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Supplementary Table 1

Soil organic C and N storage estimated with the root-zone enrichment method under conventional and conservation land management across North Carolina

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplementary Table 1. Soil characteristics of the 0-10-cm depth at each of 25 research locations in North Carolina (mean + standard deviation among fields). Fields were 2-4 replicates of 2-4 land uses. | | | | | | | | | | | | | | | | | | |
| Region / location | Number of fields | Clay  (g kg-1) | Sand  (g kg-1) | Bulk density  (Mg m-3) | Sieved soil density  (Mg m-3) | Coarse fraction removed  (g kg-1) | pH | Cation exchange capacity (molc m-3) | Mehlich-3-extractable phosphorus (g m-3) | Mehlich-3-extractable potassium (g m-3) | SOC  (g kg-1) | Total SOC stock of 0-30 cm  (Mg C ha-1) | Baseline SOC of 0-30 cm  (Mg C ha-1) | Root-zone enrichment of SOC of 0-30 cm  (Mg C ha-1) | TSN  (g kg-1) | Total soil N stock of 0-30 cm  (Mg N ha-1) | Baseline soil N of 0-30 cm  (Mg N ha-1) | Root-zone enrichment of total soil N of 0-30 cm  (Mg N ha-1) |
| *Atlantic Coast Flatwoods Major Land Resource Area* | | | | | | | | | | | | | | | | | | |
| Horticultural Crops Research Station, Castle Hayne NC | 12 | 38 + 11 | 877 + 30 | 1.29 + 0.11 | 1.37 + 0.15 | 2 + 2 | 5.6 + 0.4 | 45 + 16 | 188 + 106 | 47 + 18 | 14.6 + 9.9 | 43.5 + 22.1 | 27.6 + 16.3 | 15.8 + 12.1 | 0.83 + 0.66 | 2.23 + 1.12 | 1.26 + 0.36 | 0.97 + 0.89 |
| Ideal Farm, Castle Hayne NC | 8 | 53 + 25 | 848 + 72 | 1.14 + 0.21 | 1.21 + 0.24 | 3 + 3 | 4.4 + 0.6 | 104 + 60 | 50 + 23 | 24 + 21 | 71.4 + 71.3 | 104.6 + 31.3 | 103.4 + 41.1 | 1.2 + 13.8 | 2.13 + 1.88 | 2.83 + 1.40 | 2.47 + 1.07 | 0.37 + 0.55 |
| Caswell Research Farm, Kinston NC | 10 | 78 + 41 | 816 + 108 | 1.18 + 0.13 | 1.20 + 0.12 | 3 + 2 | 5.3 + 0.8 | 76 + 20 | 188 + 145 | 108 + 75 | 32.8 + 15.6 | 80.2 + 25.4 | 55.6 + 31.8 | 24.6 + 12.9 | 2.00 + 0.78 | 4.45 + 0.97 | 2.57 + 1.22 | 1.88 + 0.71 |
| Tidewater Research Station, Plymouth NC | 16 | 198 + 60 | 528 + 121 | 1.06 + 0.24 | 1.01 + 0.16 | 2 + 4 | 5.5 + 0.5 | 111 + 25 | 103 + 32 | 175 + 102 | 53.0 + 26.3 | 106.6 + 19.2 | 77.8 + 25.6 | 28.8 + 9.1 | 3.35 + 1.25 | 6.25 + 0.70 | 4.04 + 1.24 | 2.22 + 1.04 |
| Border Belt Tobacco Research Station, Whiteville NC | 12 | 77 + 25 | 723 + 90 | 1.19 + 0.21 | 1.23 + 0.15 | 3 + 3 | 5.3 + 0.7 | 53 + 18 | 52 + 33 | 84 + 58 | 23.6 + 16.5 | 51.4 + 24.2 | 22.2 + 8.5 | 29.2 + 18.9 | 1.44 + 0.83 | 3.19 + 1.10 | 1.47 + 0.43 | 1.72 + 1.11 |
| *Southern Coastal Plain Major Land Resource Area* | | | | | | | | | | | | | | | | | | |
| Central Crops Research Station, Clayton NC | 12 | 102 + 68 | 819 + 136 | 1.34 + 0.23 | 1.33 + 0.19 | 47 + 53 | 5.4 + 0.9 | 51 + 23 | 123 + 114 | 86 + 41 | 16.3 + 13.8 | 39.2 + 21.3 | 20.2 + 10.3 | 19.0 + 13.3 | 0.89 + 0.63 | 2.76 + 1.74 | 1.35 + 0.31 | 1.41 + 1.71 |
| Wilkerson Farm, Clayton NC | 10 | 96 + 45 | 737 + 133 | 1.26 + 0.37 | 1.23 + 0.27 | 6 + 6 | 5.0 + 0.8 | 57 + 26 | 95 + 81 | 96 + 44 | 35.2 + 31.3 | 62.7 + 35.0 | 32.3 + 20.6 | 30.4 + 18.3 | 1.75 + 1.46 | 3.09 + 1.26 | 1.58 + 0.52 | 1.51 + 0.87 |
| Horticultural Crops Research Station, Clinton NC | 12 | 90 + 44 | 753 + 112 | 1.29 + 0.20 | 1.34 + 0.18 | 8 + 15 | 5.1 + 0.8 | 44 + 15 | 108 + 61 | 85 + 58 | 18.1 + 10.8 | 43.5 + 20.0 | 20.2 + 9.6 | 23.2 + 14.7 | 1.22 + 0.73 | 3.05 + 1.44 | 1.38 + 0.38 | 1.66 + 1.26 |
| Cherry Research Farm, Goldsboro NC | 16 | 130 + 51 | 649 + 123 | 1.31 + 0.23 | 1.18 + 0.15 | 7 + 11 | 5.6 + 0.8 | 80 + 30 | 167 + 148 | 136 + 117 | 25.3 + 17.8 | 57.2 + 25.3 | 29.8 + 18.3 | 27.4 + 12.5 | 1.85 + 0.98 | 4.19 + 1.43 | 2.22 + 1.13 | 1.98 + 0.78 |
| Lower Coastal Plain Research Station, Kinston NC | 12 | 103 + 49 | 731 + 90 | 1.23 + 0.22 | 1.23 + 0.19 | 12 + 13 | 5.2 + 0.7 | 65 + 28 | 120 + 87 | 94 + 49 | 28.9 + 25.1 | 58.6 + 30.1 | 30.2 + 21.2 | 28.4 + 13.5 | 1.79 + 1.17 | 3.72 + 1.51 | 1.82 + 0.97 | 1.90 + 0.95 |
| Peanut Belt Research Station, Lewiston-Woodville NC | 12 | 108 + 46 | 639 + 142 | 1.27 + 0.29 | 1.24 + 0.22 | 5 + 6 | 5.3 + 1.0 | 63 + 15 | 41 + 20 | 70 + 34 | 28.5 + 18.2 | 62.4 + 31.0 | 34.2 + 29.4 | 28.2 + 19.0 | 1.58 + 1.10 | 3.42 + 1.90 | 1.90 + 1.49 | 1.51 + 0.98 |
| Upper Coastal Plain Research Station, Rocky Mount NC | 16 | 85 + 35 | 712 + 87 | 1.36 + 0.18 | 1.34 + 0.12 | 3 + 4 | 5.5 + 0.8 | 54 + 19 | 97 + 65 | 78 + 22 | 16.2 + 8.4 | 40.8 + 14.7 | 18.2 + 6.8 | 22.6 + 11.9 | 1.09 + 0.57 | 2.81 + 0.98 | 1.37 + 0.24 | 1.44 + 0.92 |
| Fountain Farm, Rocky Mount NC | 12 | 120 + 54 | 613 + 139 | 1.27 + 0.24 | 1.22 + 0.14 | 8 + 15 | 5.4 + 0.7 | 72 + 15 | 99 + 84 | 94 + 31 | 24.1 + 12.1 | 53.0 + 18.3 | 23.6 + 9.3 | 29.3 + 11.9 | 1.76 + 0.87 | 3.96 + 1.27 | 1.85 + 0.43 | 2.10 + 0.99 |
| Williamsdale Biofuel Lab, Wallace NC | 10 | 81 + 25 | 718 + 67 | 1.26 + 0.17 | 1.24 + 0.14 | 5 + 6 | 5.3 + 1.0 | 77 + 20 | 315 + 184 | 141 + 87 | 26.8 + 17.4 | 61.2 + 14.0 | 32.2 + 9.7 | 29.1 + 15.5 | 1.40 + 0.48 | 3.45 + 0.53 | 1.93 + 0.53 | 1.53 + 0.36 |
| *Southern Piedmont Major Land Resource Area* | | | | | | | | | | | | | | | | | | |
| Beef Cattle Field Lab, Butner NC | 12 | 147 + 60 | 588 + 172 | 1.27 + 0.19 | 1.16 + 0.13 | 70 + 45 | 5.5 + 0.6 | 63 + 21 | 54 + 47 | 65 + 16 | 21.0 + 9.0 | 47.5 + 15.0 | 18.8 + 6.8 | 28.7 + 9.6 | 1.42 + 0.36 | 3.38 + 0.61 | 1.48 + 0.32 | 1.90 + 0.34 |
| Umstead Research Farm, Butner NC | 12 | 130 + 55 | 657 + 103 | 1.29 + 0.15 | 1.19 + 0.08 | 66 + 53 | 5.1 + 0.6 | 62 + 16 | 59 + 39 | 64 + 30 | 19.8 + 5.9 | 44.9 + 8.5 | 16.1 + 4.1 | 28.8 + 7.6 | 1.50 + 0.62 | 3.46 + 1.01 | 1.24 + 0.27 | 2.22 + 0.91 |
| Sandhills Research Station, Jackson Springs NC | 12 | 46 + 19 | 887 + 31 | 1.22 + 0.16 | 1.36 + 0.15 | 30 + 68 | 5.3 + 1.0 | 51 + 20 | 95 + 65 | 42 + 16 | 19.1 + 11.1 | 44.7 + 17.2 | 18.5 + 4.9 | 26.2 + 15.5 | 0.90 + 0.43 | 2.25 + 0.71 | 1.06 + 0.18 | 1.19 + 0.69 |
| Oxford Tobacco Research Station, Oxford NC | 12 | 98 + 40 | 720 + 109 | 1.38 + 0.22 | 1.30 + 0.14 | 23 + 24 | 5.3 + 0.6 | 46 + 15 | 93 + 26 | 85 + 28 | 14.7 + 8.6 | 40.4 + 14.2 | 20.0 + 9.0 | 20.4 + 12.2 | 1.00 + 0.59 | 2.55 + 1.03 | 1.13 + 0.51 | 1.42 + 0.96 |
| Currin Farm, Oxford NC | 8 | 159 + 62 | 626 + 78 | 1.35 + 0.11 | 1.23 + 0.08 | 40 + 30 | 5.5 + 0.2 | 52 + 11 | 61 + 24 | 118 + 37 | 13.0 + 5.4 | 37.8 + 10.5 | 19.8 + 5.1 | 18.0 + 9.0 | 1.04 + 0.44 | 3.07 + 0.82 | 1.66 + 0.33 | 1.41 + 0.71 |
| Lake Wheeler Road Field Lab, Raleigh NC | 16 | 150 + 66 | 703 + 71 | 1.22 + 0.23 | 1.14 + 0.18 | 101 + 87 | 5.4 + 0.8 | 78 + 24 | 154 + 162 | 127 + 55 | 32.1 + 20.2 | 64.5 + 21.7 | 32.3 + 9.7 | 32.2 + 14.3 | 2.19 + 1.30 | 4.33 + 1.50 | 2.02 + 0.45 | 2.32 + 1.24 |
| Piedmont Research Station, Salisbury NC | 16 | 275 + 107 | 460 + 127 | 1.12 + 0.21 | 1.03 + 0.12 | 17 + 33 | 6.2 + 0.6 | 120 + 43 | 141 + 152 | 187 + 81 | 28.1 + 11.0 | 61.5 + 13.0 | 28.4 + 9.3 | 33.1 + 12.8 | 2.30 + 0.85 | 5.07 + 1.03 | 2.36 + 0.83 | 2.71 + 1.02 |
| Upper Piedmont Research Station, Reidsville NC | 12 | 159 + 47 | 651 + 63 | 1.23 + 0.18 | 1.13 + 0.09 | 30 + 32 | 5.6 + 0.7 | 73 + 20 | 100 + 83 | 116 + 35 | 24.8 + 9.2 | 54.0 + 13.6 | 20.8 + 7.0 | 33.2 + 8.1 | 1.83 + 0.53 | 4.12 + 1.01 | 1.69 + 0.59 | 2.42 + 0.59 |
| *Southern Blue Ridge Major Land Resource Area* | | | | | | | | | | | | | | | | | | |
| Upper Mountain Research Station, Laurel Springs NC | 12 | 189 + 46 | 606 + 77 | 1.03 + 0.18 | 0.94 + 0.14 | 36 + 23 | 5.7 + 0.5 | 75 + 19 | 79 + 49 | 79 + 31 | 34.0 + 13.4 | 82.8 + 18.9 | 55.8 + 31.1 | 27.0 + 21.2 | 2.43 + 0.82 | 5.73 + 0.99 | 3.60 + 1.75 | 2.13 + 1.48 |
| Mountain Horticultural Crops Research and Extension Center, Mills River NC | 16 | 217 + 32 | 570 + 46 | 1.19 + 0.22 | 1.07 + 0.14 | 28 + 30 | 5.7 + 0.7 | 65 + 14 | 56 + 43 | 110 + 42 | 23.7 + 9.9 | 59.0 + 14.0 | 32.8 + 14.0 | 26.2 + 15.9 | 1.76 + 0.65 | 5.94 + 5.81 | 5.68 + 12.8 | 0.26 + 7.06 |
| Mountain Research Station, Waynesville NC | 12 | 290 + 94 | 465 + 107 | 1.04 + 0.21 | 0.94 + 0.15 | 9 + 9 | 5.9 + 0.6 | 83 + 26 | 45 + 30 | 149 + 66 | 33.2 + 18.0 | 74.4 + 18.1 | 43.2 + 16.2 | 31.3 + 18.3 | 2.50 + 0.91 | 5.96 + 1.03 | 3.65 + 1.28 | 2.31 + 1.39 |
|  | | | | | | | | | | | | | | | | | | |