COMPARISON OF TWO METHODS OF DETERMINATION OF TOTAL NITROGEN IN SOIL SAMPLES (DRY COMBUSTION AND MODIFIED KJELDAHL)

Paulina DróVdV
Laboratory of Forest Environment Chemistry
Forest Research Institute
Poland

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Accreditation

Laboratory meets requirements of the PN EN ISO/IEC 17025:2005

Laboratory needs to verify all the accredited parameters in the interlaboratory comparison

7 th FSCC both methods (dry combustion and modified Kjeldahl)
Dry combustion (total nitrogen)

Apparatus: Vario Max CN
sample analysis time: 10 min. (without mineralization)
accuracy: < 5 %
precision: < 5 %
uncertainty: ~15%

Modified Kjeldahl (ammonium N, organic N)

Apparatus: Kjeltec 2300
sample analysis time: few hours (including mineralization time)
accuracy: < 10 %
precision: < 5 %
uncertainty: ~10%
## Results of total nitrogen - 7th FSCC

<table>
<thead>
<tr>
<th>Sample name</th>
<th>Dry combustion [g/kg]</th>
<th>Recovery [%]</th>
<th>Modified Kjeldahl [g/kg]</th>
<th>Recovery [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.97</td>
<td>108.5</td>
<td>0.90</td>
<td>99.96</td>
</tr>
<tr>
<td>2</td>
<td>3.68</td>
<td>97.83</td>
<td>3.72</td>
<td>98.98</td>
</tr>
<tr>
<td>3</td>
<td>0.93</td>
<td>103.7</td>
<td>0.73</td>
<td>80.74</td>
</tr>
<tr>
<td>4</td>
<td>11.9</td>
<td>103.4</td>
<td>11.5</td>
<td>100.4</td>
</tr>
<tr>
<td>5</td>
<td>15.5</td>
<td>100.0</td>
<td>15.1</td>
<td>97.78</td>
</tr>
</tbody>
</table>
Conclusion

Determination of total Nitrogen in soil samples - dry combustion and modified Kjeldahl

dry combustion is faster, safer and doesn’t require mineralization and so many chemicals as modified Kjeldahl method

good precision and accuracy characterize both of the methods

results obtained by Kjeldahl method are lower (because of some nitrogen forms which can not be determined)