**Supporting information Table 4.** Metabolites with higher VIP (variable importance for the projection) values obtained from partial least square sparse regression modeling outputs for each trait. The VIP ranking of metabolites is a representation of the most important metabolites for the models explaining each trait. High VIP values correspond to strong correlations.

|  |  |  |  |
| --- | --- | --- | --- |
|   | ***Palustrine ta***  |   | ***Terrestrial ta***  |
| **Metabolite** | **Comp 1** | **Comp 2** | **Comp 3** | **Comp 4** |   | **Comp 1** | **Comp 2** |
|  Phosphoric acid | 2.6 | 2.4 | 2.4 | 2.3 |   | ---   |  ---  |
| Proline | 1.9 | 1.8 | 1.8 | 1.8 |   | ---   |  ---  |
| Malic acid | 1.8 | 1.7 | 1.7 | 1.7 |   |  ---  |  ---  |
| Glyceric acid | 1.8 | 1.7 | 1.7 | 1.6 |   |  ---  |  ---  |
| Quinic acid | 1.7 | 1.6 | 1.5 | 1.5 |   |  ---  |  ---  |
| Caffeoylquinic acid | 1.4 | 1.4 | 1.4 | 1.3 |   |  ---  |  ---  |
| Fructose | 1.4 | 1.3 | 1.3 | 1.3 |   |  ---  |  ---  |
| GABA | 1.2 | 1.2 | 1.2 | 1.1 |   |  ---  |  ---  |
| Threonine | 1.1 | 1.1 | 1.1 | 1.1 |   |  ---  |  ---  |
| Glucose | 1.9 | 1.8 | 1.7 | 1.7 |   | 2.4 | 2.2 |
| Trehalose | ---  | ---   |  ---  |  ---  |   | 4.2 | 3.8 |
| Sucrose |  ---  |  ---  |  ---  |  ---  |   | 2.8 | 2.6 |
| Threonic acid |  ---  |  ---  |  ---  |  ---  |   | 0 | 2.1 |
| Glycerol |  ---  |  ---  |  ---  |  ---  |   | 1.5 | 1.3 |