figure S10: Proportion of grasslike plant cover related to total plant cover (PROPGRASS, cf. Tables 1, 2) in spatio-temporal display.

Figure S11: Proportion of cover of plants belonging to the *Fabaceae* family related to total plant cover (PROPFAB, cf. Tables 1, 2) in spatio-temporal display.

Figure S12: Proportion of cover of woody plants related to total plant cover (PROPWOOD, cf. Tables 1, 2) in spatio-temporal display.

Figure S13: Soil properties Percentage of organic carbon in the soil (CORGP), Percentage of gravel content in the soil (GRAVCONT), and Percentage of medium sand (0.2 - 0.63 mm) in the soil (MSAND) as measured in 2005 (cf. Tables 1, 2) in spatio-temporal display.

Figure S14: Mean annual ground water level below surface GAUGE [m] (cf. Tables 1, 2) in spatio-temporal display.

Figure S15: Laser-scanned mean vegetation height VEGHEIGHT [m] (cf. Tables 1, 2) in spatio-temporal display.

Figure S16: Laser-scanned mean vegetation density VEGDENS (cf. Tables 1, 2) in spatio-temporal display.

Figure S17: Product of the mean vegetation height und vegetation density VEGDH (cf. Tables 1, 2) in spatio-temporal display.

Figure S18: Proportion of laser scan cells classified as belonging to a rill related to the total amount of laser scan cells per vegetation plot RILLR (cf. Tables 1, 2) in spatio-temporal display.

Figure S19: Mean value of local relief energy RELEN (cf. Tables 1, 2) in spatio-temporal display.

Figure S20: Mean ground surface elevation changes DHEIGHT [m] (cf. Tables 1, 2) between September 2008 - May 2009, May 2009 - April 2010, and April 2010 - February 2011 in spatio-temporal display. Positive values of DHEIGHT indicate an increase of the surface height indicating a net gain of substrate material in the vegetation square, while negative values indicate a net substrate material export (erosion) from the respective square.

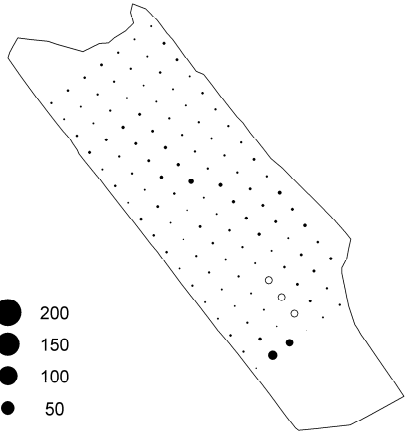
Figure S21: Initial network of erosion channels in November 2005. The circles indicate the perpendicular erosion channels in the upper part and rectangles mark the parallel channels in the lower western part of the area corresponding to caterpillar tracks. Figure taken from Schaaf et al. (2012).

Figure S22: Boxplot of the rill cell frequency (RILLR) against the distance to the grid row A on the catchment (see Figure 1). Due to other confounding variables the minimum around DISTA values about 50 – 150 m is less visible than in the results of the statistical analysis (Figure 2).

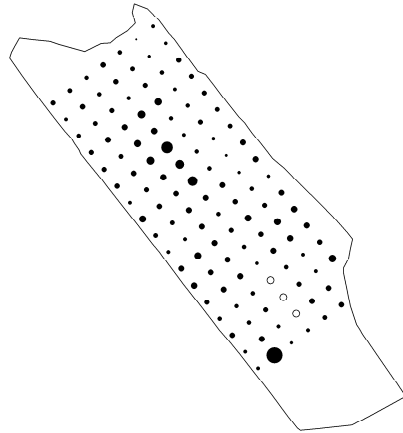
Figure S23: Boxplot of local relief energy (RELEN) against the distance to the grid row A on the catchment (see Figure 1). Due to other confounding variables the minimum around

DISTA values about 50 – 150 m is less visible than in the results of the statistical analysis (Figure 3).

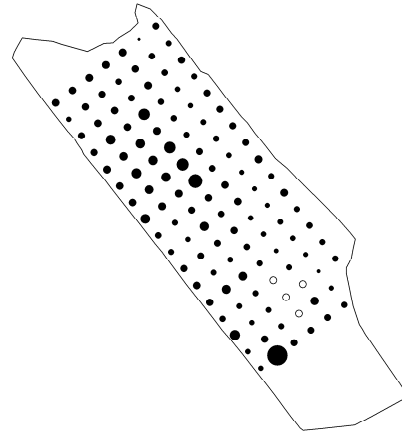
COVTOT
2006



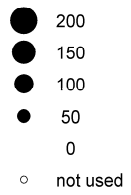
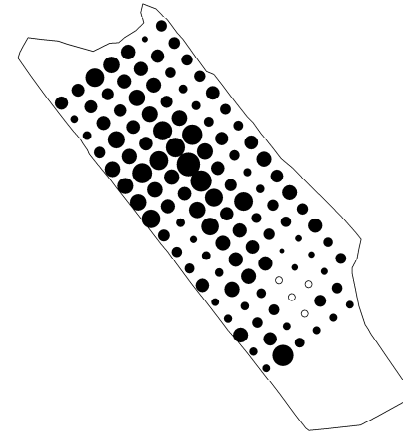
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2007



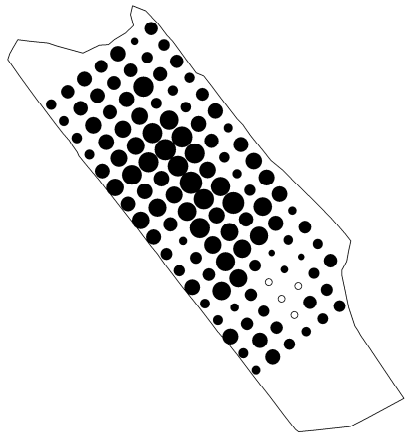
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2008



COVTOT
2009



COVTOT
2010



COVTOT
2011

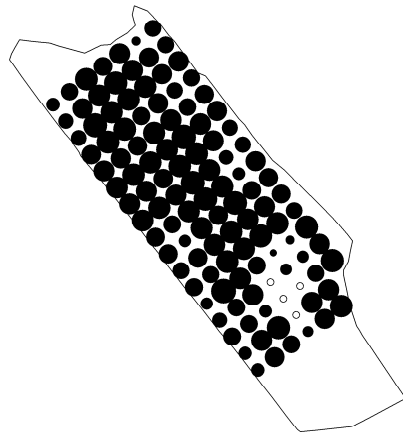
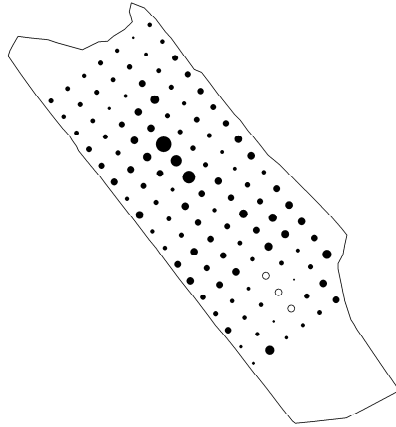


Figure S1

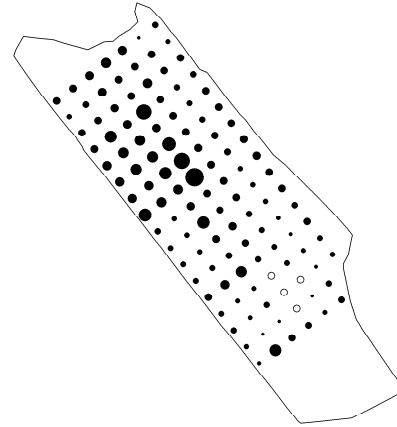
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2006



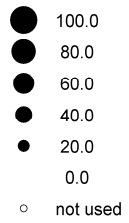
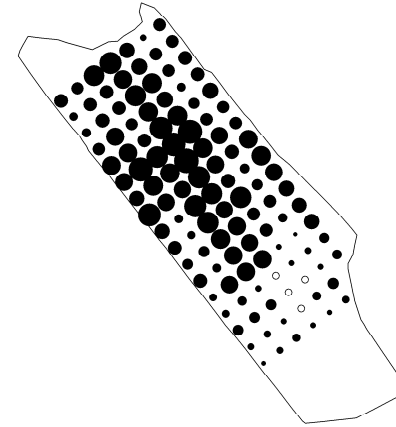
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2007



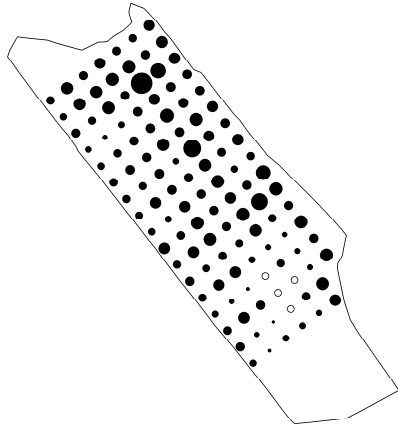
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2008



COVANN
2009



COVANN
2010



COVANN
2011

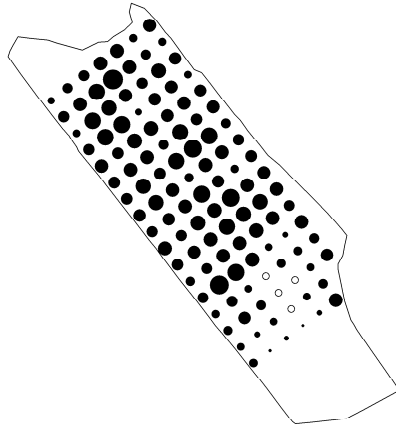
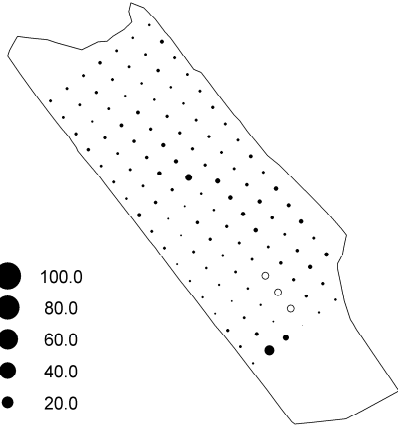
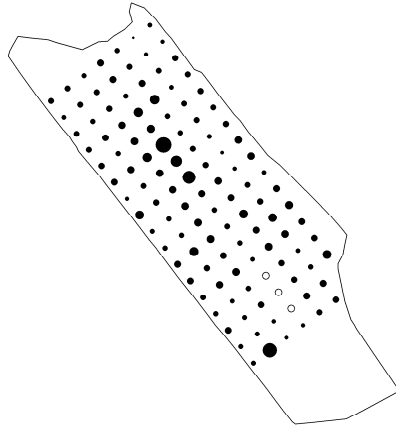


Figure S2

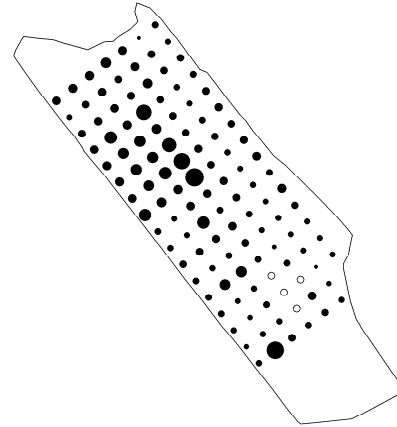
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2006



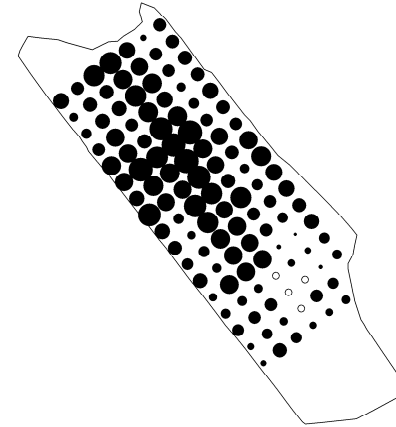
COVHERB
2007



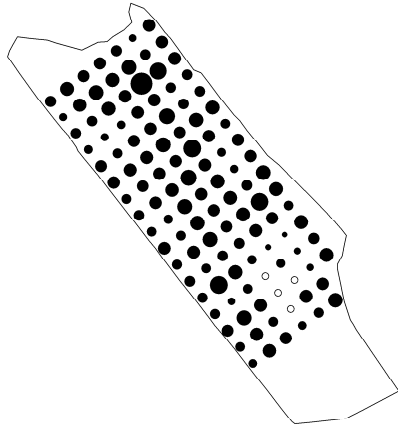
COVHERB
2008



COVHERB
2009



COVHERB
2010



COVHERB
2011

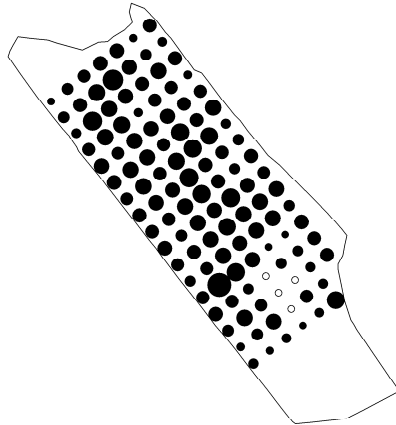
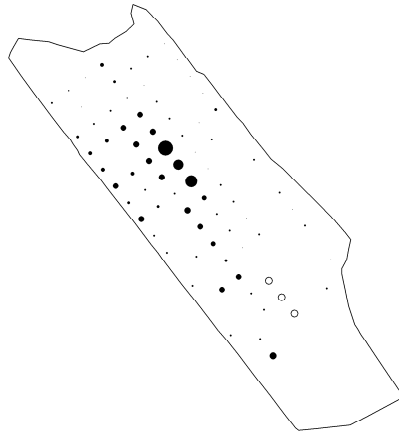


Figure S3

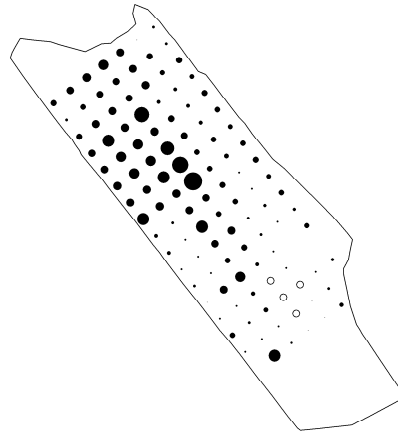
COVFAB
2006



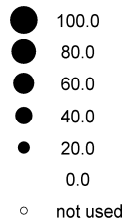
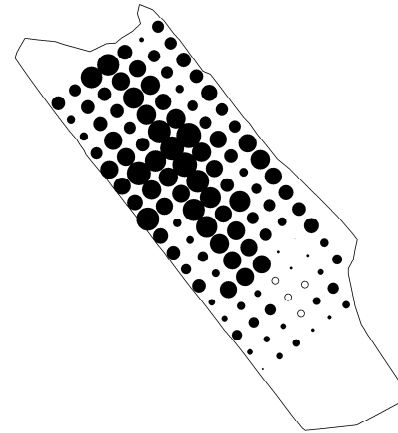
COVFAB
2007



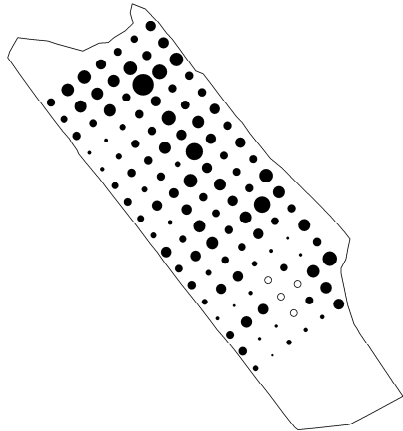
COVFAB
2008



COVFAB
2009



COVFAB
2010



COVFAB
2011

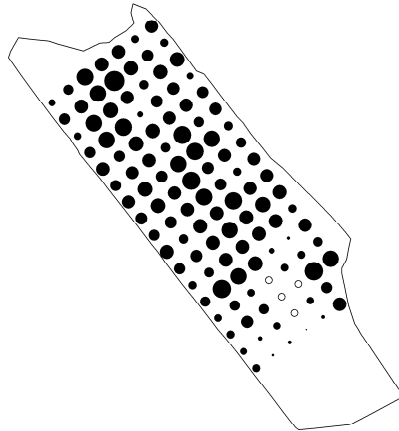


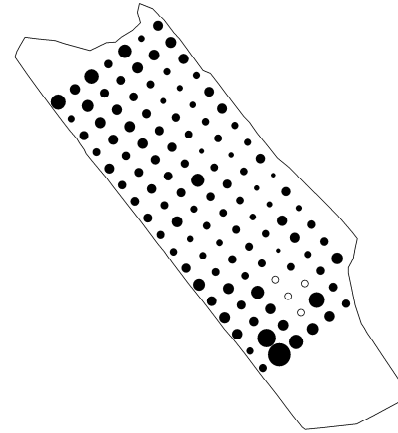
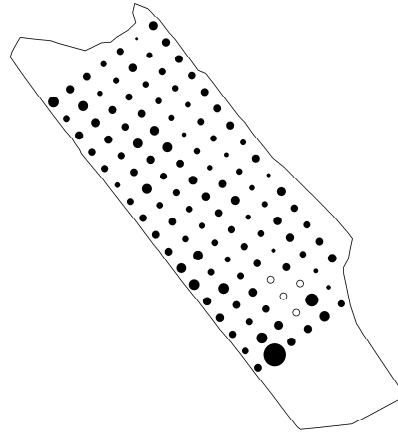
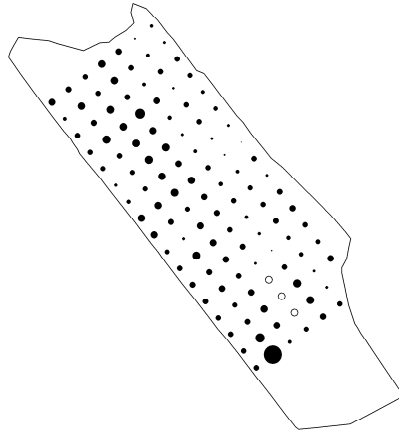
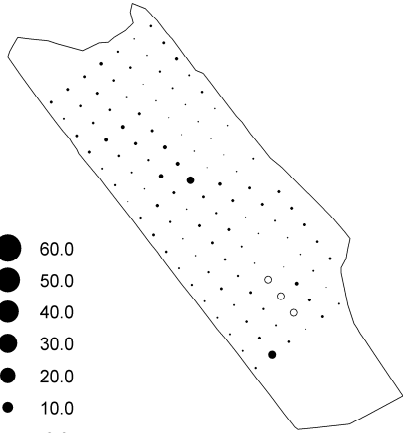
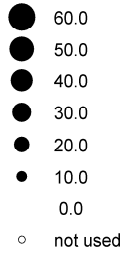
Figure S4

COVER
2006

COVER
2007

COVER
2008

COVER
2009



COVER
2010

COVER
2011

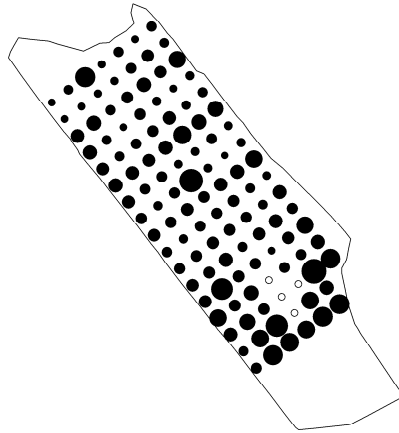
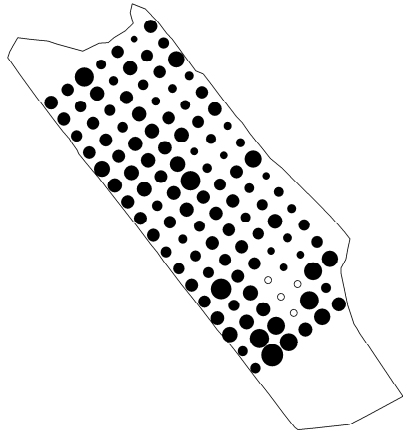
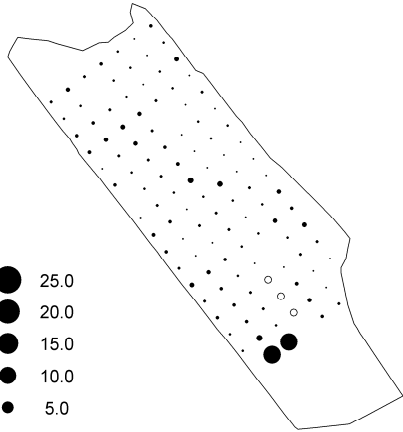
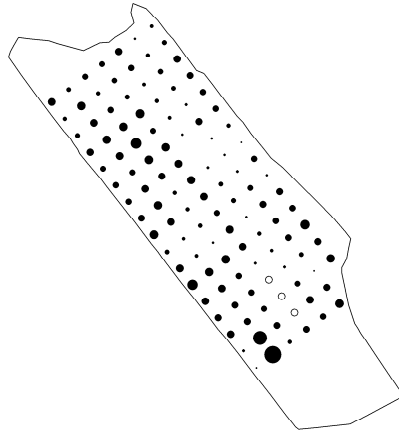


Figure S5

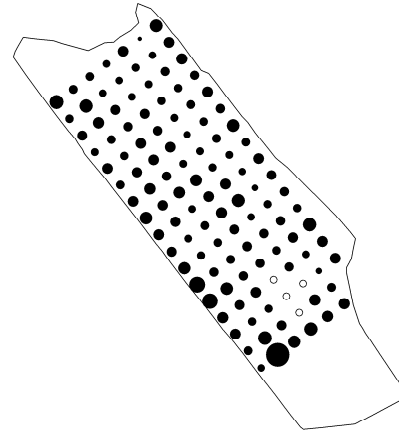
COVGRASS
2006



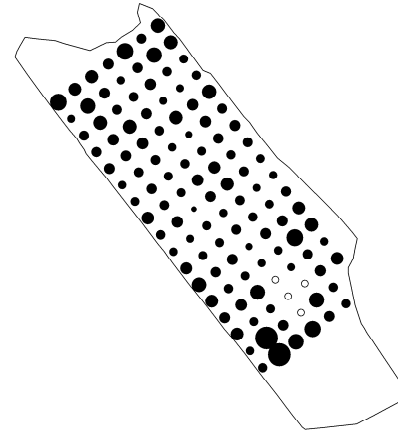
COVGRASS
2007



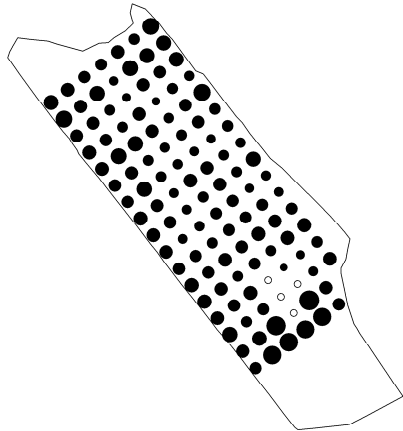
COVGRASS
2008



COVGRASS
2009



COVGRASS
2010



COVGRASS
2011

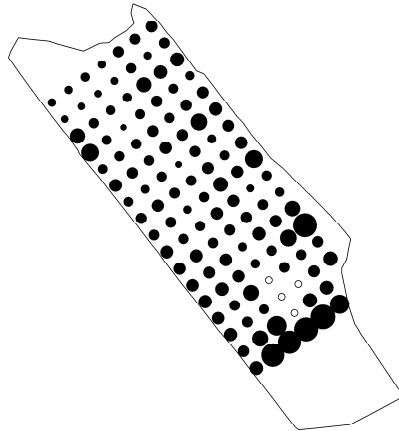
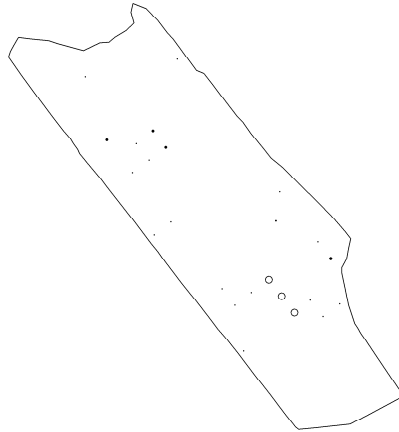


Figure S6

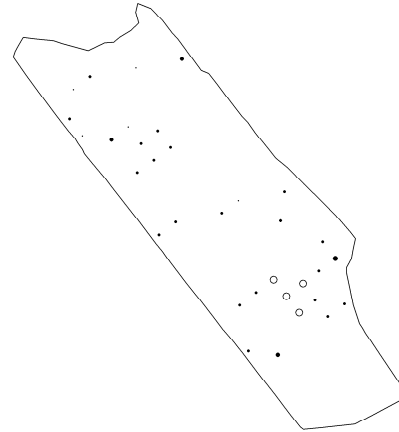
COVWOOD
2006



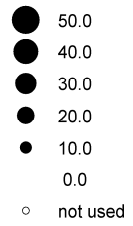
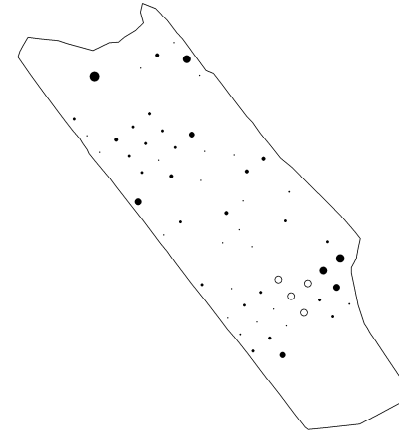
COVWOOD
2007



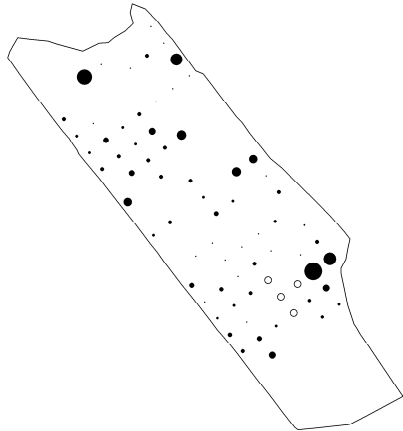
COVWOOD
2008



COVWOOD
2009



COVWOOD
2010



COVWOOD
2011

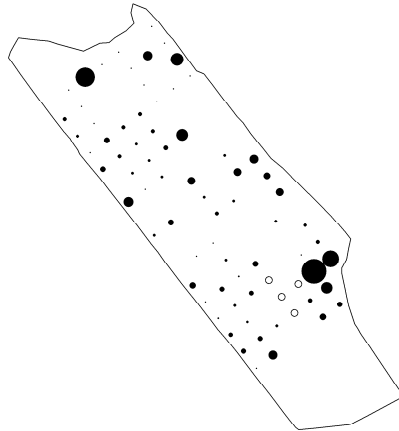
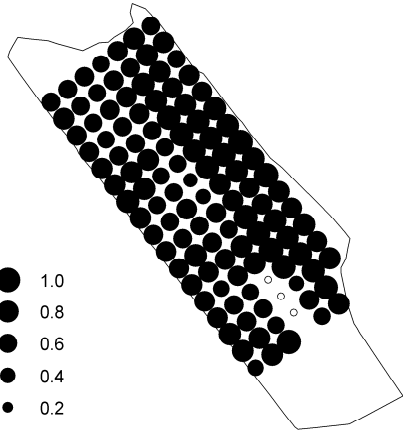
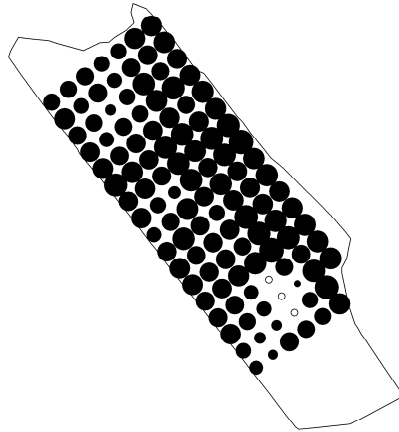


Figure S7

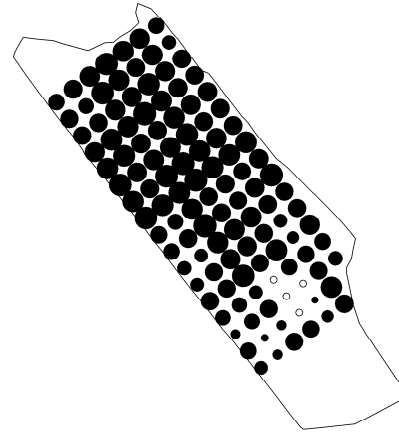
PROPANN
2006



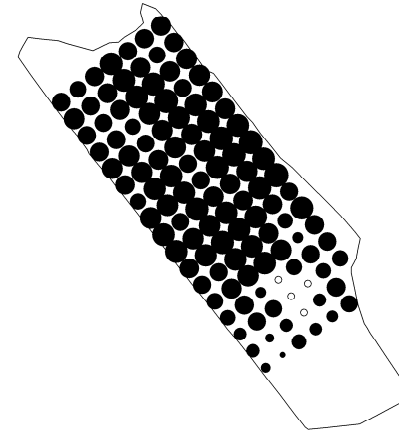
PROPANN
2007



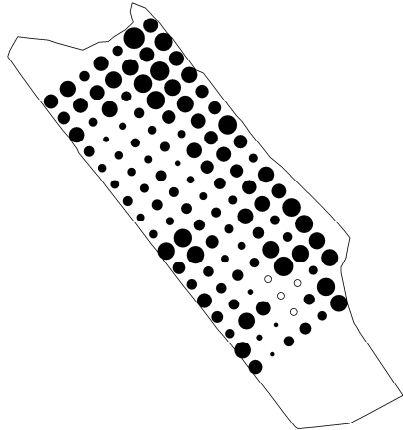
PROPANN
2008



PROPANN
2009



PROPANN
2010



PROPANN
2011

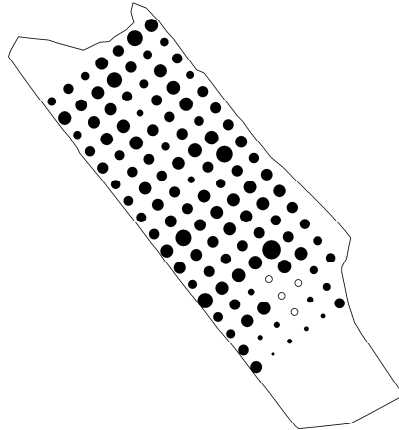


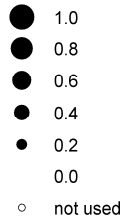
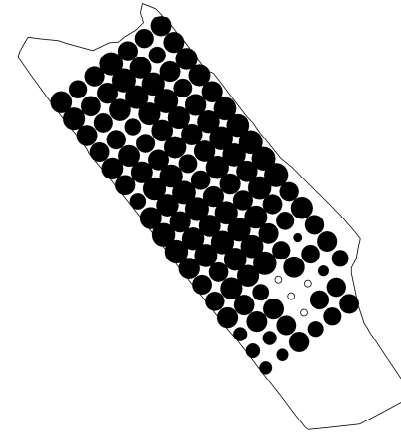
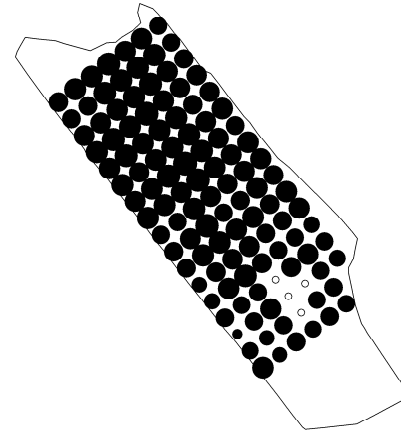
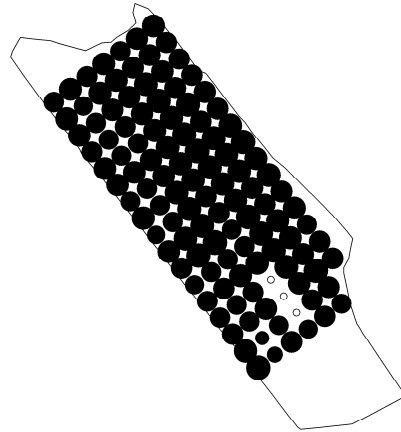
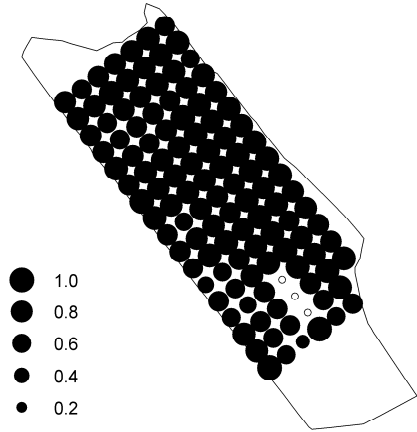
Figure S8

PROPERB
2006

PROPERB
2007

PROPERB
2008

PROPERB
2009



PROPERB
2010

PROPERB
2011

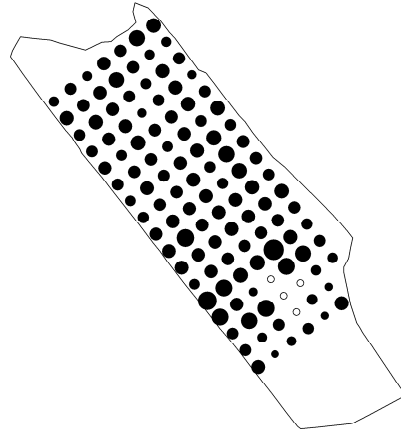
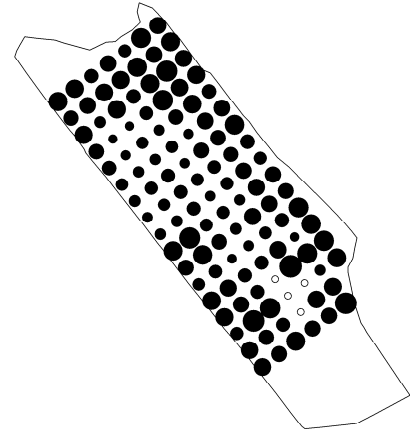
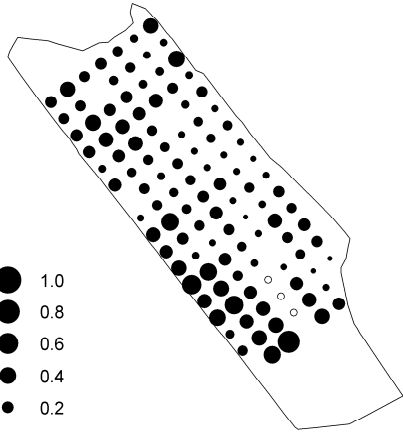
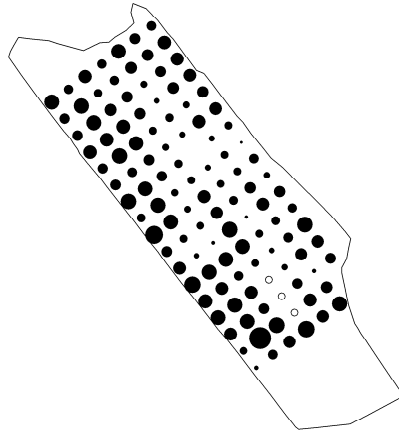


Figure S9

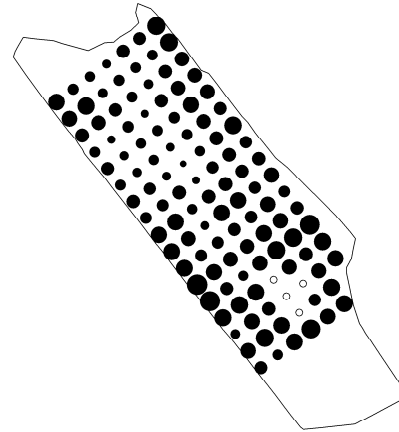
PROPGRASS
2006



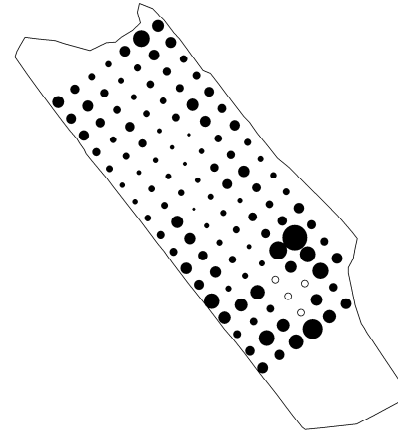
PROPGRASS
2007



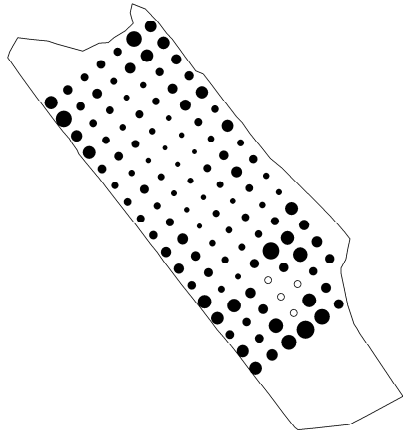
PROPGRASS
2008



PROPGRASS
2009



PROPGRASS
2010



PROPGRASS
2011

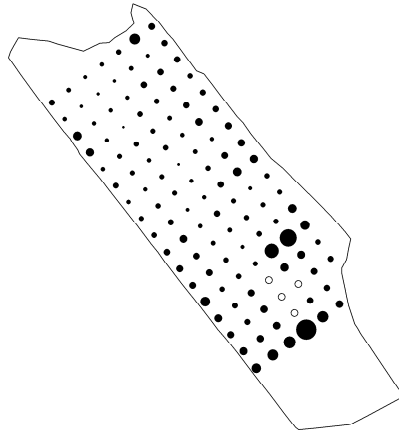
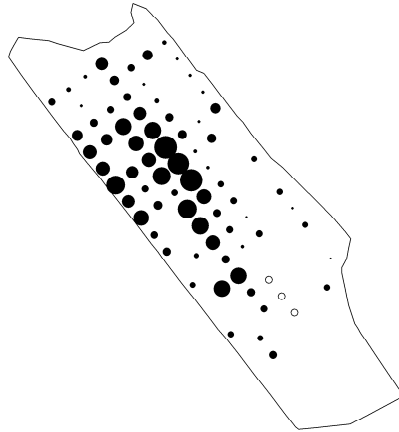


Figure S10

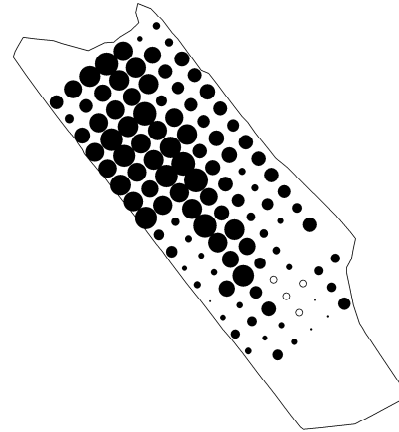
PROPFAB
2006



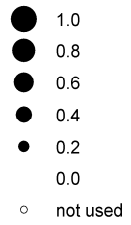
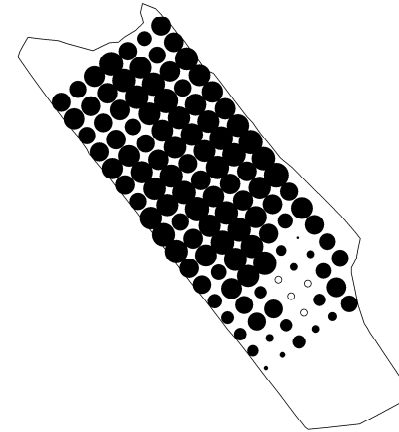
PROPFAB
2007



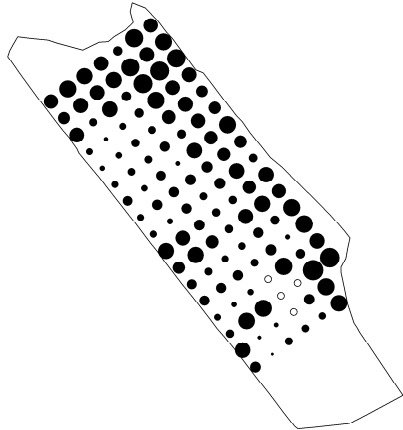
PROPFAB
2008



PROPFAB
2009



PROPFAB
2010



PROPFAB
2011

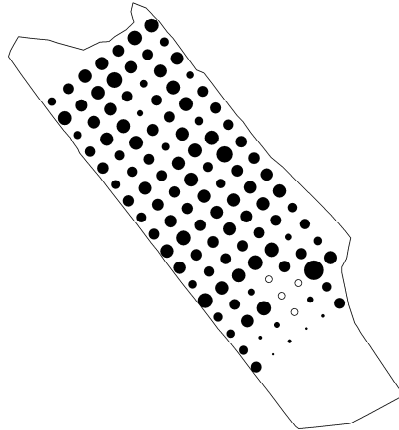


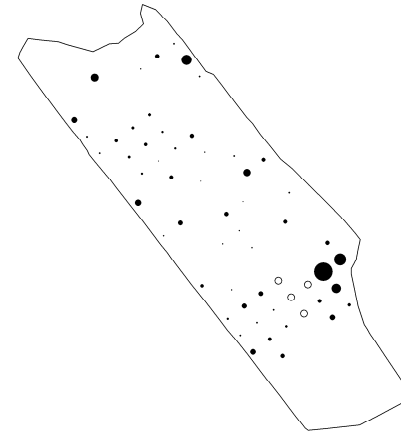
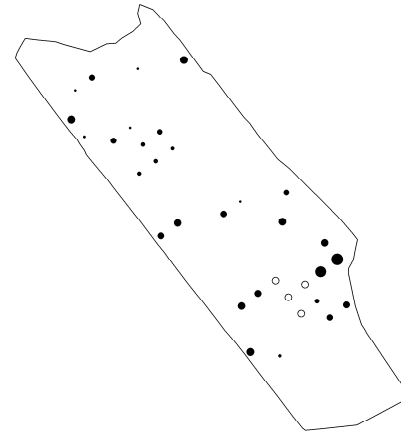
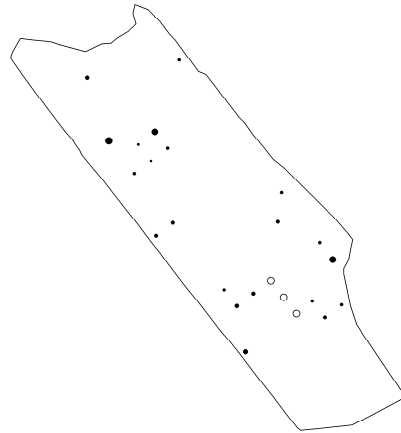
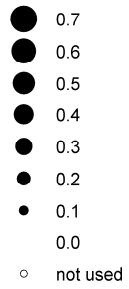
Figure S11

PROPWOOD
2006

PROPWOOD
2007

PROPWOOD
2008

PROPWOOD
2009



PROPWOOD
2010

PROPWOOD
2011

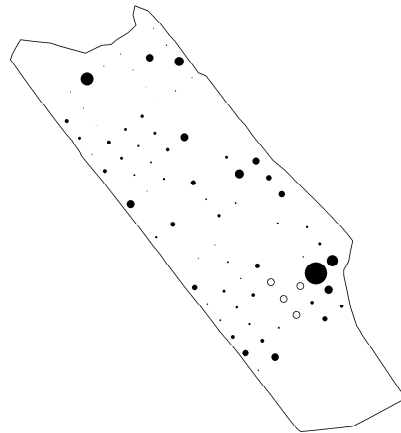
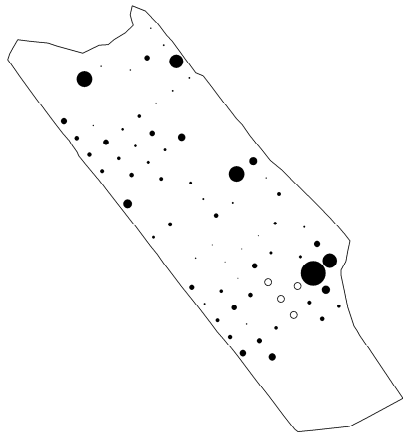
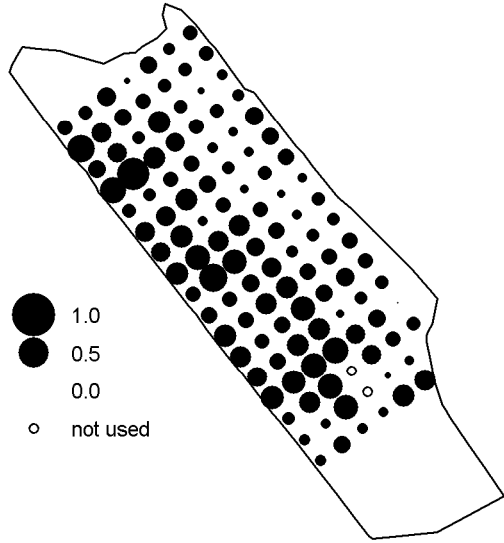
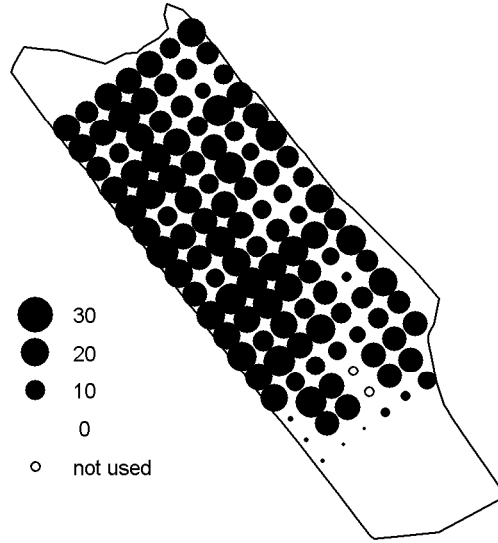


Figure S12

CORGP
2005



GRAVCONT
2005



MSAND
2005

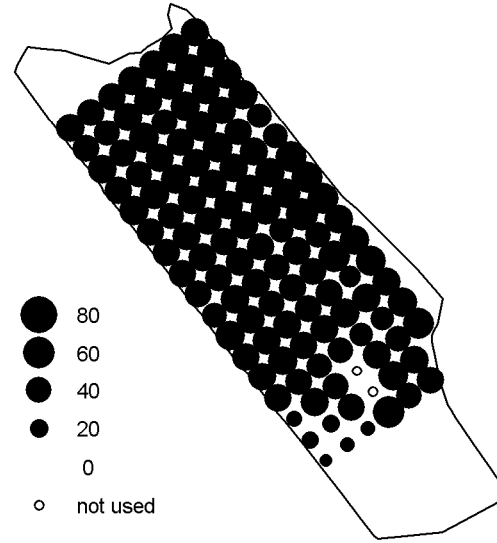
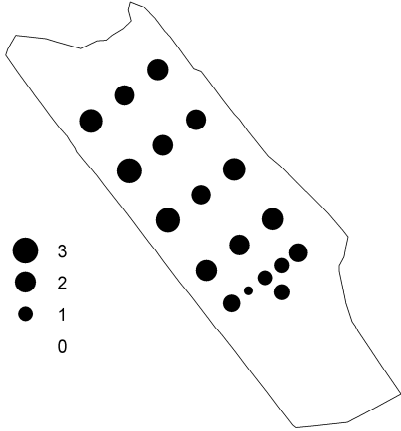
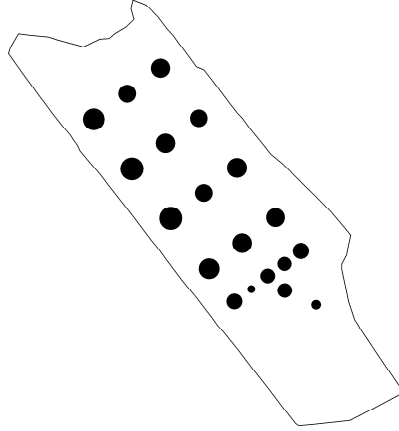


Figure S13

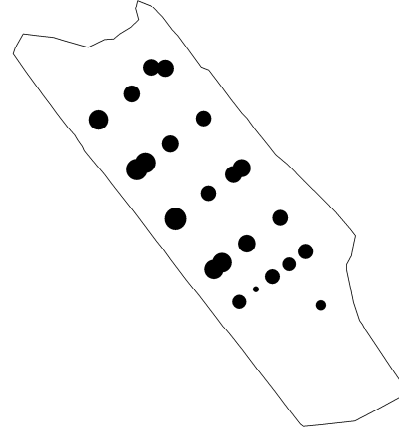
GAUGE
2006



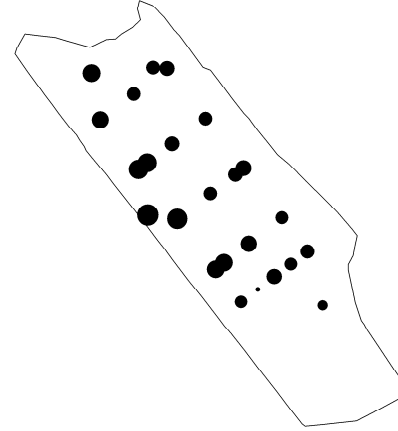
GAUGE
2007



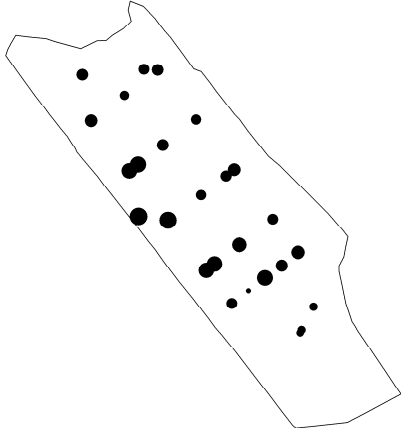
GAUGE
2008



GAUGE
2009



GAUGE
2010



GAUGE
2011

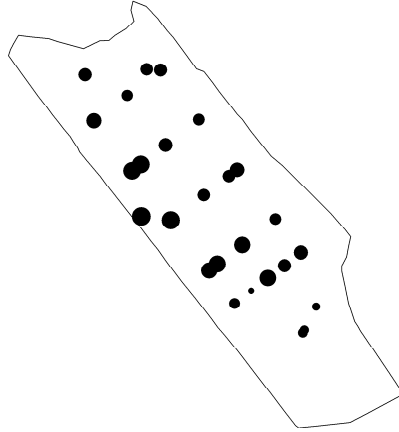
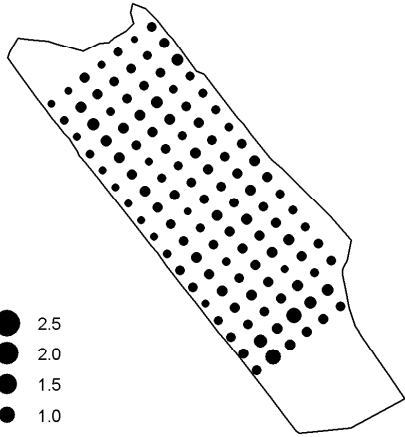
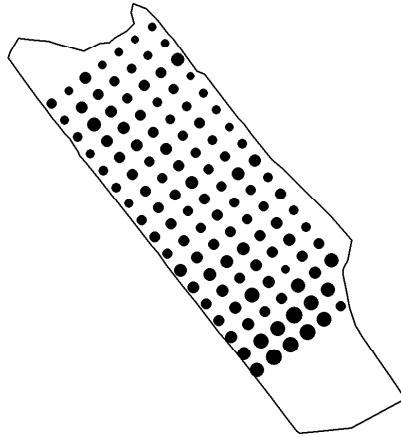


Figure S14

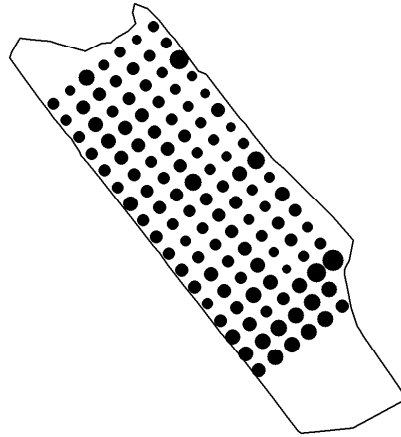
VEGHEIGHT
2008/9



VEGHEIGHT
2009/8



VEGHEIGHT
2010/10



VEGHEIGHT
2011/5

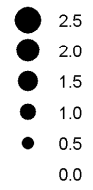
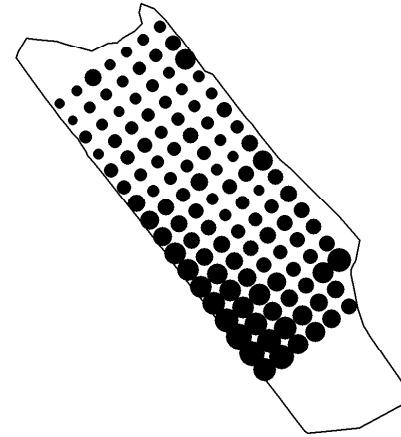
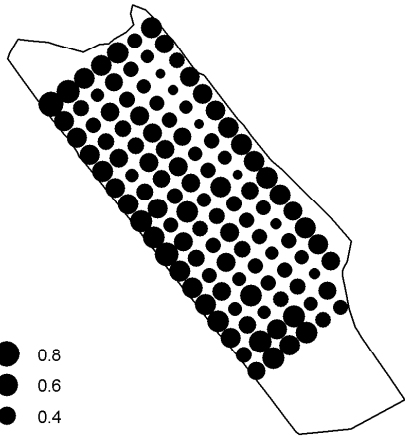
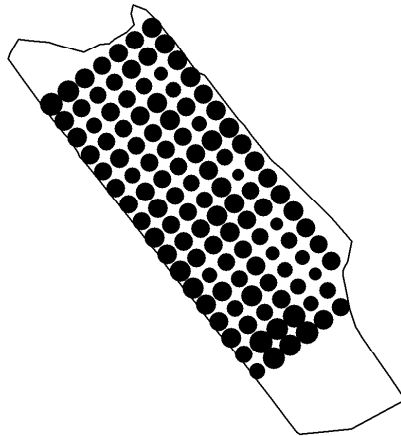


Figure S15

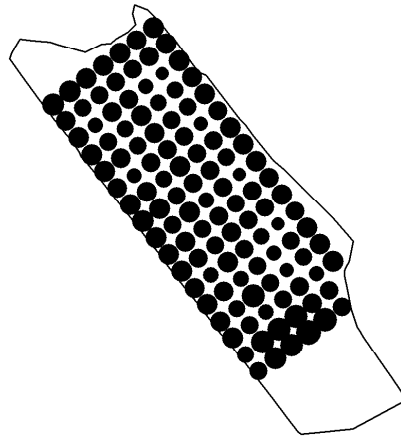
VEGDENS
2008/9



VEGDENS
2009/8



VEGDENS
2010/10



VEGDENS
2011/5

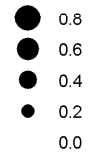
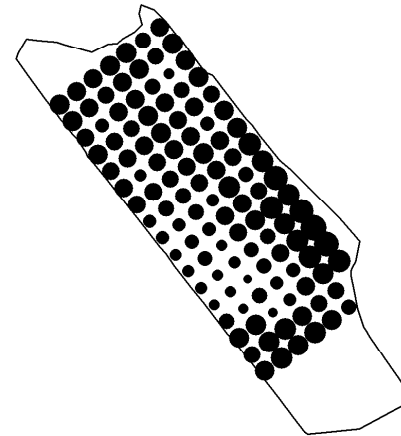


Figure S16

VEGDH
2008/9

VEGDH
2009/8

VEGDH
2010/10

VEGDH
2011/5

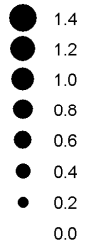
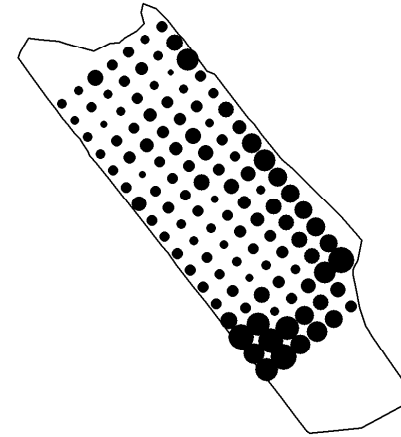
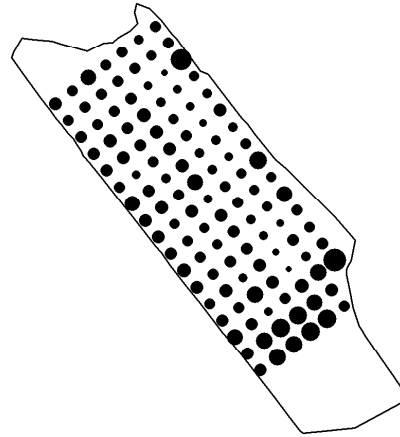
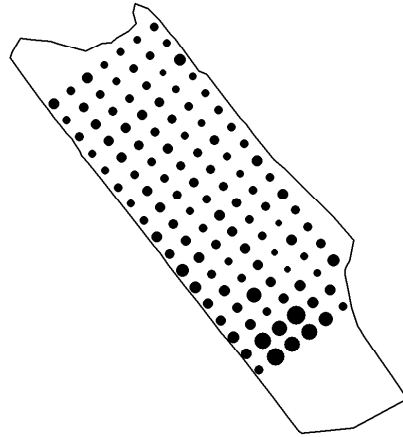
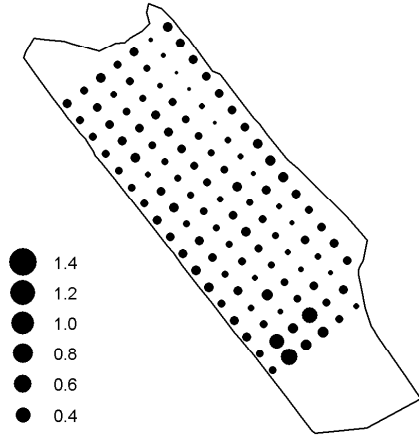


Figure S17

RILLR
2008/9

RILLR
2009/8

RILLR
2010/10

RILLR
2011/5

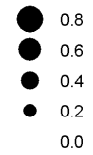
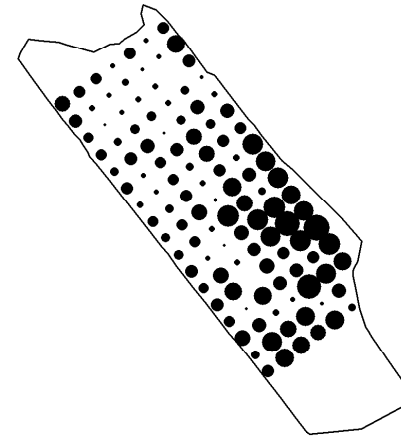
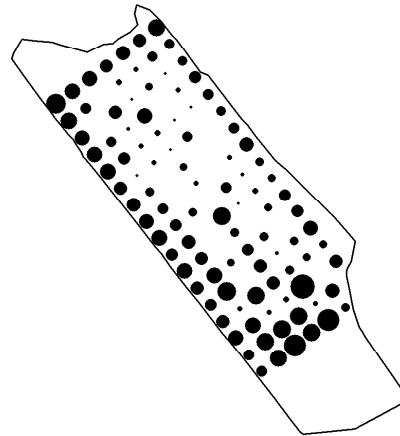
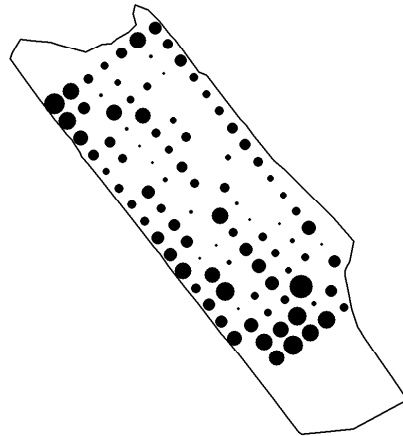
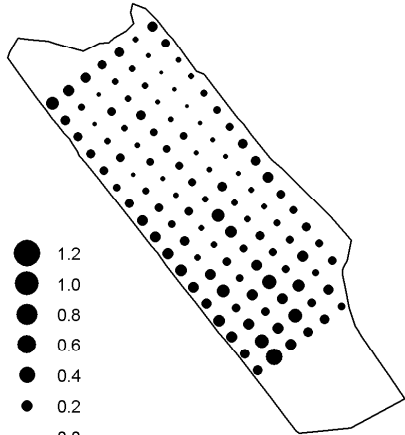
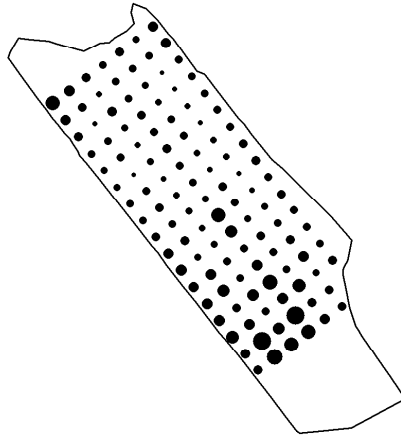


Figure S18

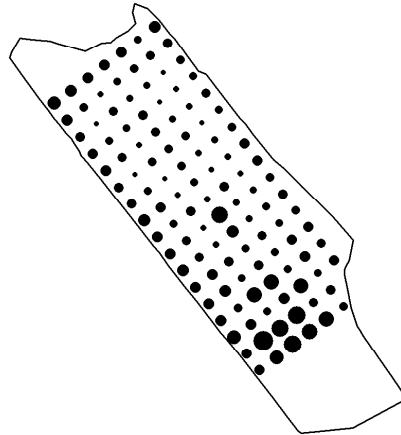
RELEN
2008/9



RELEN
2009/8



RELEN
2010/10



RELEN
2011/5

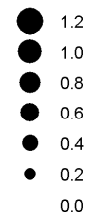
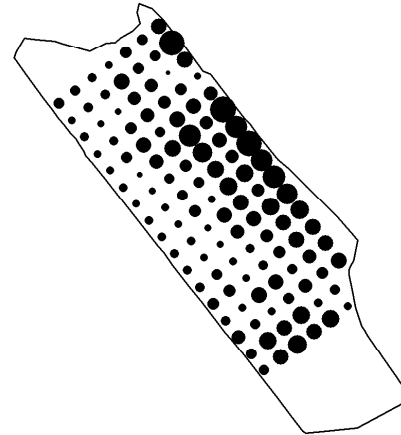
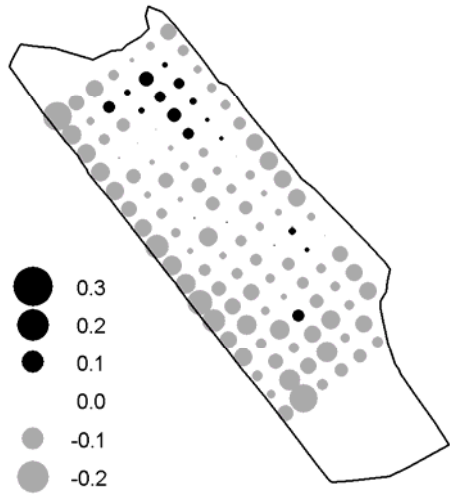
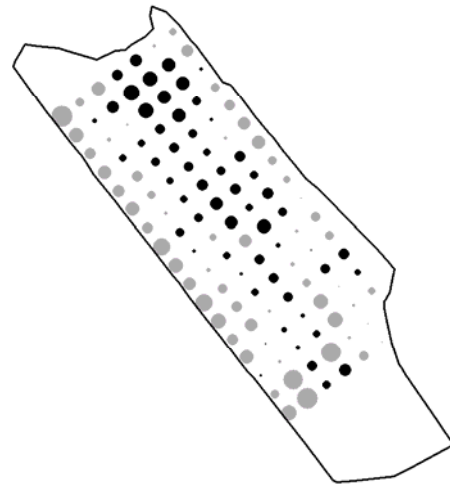


Figure S19

DHEIGHT
2008/9



DHEIGHT
2009/5



DHEIGHT
2010/4

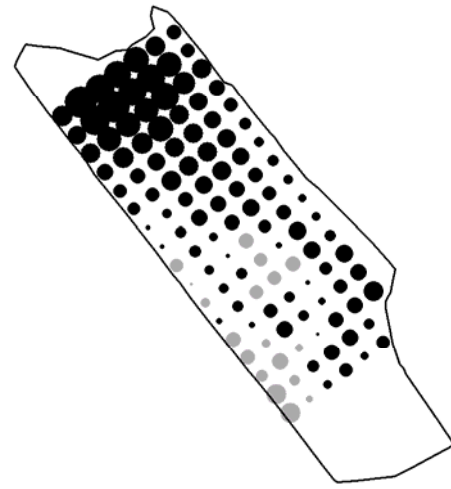


Figure S20

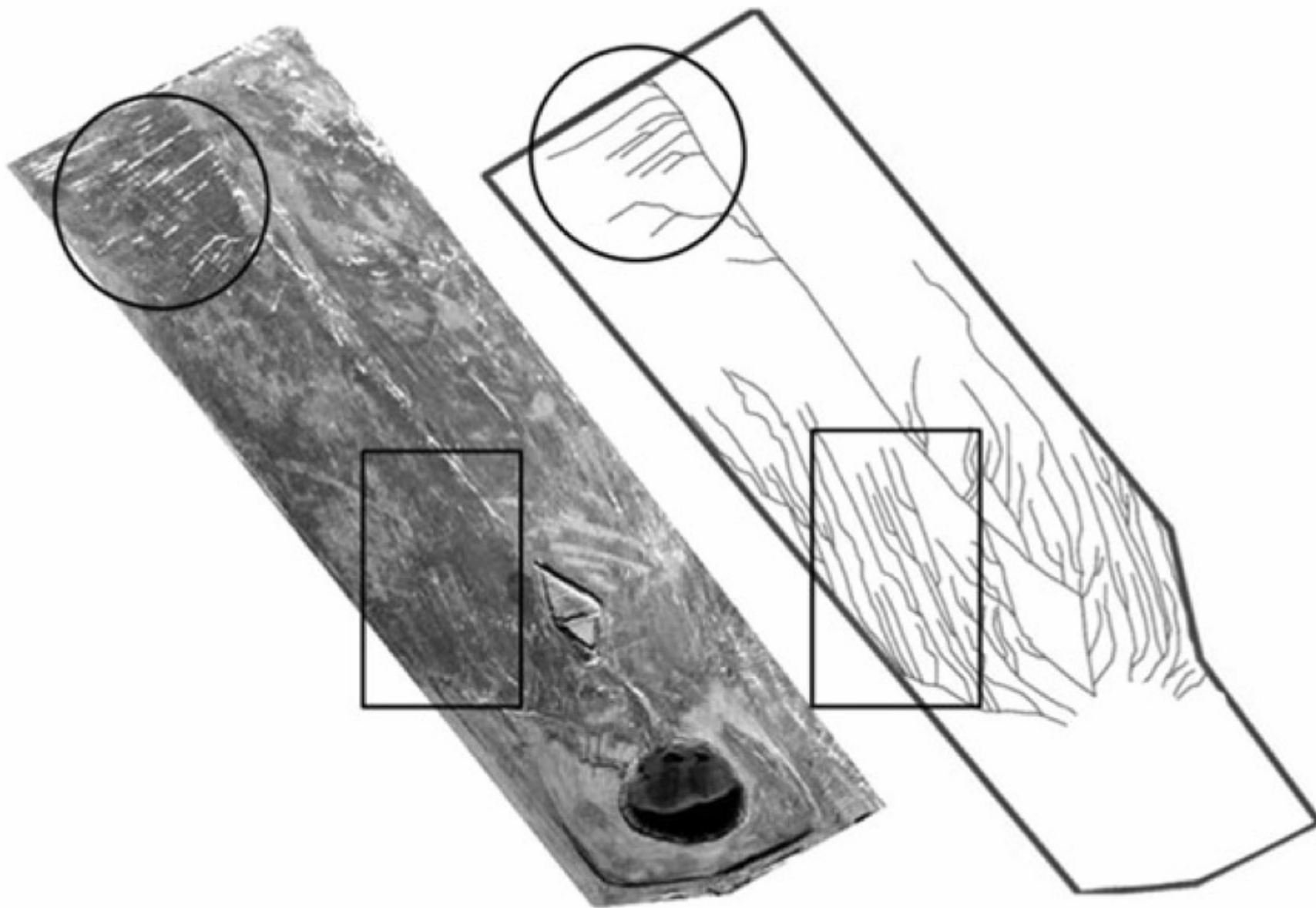


Figure S21

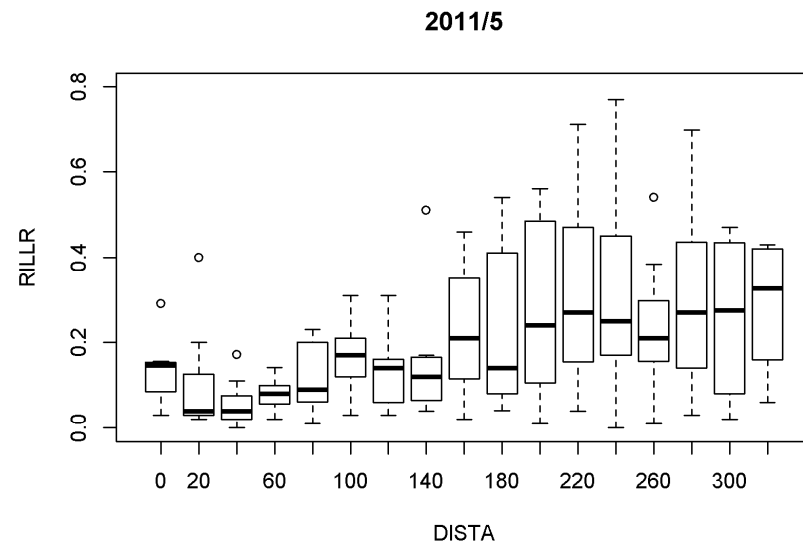
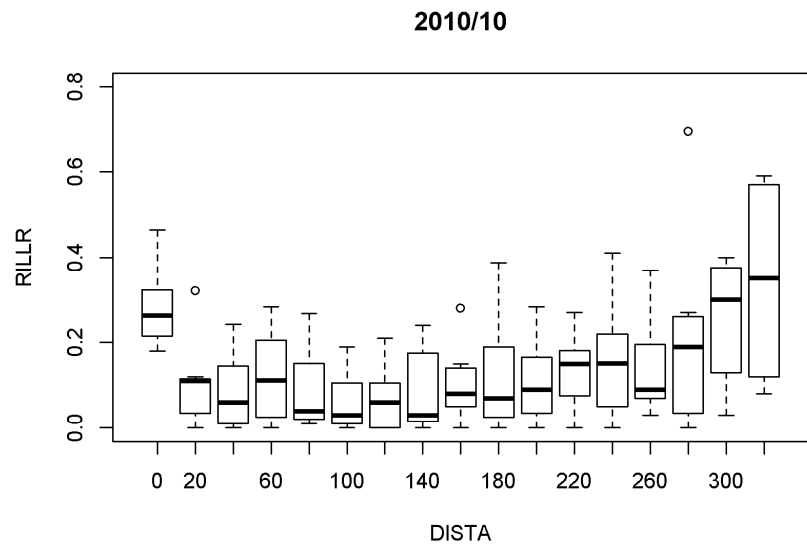
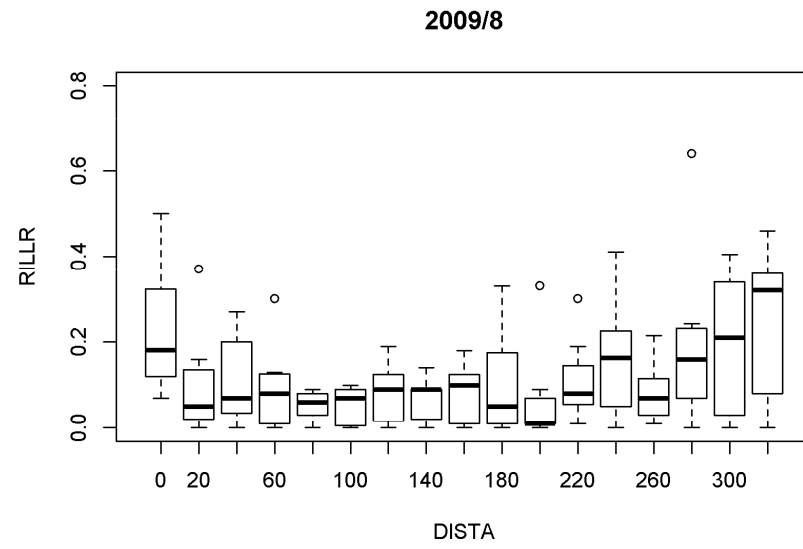
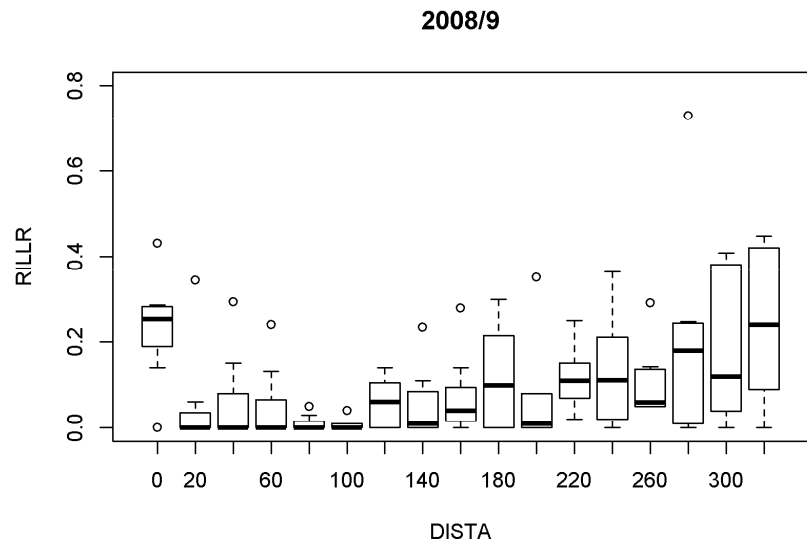


Figure S22

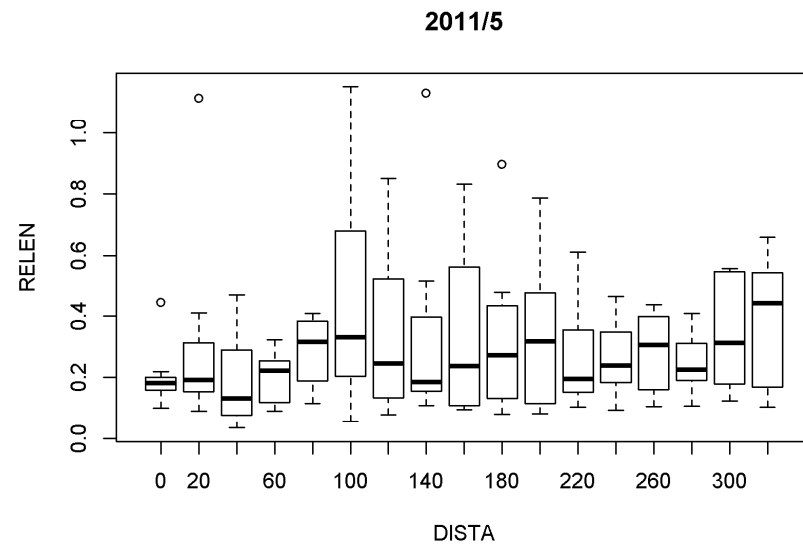
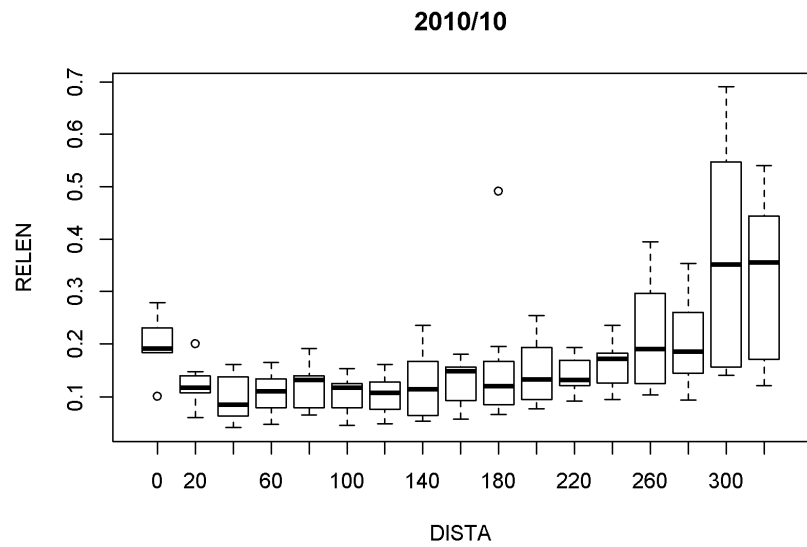
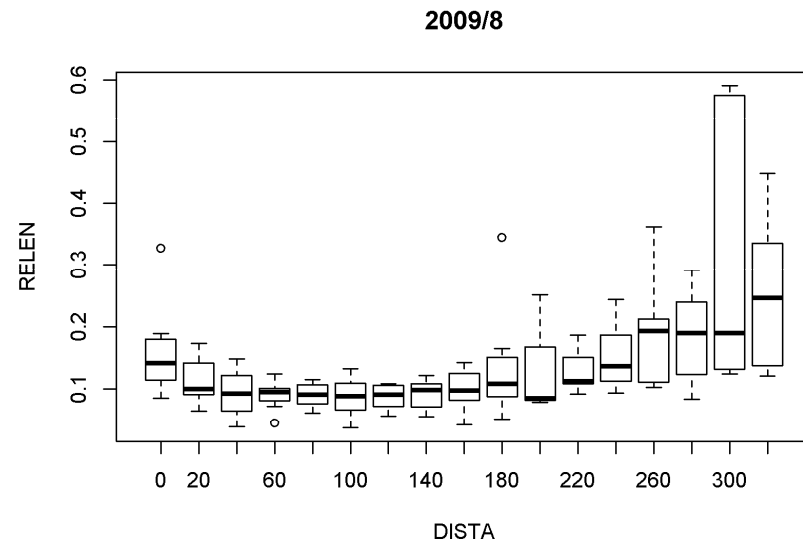
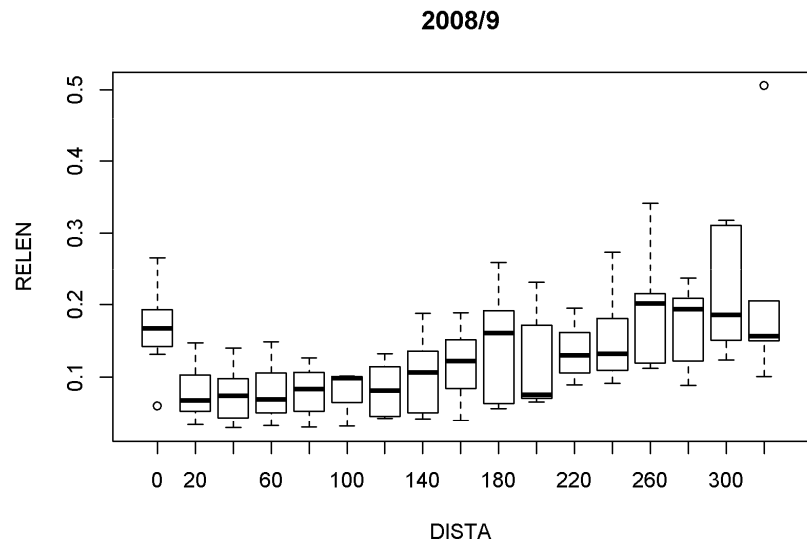


Figure S23