**Table ST1:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Decline during 4 h DEA assay** | **Pre-DEA Incubation time (h)** | **With Acetylene (N2O-R blocked)** |  | **Without Acetylene (N2O-R functional)** |
| **pH [KOH addition – cmolc kg-1]** |  | **pH [KOH addition – cmolc kg-1]** |
| **4.7[0]** | **6.7[6]** | **8.3 [16]** | **8.7 [20]** |  | **4.7[0]** | **6.7[6]** | **8.3 [16]** | **8.7 [20]** |
|  |  |  |  |  |  |  |  |  |  |  |
| **NH4+** | **16** | -0.1\* | -2.5\* | 1.6 | 4.4 |  | -0.3\* | -0.6 | 1.5 | 5.0 |
| **(mg kg-1)** | **24** | 0.2\* | -0.2\* | 0.5\* | 3.9 |  | 0.2\* | 0.7\* | 1.6\* | 5.5 |
|  | **32** | -0.1\* | 0.3\* | 9.0 | 4.9 |  | 0.0\* | 1.2 | 0.4\* | 5.7 |
|  | **40** | -0.1\* | 1.4 | 6.6 | 4.8 |  | 0.3\* | 2.3 | 3.4 | 5.0 |
|  | **48** | 0.7 | 2.9\* | 2.4\* | 7.9 |  | 0.8\* | 2.1 | 4.6 | 3.6 |
|  |  |  |  |  |  |  |  |  |  |  |
| **NO3-** | **16** | 16.1 | 21.2 | 24.4 | 19.0 |  | 15.9 | 21.5 | 26.7 | 19.9 |
| **(mg kg-1)** | **24** | 16.4 | 22.7 | 41.3 | 21.5 |  | 16.6 | 22.0 | 35.5 | 22.9 |
|  | **32** | 15.9 | 21.2 | 39.5 | 21.4 |  | 16.9 | 22.0 | 31.5 | 26.7 |
|  | **40** | 15.4 | 21.5 | 36.0 | 25.5 |  | 16.2 | 19.0 | 31.2 | 25.6 |
|  | **48** | 15.8 | 19.8 | 30.1 | 25.9 |  | 16.3 | 18.3 | 30.3 | 32.5 |
|  |  |  |  |  |  |  |  |  |  |  |
| **DOC** | **16** | -8.5 | 32.1 | 736.5 | -262.0\* |  | -1.9\* | 35.8 | 976.2 | 945.0 |
| **( mg kg-1)** | **24** | -0.7\* | 1.2\* | 944.9 | 1220.3\* |  | -5.2\* | 60.9 | 893.6 | 1451.7\* |
|  | **32** | -0.2\* | 28.6\* | 707.2 | 965.6\* |  | -0.7\* | 81.9 | 321.5\* | 949.9\* |
|  | **40** | 8.2 | 57.0 | 453.2 | 164.2\* |  | 7.9 | 82.2 | 611.8 | 782.2\* |
|  | **48** | 10.0 | 89.5 | 948.6 | 1420.9 |  | 9.6 | 67.6 | 941.9 | 1296.9 |
|  |  |  |  |  |  |  |  |  |  |  |
| **DON** | **16** | 1.7 | 4.9 | 78.8 | -17.3\* |  | -1.4\* | 2.7 | 67.3\* | 45.4\* |
| **( mg kg-1)** | **24** | 1.3\* | -4.0\* | 46.0 | 72.5\* |  | 0.6\* | 4.8 | 63.8 | 117.4 |
|  | **32** | 0.2\* | 5.3\* | 81.0 | 125.6 |  | -1.1\* | 4.2 | 22.7\* | 21.6\* |
|  | **40** | 3.8 | 4.2 | 90.6 | 15.3\* |  | 1.9\* | 6.4 | 65.0\* | -5.8\* |
|  | **48** | -1.5\* | 10.0 | 26.0\* | 30.6\* |  | 2.1\* | 7.7 | 50.7 | 73.0\* |
|  |  |  |  |  |  |  |  |  |  |  |

\*Difference not statistically significant at a 0.05 level based on Student’s T-test between ‘before’ and ‘after’ DEA assay values. High variability occurs especially for DOC and DON.