**Supplementary material 1. Model ANOVA results.**

**Analysis of Deviance Tables by response variable**

**Anova test in *car* package, Type II Wald F tests with Kenward-Roger df**

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**Response: Difference in aggregate stability from continuous corn**

 F Df Df.res Pr(>F)

Year 9.400 1 178.332 0.002507 \*\*

TRTName 67.072 5 32.060 4.986e-16 \*\*\*

Block 0.862 3 14.302 0.483177

Year:TRTName 34.294 4 183.624 < 2.2e-16 \*\*\*

**Response: Aggregate stability**

 F Df Df.res Pr(>F)

Year 53.1756 1 179.192 9.454e-12 \*\*\*

TRTName 52.2575 5 20.890 4.204e-11 \*\*\*

Block 0.8548 3 12.725 0.4892

Year:TRTName 10.2262 4 184.844 1.679e-07 \*\*\*

**Response: Difference in soil organic matter content from continuous corn**

 F Df Df.res Pr(>F)

Year 4.412 1 178.265 0.0370946 \*

TRTName 21.099 5 32.944 2.059e-09 \*\*\*

Block 13.451 3 14.403 0.0001858 \*\*\*

Year:TRTName 9.453 4 183.528 5.707e-07 \*\*\*

**Response: Soil organic matter content**

 F Df Df.res Pr(>F)

Year 146.4190 1 178.952 < 2.2e-16 \*\*\*

TRTName 16.5974 5 23.441 4.973e-07 \*\*\*

Block 14.2730 3 13.144 0.0001997 \*\*\*

Year:TRTName 3.9214 4 184.452 0.0044288 \*\*

**Analysis of Deviance Tables by response variable**

**Anova test in *car* package, Type II Wald F tests with Kenward-Roger df**

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**Response: Difference in available water capacity from continuous corn**

 F Df Df.res Pr(>F)

Year 0.2423 1 178.928 0.6232

TRTName 1.0188 5 25.679 0.4272

Block 0.0053 1 14.664 0.9428

Year:TRTName 0.7388 4 184.876 0.5666

**Response: Available water capacity**

 F Df Df.res Pr(>F)

Year 83.6467 1 179.186 <2e-16 \*\*\*

TRTName 1.1471 5 23.459 0.3640

Block 0.0001 1 14.400 0.9917

Year:TRTName 0.3270 4 185.299 0.8596

**Response: Difference in corn yield at 35% dry matter from continuous corn**

 F Df Df.res Pr(>F)

Year 0.0531 1 120.944 0.8181

TRTName 1.5234 5 25.894 0.2171

Block 0.5919 3 11.472 0.6326

Year:TRTName 0.6870 4 124.082 0.6023

**Response: Corn yield at 35% dry matter**

 F Df Df.res Pr(>F)

Year 4.5371 1 122.248 0.03517 \*

TRTName 1.5695 5 20.327 0.21336

Block 0.6273 3 9.701 0.61413

Year:TRTName 0.5570 4 124.789 0.69426

**Analysis of Deviance Tables by response variable**

**Anova test in *car* package, Type II Wald F tests with Kenward-Roger df**

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**Response: Difference in surface hardness from continuous corn**

 F Df Df.res Pr(>F)

Year 180.7597 1 179.258 < 2e-16 \*\*\*

TRTName 3.5701 5 20.376 0.01771 \*

Block 0.8106 3 12.634 0.51097

Year:TRTName 1.8354 4 184.976 0.12382

**Response: Surface hardness**

 F Df Df.res Pr(>F)

Year 35.2951 1 179.258 1.442e-08 \*\*\*

TRTName 8.1775 5 20.376 0.0002281 \*\*\*

Block 1.9471 3 12.634 0.1733078

Year:TRTName 4.5187 4 184.976 0.0016618 \*\*

**Response: Difference in subsurface hardness from continuous corn**

 F Df Df.res Pr(>F)

Year 0.2834 1 179.258 0.59512

TRTName 3.2824 5 20.376 0.02475 \*

Block 5.3444 3 12.634 0.01334 \*

Year:TRTName 1.8047 4 184.976 0.12970

**Response: Subsurface hardness**

 F Df Df.res Pr(>F)

Year 115.0694 1 179.258 <2e-16 \*\*\*

TRTName 0.9726 5 20.376 0.4578

Block 1.4710 3 12.634 0.2695

Year:TRTName 0.5225 4 184.976 0.7193

**Response: Difference in active carbon from continuous corn**

 F Df Df.res Pr(>F)

Year 0.8927 1 178.688 0.346035

TRTName 4.1307 5 27.133 0.006431 \*\*

Block 5.4912 3 13.683 0.010837 \*

Year:TRTName 4.1476 4 184.107 0.003059 \*\*

**Analysis of Deviance Tables by response variable**

**Anova test in *car* package, Type II Wald F tests with Kenward-Roger df**

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**Response: Active carbon**

 F Df Df.res Pr(>F)

Year 19.8426 1 179.208 1.477e-05 \*\*\*

TRTName 3.3093 5 20.756 0.02356 \*

Block 5.7199 3 12.701 0.01049 \*

Year:TRTName 1.5583 4 184.876 0.18727

**Response: Difference in respiration from continuous corn**

 F Df Df.res Pr(>F)

Year 0.3528 1 139.107 0.5535

TRTName 57.4198 5 23.438 2.227e-12 \*\*\*

Block 1.9734 3 13.126 0.1674

Year:TRTName 6.8607 4 145.112 4.368e-05 \*\*\*

**Response: Respiration**

 F Df Df.res Pr(>F)

Year 7.0504 1 139.380 0.0088478 \*\*

TRTName 56.5554 5 21.211 1.517e-11 \*\*\*

Block 2.0640 3 12.752 0.1555502

Year:TRTName 4.9024 4 145.661 0.0009755 \*\*\*

**Response: Difference in dry matter yield from continuous corn**

 F Df Df.res Pr(>F)

Year 2.9594 1 179.258 0.087103 .

TRTName 15.8679 5 20.376 2.012e-06 \*\*\*

Block 0.4774 3 12.634 0.703607

Year:TRTName 4.7762 4 184.976 0.001089 \*\*

**Response: Dry matter yield**

 F Df Df.res Pr(>F)

Year 2.1980 1 179.258 0.13995

TRTName 9.3123 5 20.376 9.767e-05 \*\*\*

Block 0.2786 3 12.634 0.83983

Year:TRTName 2.8143 4 184.976 0.02672 \*

**Analysis of Deviance Tables by response variable**

**Anova test in *car* package, Type II Wald F tests with Kenward-Roger df**

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**Response: CP\_diff**

 F Df Df.res Pr(>F)

Year 0.4803 1 139.380 0.4894

TRTName 42.2924 5 21.211 2.504e-10 \*\*\*

Block 0.4738 3 12.752 0.7059

Year:TRTName 21.9376 4 145.661 3.458e-14 \*\*\*

**Response: CPSU**

 F Df Df.res Pr(>F)

Year 20.2612 1 139.380 1.414e-05 \*\*\*

TRTName 38.9807 5 21.211 5.421e-10 \*\*\*

Block 0.4431 3 12.752 0.7263

Year:TRTName 19.6922 4 145.661 5.640e-13 \*\*\*

**Response: NDF\_diff**

 F Df Df.res Pr(>F)

Year 0.9348 1 139.380 0.3353

TRTName 20.8830 5 21.211 1.531e-07 \*\*\*

Block 0.0275 3 12.752 0.9935

Year:TRTName 6.3879 4 145.661 9.168e-05 \*\*\*

**Response: NDFSU**

 F Df Df.res Pr(>F)

Year 12.2131 1 139.380 0.0006366 \*\*\*

TRTName 21.8704 5 21.211 1.028e-07 \*\*\*

Block 0.0025 3 12.752 0.9998216

Year:TRTName 6.6246 4 145.661 6.311e-05 \*\*\*

**Response: NDF30\_diff**

 F Df Df.res Pr(>F)

Year 0.1570 1 139.380 0.6925

TRTName 1.3306 5 21.211 0.2894

Block 0.0062 3 12.752 0.9993

Year:TRTName 0.3096 4 145.661 0.8712

**Analysis of Deviance Tables by response variable**

**Anova test in *car* package, Type II Wald F tests with Kenward-Roger df**

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**Response: NDFD30SU**

 F Df Df.res Pr(>F)

Year 1.5259 1 139.380 0.2188

TRTName 1.4137 5 21.211 0.2596

Block 0.0143 3 12.752 0.9975

Year:TRTName 0.1709 4 145.661 0.9529