

Title Antioxidant Properties of Carrot Cultivars from Myanmar and Germany as Affected by Different Nitrogen Levels of Organic and Mineral Fertilizers

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Abstract

In recent years, there is an increasing interest in the antioxidant properties of fruits and vegetables, as they contribute to the reduction of the incidence of cardio-vascular diseases and cancers. The uses of different types of fertilizers as well as different cultivars are important for the quality of the crop. Consequently, the knowledge of the local landraces for a certain area and their responses to the different fertilizers and the effects on e.g. nutritional quality is of great importance. In the present research, a pot experiment was conducted to investigate the antioxidant properties of chosen carrot cultivars exposed to the different nitrogen levels supplied by organic and mineral fertilizers. In the split-split-plot experimental design with three replications, three kinds of fertilizer (mineral fertilizer, farmyard manure (FYM), and compost) were allocated to the main-plots, and the nitrogen levels ($N_1 = 60$, $N_2 = 120$, and $N_3 = 180 \text{ kg ha}^{-1}$) to the sub-plots. Cultivars from Myanmar (Pawedaung and Srup) and Germany (Fly Away and Purple Haze) were set as sub-sub-plot factors. Higher ascorbic acid contents were found in Myanmar cultivars compared to cv. Fly Away with regard to type of fertilizer and nitrogen levels. The highest total carotenoids contents were observed in cultivars from Myanmar at N_2 and N_3 levels applied in the form of FYM fertilization. The highest total antioxidant capacity was found in cv. Purple Haze regardless of nitrogen levels and the fertilizer types. Purple Haze was also characterized by the significantly highest amount of total phenolic content with significant effect of mineral fertilization. Generally, higher ascorbic acid and carotenoids contents were observed in Myanmar cultivars and it could be part of recommendation to the farmers in Myanmar.