Potatoes are an important vegetable and the most important food crop in the world after rice and wheat. Potato tubers contain many types of essential nutrients for example: carbohydrates, vitamins, lipids, proteins and dry matter. Potatoes, like all vegetables require balanced fertilisation in order to achieve higher yields and to improve nutritional quality. Balanced fertilisation is very important for both the environment and human health, and is closely related to the NPK fertilisation ratio (2).

To determine the effects of fertilisation (Compost, NPK) and crop protection protocols (conventional, organic) on nutritional quality (vitamin C and minerals content) on two varieties of potato (Sante, Sarpo Mira).

Vitamin C content was determined by the classic 2,6 dichlorophenolindophenol colorimetric titration method.

Mineral content was determined by the Dumas combustion method using a LECO TruSpec Automated C/N Analyzer.

The design of the experiment is a split split split-plot design. The main plot is crop rotation, the sub-plot is crop protection, the sub-sub-plot is fertility management and the sub-sub-sub-plot is variety. This study conducted at Nafferton Ecological Farm.

Results from the field experiments in 2010 show that variety Sante had significantly higher vitamin C content (P < 0.001) compared with Sarpo Mira. There were no significant influences of other treatments (crop protection, fertility, and their interactions) on vitamin C content. The difference in vitamin C content was therefore due to the varietal differences.

Also analysis of the data showed that mineral contents (N, P, and K) of potatoes were significantly affected by fertility treatments (P < 0.0001, 0.0006 and 0.0338, respectively). N and P contents were significantly increased by NPK application while K content was increased significantly by compost application. These results agreed with Warman and Havard (1998).

The influence of treatments on vitamin C contents of potato were more obvious with varieties. In addition, the minerals content was also affected by the kind of treatments (fertility, variety, crop protection and rotation).

<table>
<thead>
<tr>
<th>Variety</th>
<th>Compost</th>
<th>NPK</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sante</td>
<td>56.5</td>
<td>54.86</td>
<td>55.05 A</td>
</tr>
<tr>
<td>Sarpo Mira</td>
<td>44.46</td>
<td>41.36</td>
<td>43.11 B</td>
</tr>
<tr>
<td>Mean</td>
<td>50.28 a</td>
<td>48.31 a</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Vitamin C content in Sante and Sarpo Mira potato varieties

References

Aknowlegment
I sincerely acknowledge the support of my supervisors Dr. Okello, Prof. Leifert as well as Sabancia University, Turkey.

Contact Email: t.m.m.abolgasem@ncl.ac.uk for further information