**Ground management through grazing in rainfed olive orchards provides high olive yields and has other potential benefits for both the soil and the farmer**

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Figure 4. Leaf micronutrient concentrations as a function of soil management treatments from leaf samples collected during winter (W) and summer (S) between 2012 and 2022. \*, \*\*, \*\*\* significant at P < 0.05, 0.01, 0.001, respectively. ns, not significant. Vertical bars represent the standard error.

Table S1. Fruit dry weight and pulp/pit ratio in relation to soil management treatments over two years of sampling (2019 and 2021).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fruit dry weight (g fruit–1) |  | Pulp/pit ratio |
|  | 2019 | 2021 |  | 2019 | 2021 |
|  |  |  |  |  |  |
| Sheep walking | 35.78 | 44.72 |  | 1.25 | 1.35 |
| Tillage | 34.99 | 45.16 |  | 1.32 | 1.40 |
| Herbicide | 34.23 | 44.59 |  | 1.37 | 1.33 |
| P | 0.9483 | 0.9799 |  | 0.6008 | 0.5916 |

Table S2. Nutrient concentration in pulp and pit as a function of soil management treatments in two years of sampling (2019 and 2021).

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Nitrogen | Phosphorus | Potassium | Calcium | Magnesium |  | Boron | Iron | Manganese | Zinc | Copper |
|  |  |  | (g kg–1) |  |  |  |  |  | (mg kg–1) |  |  |
| Pulp. 2019 |  |  |  |  |  |  |  |  |  |  |  |
| Sheep walking | 5.86 | 1.51 | 13.45 | 0.50 | 0.34 |  | 13.02 | 38.69 | 6.08 | 7.31 | 11.97 |
| Tillage | 5.92 | 1.52 | 14.04 | 0.50 | 0.33 |  | 11.24 | 41.13 | 7.15 | 7.67 | 10.16 |
| Herbicide | 6.50 | 1.38 | 11.88 | 0.47 | 0.36 |  | 13.70 | 44.61 | 7.92 | 5.47 | 10.06 |
| Prob. | 0.4133 | 0.7491 | 0.4765 | 0.9535 | 0.8109 |  | 0.0330 | 0.1669 | 0.2328 | 0.2891 | 0.5705 |
| Pulp. 2021 |  |  |  |  |  |  |  |  |  |  |  |
| Sheep walking | 6.20 | 1.12 | 15.68 | 0.60 | 0.46 |  | 10.63 | 34.80 | 8.51 | 4.67 | 6.22 |
| Tillage | 5.91 | 1.37 | 13.81 | 0.63 | 0.43 |  | 10.75 | 27.98 | 8.52 | 5.26 | 7.48 |
| Herbicide | 6.01 | 1.13 | 14.02 | 0.70 | 0.40 |  | 13.41 | 27.66 | 8.35 | 3.95 | 6.58 |
| Prob. | 0.8362 | 0.0965 | 0.2495 | 0.4245 | 0.5054 |  | 0.5079 | 0.3597 | 0.9664 | 0.2920 | 0.2825 |
| Pit. 2019 |  |  |  |  |  |  |  |  |  |  |  |
| Sheep walking | 4.96 | 0.80 | 4.02 | 0.29 | 0.29 |  | 10.73 | 50.61 | 6.09 | 8.72 | 10.48 |
| Tillage | 5.88 | 1.00 | 4.40 | 0.25 | 0.33 |  | 13.17 | 51.07 | 7.58 | 11.33 | 11.30 |
| Herbicide | 5.06 | 0.70 | 3.59 | 0.29 | 0.27 |  | 10.62 | 35.46 | 6.17 | 9.06 | 9.10 |
| Prob. | 0.2600 | 0.0186 | 0.3521 | 0.9452 | 0.2804 |  | 0.0015 | 0.4415 | 0.7715 | 0.4787 | 0.1001 |
| Pit. 2021 |  |  |  |  |  |  |  |  |  |  |  |
| Sheep walking | 5.89 | 0.86 | 4.52 | 0.59 | 0.48 |  | 12.46 | 39.90 | 9.91 | 6.01 | 7.36 |
| Tillage | 5.46 | 0.75 | 3.70 | 0.40 | 0.33 |  | 9.93 | 32.10 | 8.14 | 4.83 | 6.65 |
| Herbicide | 5.45 | 0.70 | 3.57 | 0.43 | 0.31 |  | 12.02 | 37.44 | 8.58 | 4.62 | 6.98 |
| Prob. | 0.2885 | 0.5874 | 0.6001 | 0.3518 | 0.0529 |  | 0.8119 | 0.8666 | 0.7684 | 0.8419 | 0.9477 |