

Antioxidant Capacity and Anthocyanin Content of Different Black Currant Cultivars Grown With and Without Pesticides

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Introduction

Black currants (*Ribes nigrum*) contains large amounts of water soluble anthocyanins, a group of natural dietary phytochemicals with potential health benefits possible due to their high antioxidant capacity.

In recent years, low pesticide or pesticide free products have become more popular because they are believed to be healthier and more environmentally friendly.

Objective

To determine and compare the total anthocyanin content and antioxidant activity of 13 different black currants from pesticide free and pesticide treated plants.

Materials and Methods

Black currants were harvested from Aarslev Research Centre in summer 2009. Pesticide treatment of plants consisted of Mancozeb, Boscalid+Pyraclostrobin, Kresoxim-methyl, Propiconazol and Pirimicarb.

Total anthocyanin content was measured with colorimetric method and expressed as malvin equivalent content (Krawczyk, U et al, 1992).

Antioxidant capacity was determined by trolox equivalent antioxidant capacity (TEAC) assay (Re, R et al, 1999) and expressed as trolox equivalent (TE) per gram of fruit.

Results and Discussion

Figure 1 shows the total anthocyanin content of the black currant cultivars. The anthocyanin level was between 200 mg/100g and 500 mg/100g. The total anthocyanin content from pesticide free plants was higher than normal pesticide treated plants for the majority cultivars.

Figure 2 shows the antioxidant capacity of black currants. Pesticide treatment had very little effect on the antioxidant level. Cultivar 8944-4 was the only one that had significant higher antioxidant level of 0.6 $\mu\text{mol TE/g}$ between pesticide treated and pesticide free plants.

The antioxidant capacity of black currants was independent of the total anthocyanin content. The antioxidant capacity may be better correlated to a combination of ascorbic acid and anthocyanin content.

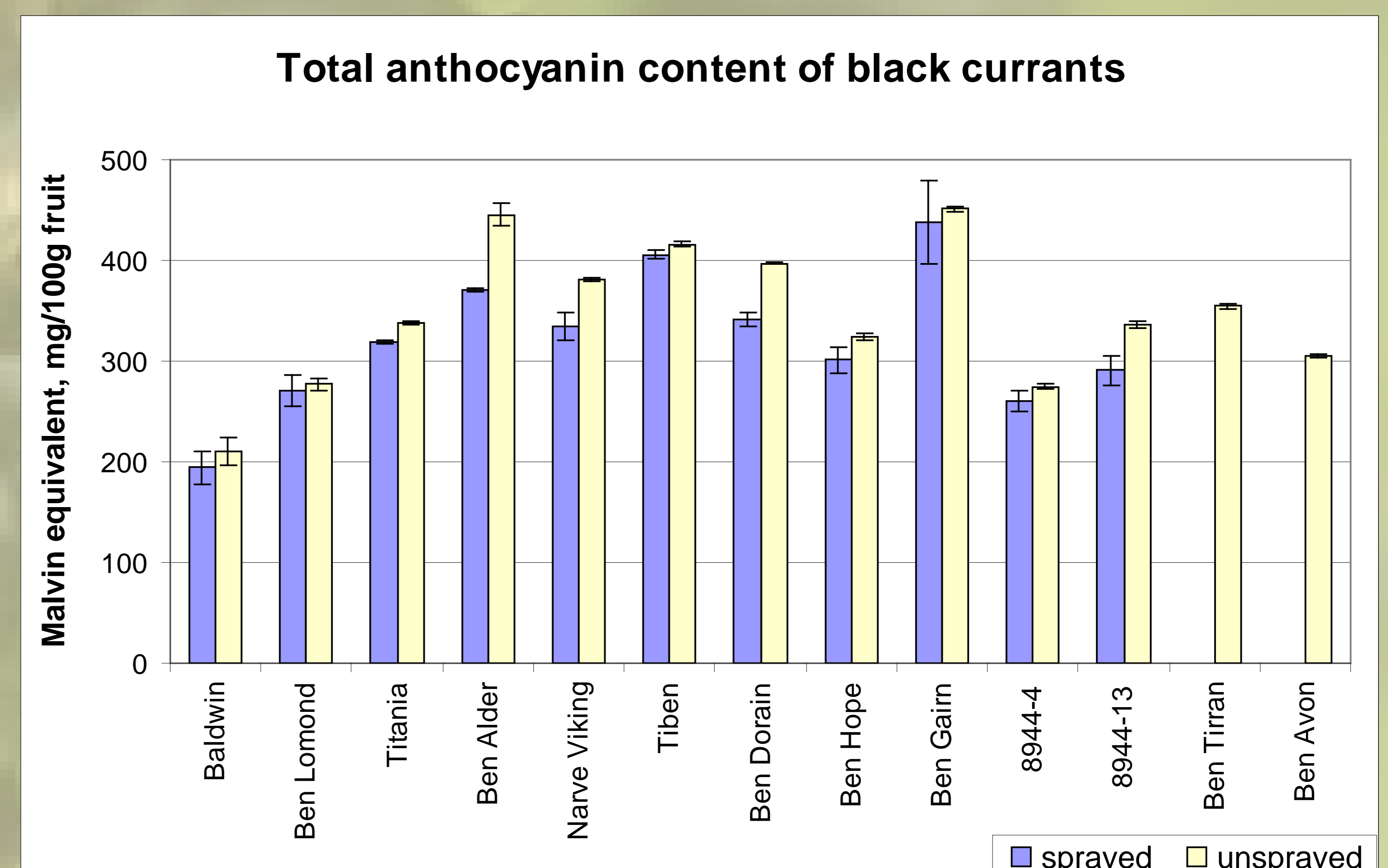


Figure 1. Total anthocyanin content of black currants. Sprayed indicated normal pesticide treated plants; unsprayed indicated pesticide free plants.

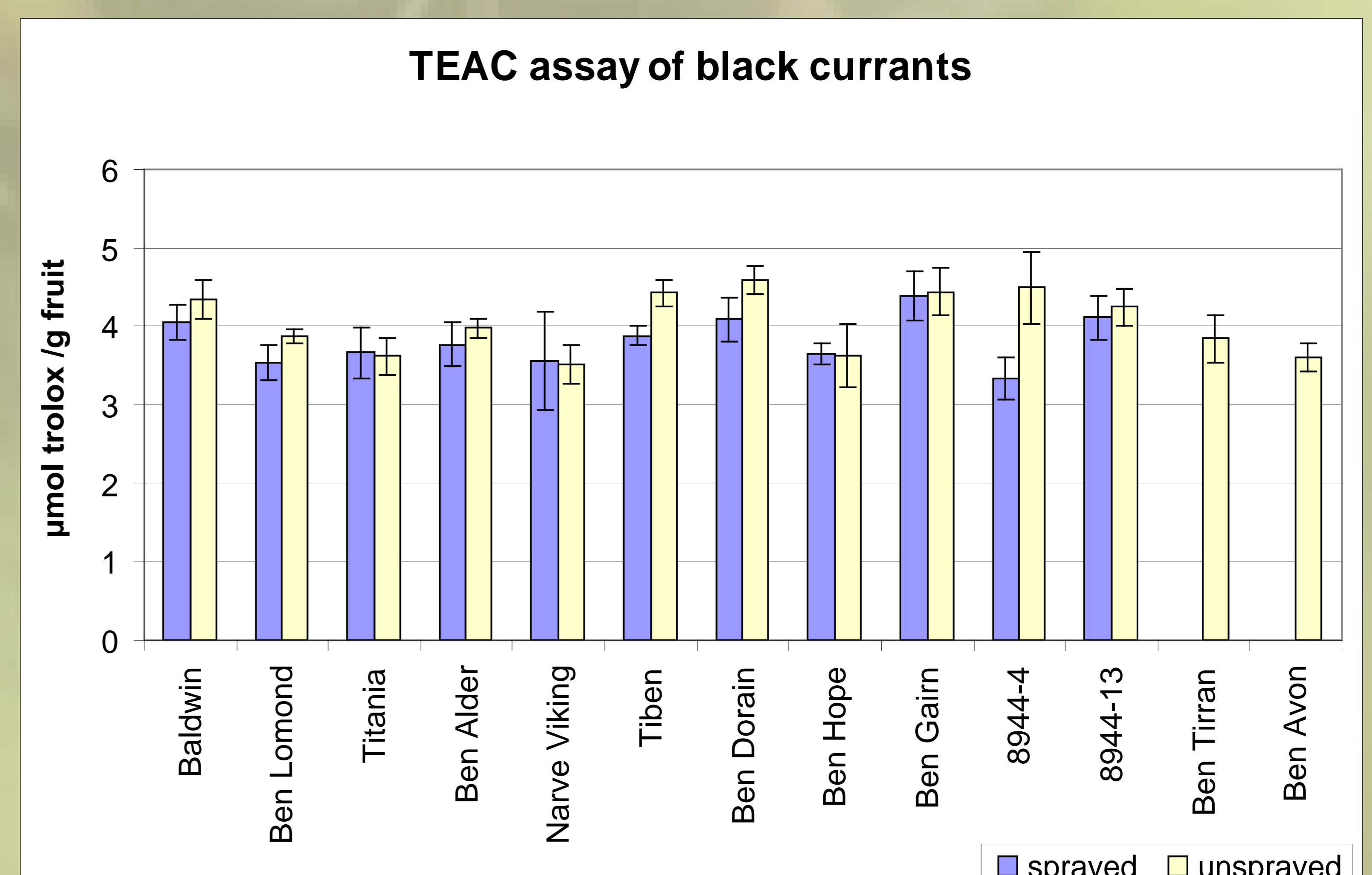


Figure 2. Antioxidant capacity of black currants. Sprayed indicated normal pesticide treated plants; unsprayed indicated pesticide free plants.

References

- Krawczyk, U; Petri, G. 1992. *Archiv der Pharmazie*, 325, 147-49
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