Supplementary Tables

**Supplementary Table S1**. Descriptive summary statistics (mean (SD)) of biodiversity and ecological functions.

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| --- | --- | --- | --- | --- | --- |
|   |   | **Cereal** | **Grassland** | **OilSeed Rape** | **Overall** |
|   |  | (n=60) | (n=55) | (n=30) | (n=145) |
|   | Weed Richness | 12.3 (9.75) | 21.5 (9.80) | 16.6 (4.26) | 16.6 (9.59) |
| Weed Abundance | 153 (176) | 308 (128) | 153 (83.1) | 778 (926) |
| Ground beetle Abundance | 26.3 (22.3) | 11.1 (19.1) | 27.3 (16.5) | 20.7 (21.2) |
| **Aboveground functions** | Weed Seed Predation Rate | 0.614 (0.207) | 0.822 (0.129) | 0.557 (0.219) | 0.681 (0.215) |
| Bee Richness | 6.55 (2.40) | 7.00 (3.19) | 6.60 (3.30) | 6.73 (2.90) |
| Aphid Predation Rate | 0.640 (0.201) | 0.725 (0.217) | 0.450 (0.183) | 0.633 (0.226) |
| OSR Fruiting Success | 0.590 (0.207) | 0.625 (0.261) | 0.557 (0.253) | 0.594 (0.236) |
| **Belowground functions** | Soil organic | 30.4 (6.60) | 38.2 (10.5) | 28.8 (6.45) | 33.1 (9.20) |
| β-Glucosidase | 32.1 (9.25) | 37.3 (11.4) | 32.2 (8.40) | 34.1 (10.2) |
| Arylamidase | 20.8 (6.90) | 26.9 (8.02) | 22.2 (14.3) | 23.4 (9.64) |
| Arylsulfatase | 9.38 (2.60) | 12.7 (4.90) | 9.20 (2.28) | 10.6 (3.91) |
| Uréase | 9.11 (2.95) | 15.0 (4.53) | 9.59 (4.33) | 11.4 (4.77) |
| Phosphatase | 44.4 (14.5) | 52.1 (14.6) | 44.4 (12.7) | 47.3 (14.6) |

**Supplementary Table S2.** Model selection of the goodness-of-fit of weed richness and weed abundance on EF-multifunctionality and each ecological functions. Δ AIC indicates the differences in Akaïke Criterion between the model including weed richness and the one including weed abundance. Differences are considered for Δ AIC > 2. AIC values with Δ AIC > 2 are bold.

|  |  |  |  |
| --- | --- | --- | --- |
|   | Weed Richness | Weed Abundance | Δ AIC |
| EF-Multifunctionality | 433.8 | 433.12 | 0.68 |
| Aphid predation rate | -45.79 | -46.82 | 1.03 |
| Weed seed predation rate | **-82.14** | -77.2 | 4.95 |
| Bee Richness | 733.41 | 732.18 | 1.23 |
| OSR fruiting success | 7.78 | 7.75 | 0.03 |
| Soil Carbon | 1027.74 | 1028.69 | 0.95 |
| PHOS activity | 1176.67 | 1176.15 | 0.63 |
| ARS activity | 785.39 | 785.24 | 0.15 |
| GLU activity | 1079.3 | **1076.28** | 3.02 |
| URE activity | 1059.16 | 1060.75 | 1.59 |
| ARN activity | 811.04 | 810.93 | 0.11 |