|  |  |  |
| --- | --- | --- |
| **Genotype** | **Panel** | **Collection** |
| ACADUR | UNIBO | Bologna University |
| ANTALIS | CREA | CREA |
| ANVERGUR | GPDUR | Bologna University |
| ARDENTE | UNIBO | Bologna University |
| ASTERIX | CREA | CREA |
| AVENTUR | GPDUR | Arvalis |
| AZEGHAR-2\_DP128 | UNIBO | Bologna University |
| BALSAMO | CREA | CREA |
| BOLIDO-DP034 | UNIBO | Bologna University |
| CASANOVA | CREA | CREA |
| CHAM-1\_DP136 | UNIBO | Bologna University |
| COLOSSEO\_DP087 | UNIBO | Bologna University |
| EL4X\_120 | EPO | INRAE Montpellier |
| EL4X\_194 | EPO | INRAE Montpellier |
| EL4X\_316 | EPO | INRAE Montpellier |
| EL4X\_35 | EPO | INRAE Montpellier |
| EL4X\_428 | EPO | INRAE Montpellier |
| EL4X\_464 | EPO | INRAE Montpellier |
| FURIO\_CAMILLO | CREA | CREA |
| GIUSTO | CREA | CREA |
| KOFA | UNIBO | Bologna University |
| L2574 | CREA | CREA |
| LAHAN | GPDUR | Arvalis |
| LGBORIS | GPDUR | Arvalis |
| LLOYD | UNIBO | Bologna University |
| MIKI-1\_DP161 | UNIBO | Bologna University |
| MONASTIR | GPDUR | Arvalis |
| MURANO | GPDUR | Arvalis |
| NEMESIS | GPDUR | Arvalis |
| NOBILIS | GPDUR | Arvalis |
| ORJAUNE | GPDUR | Arvalis |
| PLUSSUR | GPDUR | Arvalis |
| QUALIDOU | GPDUR | Arvalis |
| RAMIREZ | CREA | CREA |
| Selcuklu-97 | CREA | CREA |
| SVEVO | CREA | CREA |

**Supplementary Table 1: Variety information.**

**Supplementary Table 2: List of the 54 binary mixtures.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Genotype 1** | **Genotype 2** |  | **Genotype 1** | **Genotype 2** |
| ACADUR | ANVERGUR |  | LAHAN | BOLIDO-DP034 |
| ACADUR | ARDENTE |  | LAHAN | EL4X\_120 |
| ASTERIX | EL4X\_35 |  | LAHAN | EL4X\_464 |
| ASTERIX | MIKI-1\_DP161 |  | LGBORIS | EL4X\_35 |
| ASTERIX | NEMESIS |  | LGBORIS | NEMESIS |
| AVENTUR | EL4X\_194 |  | LLOYD | ANVERGUR |
| AVENTUR | ORJAUNE |  | LLOYD | EL4X\_464 |
| AZEGHAR-2\_DP128 | KOFA |  | MIKI-1\_DP161 | EL4X\_464 |
| AZEGHAR-2\_DP128 | NEMESIS |  | MONASTIR | BALSAMO |
| BALSAMO | ARDENTE |  | MONASTIR | CHAM-1\_DP136 |
| BALSAMO | AVENTUR |  | MONASTIR | EL4X\_35 |
| BOLIDO-DP034 | EL4X\_194 |  | MURANO | ANTALIS |
| COLOSSEO\_DP087 | AZEGHAR-2\_DP128 |  | MURANO | QUALIDOU |
| COLOSSEO\_DP087 | KOFA |  | MURANO | SVEVO |
| COLOSSEO\_DP087 | QUALIDOU |  | NOBILIS | EL4X\_316 |
| EL4X\_120 | CHAM-1\_DP136 |  | NOBILIS | EL4X\_428 |
| EL4X\_120 | SELCUKLU-97 |  | NOBILIS | LLOYD |
| EL4X\_316 | ORJAUNE |  | ORJAUNE | KOFA |
| FURIO\_CAMILLO | ACADUR |  | PLUSSUR | CHAM-1\_DP136 |
| FURIO\_CAMILLO | EL4X\_428 |  | PLUSSUR | MIKI-1\_DP161 |
| FURIO\_CAMILLO | PLUSSUR |  | RAMIREZ | ANTALIS |
| GIUSTO | ANTALIS |  | RAMIREZ | CASANOVA |
| GIUSTO | BOLIDO-DP034 |  | RAMIREZ | LGBORIS |
| GIUSTO | CASANOVA |  | SELCUKLU-97 | ANVERGUR |
| L2574 | CASANOVA |  | SELCUKLU-97 | EL4X\_194 |
| L2574 | EL4X\_316 |  | SVEVO | ARDENTE |
| L2574 | QUALIDOU |  | SVEVO | EL4X\_428 |

**Supplementary Table 3: Description of the nutrient solution.**

|  |  |  |  |
| --- | --- | --- | --- |
| Macronutrients | | | |
| **molecule** | **molar mass** | **concentration Mm/L** | **concentration g/L** |
| K2HPO4 | 174,18 | 1 | 0,17418 |
| KNO3 | 101,1 | 5 | 0,5055 |
| Ca(NO3)2+4H2O | 236,15 | 2,5 | 0,590375 |
| MgSO4+7H2O | 246 | 2 | 0,492 |
| CaCl2 +2H2O | 147,01 | 2 | 0,29402 |
| Micronutrients | | | |
| **molecule** | **molar mass** | **concentration µM/L** | **concentration mg/L** |
| H3Bo3 | 61,83 | 10 | 0,6183 |
| MnCl2+4H2O | 197,91 | 4,5 | 0,890595 |
| ZnCl2 | 138 | 0,7 | 0,0966 |
| Mo(Na)2 O4 | 241,95 | 0,2 | 0,04839 |
| CuCl2+2H2O | 170,48 | 0,4 | 0,068192 |
| Fe EDTA | 367 | 56 | 20,552 |

**Supplementary Table 4: Analysis of Variance (ANOVA) of biomass components and traits in pure stands.** Pure stand data was summed per Rhizotube® (except leaf N which was averaged per Rhizotube®). We used Type III analysis of Variance using the Kenward-Roger’s method on mixed models where the identity of the variety was used as a random effect on both the intercept and the slope of the treatment effect (R+ vs R- treatment). For each fixed effects, we report the sum of squares (“Sum Sq”), the mean squares (“Mean Sq”), the numerator degrees of freedom (“NumDF”), the denominator degrees of freedom (“DenDF”), the value of the *F* statistic (“F value”), and the *p*-value (“Pr(>F)”).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **# leaves on the main stem** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Sampling\_date | 339,49 | 339,49 | 1,00 | 195,21 | 47,15 | < 0,001 |
| Block | 14,50 | 7,25 | 2,00 | 141,13 | 1,01 | 0,3680 |
| Treatment | 318,11 | 318,11 | 1,00 | 35,21 | 44,18 | < 0,001 |
|  |  |  |  |  |  |  |
| **# tillers** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Sampling\_date | 85,99 | 85,99 | 1,00 | 186,25 | 13,34 | 0,0003 |
| Block | 11,65 | 5,82 | 2,00 | 141,12 | 0,90 | 0,4073 |
| Treatment | 1930,77 | 1930,77 | 1,00 | 35,22 | 299,63 | < 0,001 |
|  |  |  |  |  |  |  |
| **Leaf N (%)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Sampling\_date | 0,00 | 0,00 | 1,00 | 173,63 | 0,08 | 0,7790 |
| Block | 0,67 | 0,33 | 2,00 | 129,90 | 17,33 | < 0,001 |
| Treatment | 3,60 | 3,60 | 1,00 | 35,18 | 187,43 | < 0,001 |
|  |  |  |  |  |  |  |
| **Shoot biomass (mg)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Sampling\_date | 2435423,50 | 2435423,50 | 1,00 | 195,00 | 41,09 | < 0,001 |
| Block | 93148,74 | 46574,37 | 2,00 | 141,13 | 0,79 | 0,4577 |
| Treatment | 10295313,57 | 10295313,57 | 1,00 | 35,20 | 173,71 | < 0,001 |
|  |  |  |  |  |  |  |
| **Root biomass (mg)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Sampling\_date | 583869,24 | 583869,24 | 1,00 | 197,39 | 25,65 | < 0,001 |
| Block | 232598,28 | 116299,14 | 2,00 | 141,15 | 5,11 | 0,0072 |
| Treatment | 880216,28 | 880216,28 | 1,00 | 35,23 | 38,67 | < 0,001 |
|  |  |  |  |  |  |  |
| **Total biomass (mg)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Sampling\_date | 5495123,01 | 5495123,01 | 1,00 | 195,91 | 38,44 | < 0,001 |
| Block | 562901,40 | 281450,70 | 2,00 | 141,14 | 1,97 | 0,1434 |
| Treatment | 6245857,09 | 6245857,09 | 1,00 | 35,22 | 43,69 | < 0,001 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Root:Shoot ratio** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Sampling\_date | 0,01 | 0,01 | 1,00 | 191,46 | 2,65 | 0,1049 |
| Block | 0,08 | 0,04 | 2,00 | 141,15 | 11,25 | < 0,001 |
| Treatment | 5,93 | 5,93 | 1,00 | 35,22 | 1629,48 | < 0,001 |
|  |  |  |  |  |  |  |
| **Root length (mm)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Block | 318426545,36 | 159213272,68 | 2,00 | 139,52 | 3,96 | 0,0213 |
| Treatment | 555238364,10 | 555238364,10 | 1,00 | 34,94 | 13,81 | 0,0007 |
|  |  |  |  |  |  |  |
| **Root projected area (mm²)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Block | 170499632,38 | 85249816,19 | 2,00 | 142,00 | 2,29 | 0,1047 |
| Treatment | 229762346,26 | 229762346,26 | 1,00 | 35,00 | 6,18 | 0,0179 |

**Supplementary Table 4 continued**

**Supplementary Table 5: Analysis of Variance (ANOVA) of RYTs.** Type III analysis of Variance using the Kenward-Roger’s method on mixed models where the identity of the genotypic pair (concatenation of the identity of the two genotypes in a RhizoTube®) was used as a random effect on the intercept. We report the fixed effect of the treatment with the sum of squares (“Sum Sq”), the mean squares (“Mean Sq”), the numerator degrees of freedom (“NumDF”), the denominator degrees of freedom (“DenDF”), the value of the *F* statistic (“F value”), and the *p*-value (“Pr(>F)”).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RYT Shoot biomass (mg)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 0,08 | 0,08 | 1,00 | 53,00 | 26,23 | < 0,001 |
|  |  |  |  |  |  |  |
| **RYT Root biomass (mg)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 0,07 | 0,07 | 1,00 | 53,00 | 32,56 | < 0,001 |
|  |  |  |  |  |  |  |
| **RYT Total biomass (mg)** | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 0,09 | 0,09 | 1,00 | 53,00 | 34,87 | < 0,001 |

**Supplementary Table 6: Analysis of Variance (ANOVA) of complementarity and selection effects (CE and SE, respectively).** Type III analysis of Variance using the Kenward-Roger’s method on mixed models where the identity of the genotypic pair (concatenation of the identity of the two genotypes in a RhizoTube®) was used as a random effect on the intercept. We report the fixed effect of the treatment with the sum of squares (“Sum Sq”), the mean squares (“Mean Sq”), the numerator degrees of freedom (“NumDF”), the denominator degrees of freedom (“DenDF”), the value of the *F* statistic (“F value”), and the *p*-value (“Pr(>F)”).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CE Shoot biomass (mg)** | | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 66878,00 | 66878,00 | 1,00 | 53,00 | 15,32 | < 0,001 |
|  |  |  |  |  |  |  |
| **CE Root biomass (mg)** | | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 38347,00 | 38347,00 | 1,00 | 53,00 | 45,77 | < 0,001 |
|  |  |  |  |  |  |  |
| **CE Total biomass (mg)** | | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 210974,00 | 210974,00 | 1,00 | 53,00 | 25,11 | < 0,001 |
|  |  |  |  |  |  |  |
| **SE Shoot biomass (mg)** | | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 2148,20 | 2148,20 | 1,00 | 53,00 | 21,00 | < 0,001 |
|  |  |  |  |  |  |  |
| **SE Root biomass (mg)** | | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 4,93 | 4,93 | 1,00 | 53,00 | 0,92 | 0,3406 |
|  |  |  |  |  |  |  |
| **SE Total biomass (mg)** | | | | | | | |
|  | Sum Sq | Mean Sq | NumDF | DenDF | F value | Pr(>F) |
| Treatment | 1488,10 | 1488,10 | 1,00 | 53,00 | 14,62 | < 0,001 |

**Supplementary Table 7: Ten best fitting models between RYT on aboveground, belowground, and total biomass and mixture trait composition.** The top-ten models are ranked according to their AICc. ∆AICc, model weights (“weight”), and adjusted R-squared (“R2\_adj”) are reported . The “avg” and “diff” suffixes refer to trait averages and trait differences, respectively.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Shoot biomass RYT - R+** | | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_diff | Root\_proj\_area\_avg | Root\_length\_avg | #\_leaves\_avg | Root\_length\_diff | leaf\_N\_avg | #\_tillers\_avg |  |
| 0,00 | 0,15 | 0,05 | -0,26 | -0,31 | NA | NA | NA | NA | NA |  |
| 0,30 | 0,13 | 0,05 | -0,27 | NA | -0,31 | NA | NA | NA | NA |  |
| 0,54 | 0,12 | 0,00 | NA | NA | NA | NA | NA | NA | NA |  |
| 0,80 | 0,10 | 0,02 | NA | -0,19 | NA | NA | NA | NA | NA |  |
| 1,02 | 0,09 | 0,06 | -0,32 | -0,29 | NA | -0,17 | NA | NA | NA |  |
| 1,03 | 0,09 | 0,06 | -0,34 | NA | -0,29 | -0,19 | NA | NA | NA |  |
| 1,15 | 0,08 | 0,03 | NA | -0,27 | NA | NA | -0,20 | NA | NA |  |
| 1,17 | 0,08 | 0,01 | NA | NA | -0,17 | NA | NA | NA | NA |  |
| 1,37 | 0,08 | 0,05 | -0,28 | -0,34 | NA | NA | NA | -0,14 | NA |  |
| 1,40 | 0,08 | 0,05 | -0,31 | -0,28 | NA | NA | NA | NA | -0,15 |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **Shoot biomass RYT - R-** | | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_avg | Root\_length\_avg | #\_leaves\_diff | #\_leaves\_avg | Root\_proj\_area\_diff | Root\_length\_diff | #\_tillers\_avg | leaf\_N\_diff |
| 0,00 | 0,14 | 0,58 | -1,18 | 0,61 | NA | -0,22 | NA | NA | NA | NA |
| 0,13 | 0,14 | 0,59 | -1,44 | 0,89 | -0,22 | NA | 0,23 | NA | NA | NA |
| 0,40 | 0,12 | 0,59 | -1,38 | 0,82 | -0,22 | NA | NA | 0,22 | NA | NA |
| 0,72 | 0,10 | 0,60 | -1,29 | 0,79 | -0,19 | -0,15 | 0,19 | NA | NA | NA |
| 0,96 | 0,09 | 0,60 | -1,24 | 0,74 | -0,18 | -0,15 | NA | 0,18 | NA | NA |
| 0,99 | 0,09 | 0,58 | -1,17 | 0,60 | -0,11 | -0,20 | NA | NA | NA | NA |
| 0,99 | 0,09 | 0,60 | -1,23 | 0,72 | -0,22 | NA | NA | 0,21 | -0,14 | NA |
| 1,00 | 0,09 | 0,60 | -1,29 | 0,79 | -0,22 | NA | 0,22 | NA | -0,13 | NA |
| 1,17 | 0,08 | 0,58 | -1,25 | 0,71 | NA | -0,23 | NA | NA | NA | 0,11 |
| 1,62 | 0,06 | 0,59 | -1,26 | 0,73 | -0,13 | -0,21 | NA | NA | NA | 0,13 |

**Supplementary Table 7 continued**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Root biomass RYT - R+** | | | | | | | | | | |
| ∆AICC | weight | R2\_adj | #\_leaves\_avg | Root\_proj\_area\_avg | Root\_proj\_area\_diff | leaf\_N\_avg | leaf\_N\_diff | Root\_length\_diff | #\_tillers\_avg | Root\_length\_avg |
| 0,00 | 0,18 | 0,35 | -0,33 | -0,56 | -0,24 | -0,23 | NA | NA | NA | NA |
| 0,99 | 0,11 | 0,34 | -0,32 | -0,53 | NA | -0,22 | NA | -0,20 | NA | NA |
| 1,01 | 0,11 | 0,32 | -0,25 | -0,47 | NA | -0,21 | NA | NA | NA | NA |
| 1,04 | 0,11 | 0,34 | -0,28 | -0,53 | -0,25 | NA | -0,21 | NA | NA | NA |
| 1,19 | 0,10 | 0,36 | -0,30 | -0,56 | -0,26 | -0,18 | -0,14 | NA | NA | NA |
| 1,54 | 0,09 | 0,33 | -0,31 | NA | -0,28 | NA | -0,23 | NA | NA | -0,54 |
| 1,56 | 0,08 | 0,33 | -0,28 | -0,51 | NA | NA | -0,20 | -0,22 | NA | NA |
| 1,81 | 0,07 | 0,35 | -0,25 | -0,55 | -0,26 | -0,24 | NA | NA | -0,13 | NA |
| 1,97 | 0,07 | 0,33 | NA | -0,52 | -0,23 | NA | -0,24 | NA | -0,26 | NA |
| 1,99 | 0,07 | 0,31 | -0,32 | -0,51 | -0,21 | NA | NA | NA | NA | NA |
|  |  |  |  |  |  |  |  |  |  |  |
| **Root biomass RYT - R-** | | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_avg | #\_tillers\_avg | Root\_length\_avg | #\_leaves\_diff | Root\_length\_diff | Root\_proj\_area\_diff | #\_tillers\_dist | #\_leaves\_avg |
| 0,00 | 0,19 | 0,25 | -0,52 | NA | NA | NA | NA | NA | NA | NA |
| 0,53 | 0,15 | 0,26 | -0,44 | -0,17 | NA | NA | NA | NA | NA | NA |
| 0,89 | 0,12 | 0,26 | -0,94 | NA | 0,44 | NA | NA | NA | NA | NA |
| 1,37 | 0,10 | 0,25 | -0,50 | NA | NA | -0,12 | NA | NA | NA | NA |
| 1,76 | 0,08 | 0,26 | -0,41 | -0,18 | NA | -0,13 | NA | NA | NA | NA |
| 1,87 | 0,08 | 0,24 | -0,55 | NA | NA | NA | -0,09 | NA | NA | NA |
| 1,91 | 0,07 | 0,24 | -0,55 | NA | NA | NA | NA | -0,08 | NA | NA |
| 1,96 | 0,07 | 0,24 | -0,54 | NA | NA | NA | NA | NA | 0,08 | NA |
| 2,03 | 0,07 | 0,24 | -0,47 | NA | NA | NA | NA | NA | NA | -0,08 |
| 2,09 | 0,07 | 0,26 | -0,78 | -0,15 | 0,35 | NA | NA | NA | NA | NA |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Total biomass RYT - R+** | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_diff | Root\_proj\_area\_avg | #\_leaves\_avg | Root\_length\_avg | leaf\_N\_avg | #\_tillers\_avg | Root\_length\_diff |
| 0,00 | 0,13 | 0,12 | -0,30 | -0,36 | -0,23 | NA | NA | NA | NA |
| 0,24 | 0,12 | 0,11 | -0,32 | NA | -0,25 | -0,36 | NA | NA | NA |
| 0,28 | 0,12 | 0,09 | -0,22 | -0,39 | NA | NA | NA | NA | NA |
| 0,28 | 0,12 | 0,07 | NA | -0,29 | NA | NA | NA | NA | NA |
| 0,32 | 0,11 | 0,14 | -0,33 | -0,40 | -0,24 | NA | -0,19 | NA | NA |
| 0,85 | 0,09 | 0,10 | -0,24 | -0,43 | NA | NA | -0,18 | NA | NA |
| 0,97 | 0,08 | 0,10 | -0,28 | -0,36 | NA | NA | NA | -0,19 | NA |
| 1,02 | 0,08 | 0,08 | -0,23 | NA | NA | -0,38 | NA | NA | NA |
| 1,08 | 0,08 | 0,05 | NA | NA | NA | -0,27 | NA | NA | NA |
| 1,09 | 0,08 | 0,10 | NA | -0,33 | -0,22 | NA | NA | NA | -0,26 |
|  |  |  |  |  |  |  |  |  |  |
| **Total biomass RYT – R-** | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_avg | Root\_length\_avg | #\_tillers\_avg | #\_leaves\_diff | #\_leaves\_avg | Root\_proj\_area\_diff |  |
| 0,00 | 0,17 | 0,49 | -1,28 | 0,63 | NA | NA | NA | NA |  |
| 0,51 | 0,13 | 0,50 | -1,12 | 0,53 | -0,15 | NA | NA | NA |  |
| 0,61 | 0,12 | 0,50 | -1,14 | 0,57 | NA | NA | -0,16 | NA |  |
| 0,98 | 0,10 | 0,48 | -0,60 | NA | -0,19 | NA | NA | NA |  |
| 1,01 | 0,10 | 0,49 | -1,25 | 0,61 | NA | -0,11 | NA | NA |  |
| 1,28 | 0,09 | 0,51 | -1,08 | 0,51 | -0,16 | -0,13 | NA | NA |  |
| 1,52 | 0,08 | 0,49 | -0,57 | NA | -0,20 | -0,13 | NA | NA |  |
| 1,64 | 0,07 | 0,48 | -0,58 | NA | NA | NA | -0,18 | NA |  |
| 1,70 | 0,07 | 0,50 | -1,32 | 0,76 | NA | -0,18 | NA | 0,16 |  |
| 1,76 | 0,07 | 0,46 | -0,69 | NA | NA | NA | NA | NA |  |

**Supplementary Table 7 continued**

**Supplementary Table 8: Ten best fitting models between CE and SE computed on total biomass and mixture trait composition.** The top-ten models are ranked according to their AICc. ∆AICc, model weights (“weight”), and adjusted R-squared (“R2\_adj”) are reported. The “avg” and “diff” suffixes refer to trait averages and trait differences, respectively.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CE - R+** | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_avg | Root\_proj\_area\_dist | Root\_length\_avg | #\_leaves\_avg | leaf\_N\_avg | #\_tillers\_avg | leaf\_N\_diff |
| 0,00 | 0,13 | 0,15 | -0,43 | -0,34 | NA | -0,23 | -0,21 | NA | NA |
| 0,28 | 0,11 | 0,12 | -0,38 | -0,31 | NA | -0,22 | NA | NA | NA |
| 0,30 | 0,11 | 0,12 | NA | -0,34 | -0,39 | -0,24 | NA | NA | NA |
| 0,34 | 0,11 | 0,10 | -0,41 | -0,23 | NA | NA | NA | NA | NA |
| 0,35 | 0,11 | 0,12 | -0,45 | -0,26 | NA | NA | -0,20 | NA | NA |
| 0,66 | 0,09 | 0,07 | -0,30 | NA | NA | NA | NA | NA | NA |
| 0,85 | 0,09 | 0,14 | NA | -0,36 | -0,41 | -0,25 | -0,17 | NA | NA |
| 0,86 | 0,09 | 0,09 | NA | -0,25 | -0,40 | NA | NA | NA | NA |
| 0,93 | 0,08 | 0,14 | -0,42 | -0,32 | NA | NA | -0,21 | -0,19 | NA |
| 1,13 | 0,07 | 0,11 | -0,42 | -0,27 | NA | NA | NA | NA | -0,17 |
|  |  |  |  |  |  |  |  |  |  |
| **CE – R-** | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_avg | Root\_length\_avg | #\_leaves\_diff | #\_tillers\_avg | #\_leaves\_avg | Root\_proj\_area\_dist |  |
| 0,00 | 0,15 | 0,55 | -1,28 | 0,58 | NA | NA | NA | NA |  |
| 0,25 | 0,13 | 0,56 | -1,25 | 0,57 | -0,13 | NA | NA | NA |  |
| 0,30 | 0,13 | 0,56 | -1,14 | 0,52 | NA | NA | -0,16 | NA |  |
| 0,89 | 0,10 | 0,57 | -1,10 | 0,48 | -0,14 | -0,14 | NA | NA |  |
| 0,92 | 0,09 | 0,55 | -1,15 | 0,50 | NA | -0,13 | NA | NA |  |
| 1,13 | 0,08 | 0,56 | -1,13 | 0,52 | -0,12 | NA | -0,14 | NA |  |
| 1,14 | 0,08 | 0,55 | -0,63 | NA | -0,15 | -0,18 | NA | NA |  |
| 1,21 | 0,08 | 0,54 | -0,63 | NA | NA | NA | -0,18 | NA |  |
| 1,23 | 0,08 | 0,56 | -1,31 | 0,70 | -0,19 | NA | NA | 0,14 |  |
| 1,41 | 0,07 | 0,54 | -0,66 | NA | NA | -0,17 | NA | NA |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SE - R+** | | | | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_length\_avg | Root\_proj\_area\_avg | #\_leaves\_avg | leaf\_N\_diff | #\_tillers\_avg | leaf\_N\_avg | Root\_proj\_area\_dist | Root\_length\_diff | #\_leaves\_diff | #\_tillers\_diff |
| 0,00 | 0,18 | 0,28 | 1,34 | -1,16 | 0,48 | -0,27 | -0,27 | NA | NA | NA | NA | NA |
| 0,45 | 0,14 | 0,25 | 1,39 | -1,25 | 0,31 | -0,26 | NA | NA | NA | NA | NA | NA |
| 0,79 | 0,12 | 0,29 | 1,15 | -0,95 | 0,49 | -0,34 | -0,27 | 0,18 | NA | NA | NA | NA |
| 1,29 | 0,09 | 0,26 | 1,20 | -1,04 | 0,32 | -0,33 | NA | 0,18 | NA | NA | NA | NA |
| 1,41 | 0,09 | 0,26 | 1,36 | -1,22 | 0,24 | -0,24 | NA | NA | NA | NA | NA | 0,16 |
| 1,48 | 0,08 | 0,26 | 1,44 | -1,30 | 0,28 | -0,24 | NA | NA | NA | NA | 0,15 | NA |
| 1,67 | 0,08 | 0,28 | 1,23 | -1,07 | 0,29 | -0,32 | NA | 0,21 | NA | NA | 0,18 | NA |
| 1,79 | 0,07 | 0,30 | 1,19 | -1,06 | 0,52 | -0,29 | -0,31 | NA | -0,73 | 0,71 | NA | NA |
| 1,81 | 0,07 | 0,28 | 1,32 | -1,15 | 0,40 | -0,26 | -0,24 | NA | NA | NA | NA | 0,12 |
| 1,88 | 0,07 | 0,28 | 1,38 | -1,21 | 0,44 | -0,26 | -0,24 | NA | NA | NA | 0,11 | NA |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| **SE - R-** | | | | | | | | | | | | |
| ∆AICC | weight | R2\_adj | Root\_proj\_area\_dist | Root\_length\_diff | leaf\_N\_diff | #\_leaves\_diff | #\_tillers\_avg | #\_leaves\_avg | leaf\_N\_avg | #\_tillers\_diff | Root\_length\_avg | Root\_proj\_area\_avg |
| 0,00 | 0,27 | 0,68 | -1,27 | 0,57 | -0,24 | 0,21 | NA | NA | NA | NA | NA | NA |
| 1,91 | 0,10 | 0,68 | -1,29 | 0,57 | -0,24 | 0,22 | -0,06 | NA | NA | NA | NA | NA |
| 1,96 | 0,10 | 0,68 | -1,24 | 0,51 | -0,24 | 0,21 | NA | NA | 0,07 | NA | NA | NA |
| 2,24 | 0,09 | 0,68 | -1,26 | 0,59 | -0,25 | 0,20 | NA | 0,05 | NA | NA | NA | NA |
| 2,29 | 0,09 | 0,69 | -1,28 | 0,63 | -0,27 | 0,17 | -0,16 | 0,17 | NA | NA | NA | NA |
| 2,57 | 0,08 | 0,68 | -1,28 | 0,57 | -0,23 | 0,23 | NA | NA | NA | -0,02 | NA | NA |
| 2,60 | 0,07 | 0,68 | -1,26 | 0,57 | -0,24 | 0,21 | NA | NA | NA | NA | 0,02 | NA |
| 2,62 | 0,07 | 0,68 | -1,27 | 0,58 | -0,24 | 0,21 | NA | NA | NA | NA | NA | 0,02 |
| 2,67 | 0,07 | 0,66 | -0,73 | NA | -0,26 | 0,23 | NA | NA | NA | NA | NA | NA |
| 3,25 | 0,05 | 0,66 | -0,76 | NA | -0,25 | 0,21 | NA | NA | 0,11 | NA | NA | NA |

**Supplementary Table 8 continued**