Effect of source and level of nitrogen fertilizer on groth yild and quality of carrot

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Two field experiments were carried out at the Experimental Farm of the Faculty of Agriculture at Moshtohor, Zagazig University Benha Branch, during the two winter seasons of 1990-1991 and 1991-1992.This study was conducted to elucidate the effect of different sources and levels of nitrogen fertilizers as well as their interaction on growth, yield and quality of carrot plant roots. The widely cultivated and well know cultivar, Red Core Chantenay, of carrotwas used in this work.The obtained results can be summarized as follows:1-The maximum growth of carrot plants as top length, plant length, number of leaves/plant and fresh and dry weight per plant has been resulted when plants were fertilized with 60 kg N/fad. as ammonium sulphate or calcium nitrate2-Increasing the level of N fertilizer up to 60 kg N/fad. increased photosynthetic pigments (a, b and total chlorophyll and carotenoids) of carrot plant foliage. Moreover, no clear or constant effect, for the N-source on plant photosynthetic pigments can be achieved in this concern.513-Increasing N-fertilizer level from 30 to 60 kg N/fad. as calcium nitrate significantly increased N, P and K leaves content. Moreover, increasing N-fertilizer level up to 75 kg N/fad. was of significantly depressive effect in this respect.4-Increasing N-fertilizer level up to 60 kg N/fad., especially when added as ammonium sulphate significantly increased the total yield and its components, i.e. root length, diameter and weight as well as root/plant ratio and root yield (ton/fad) Moreover, urea as a source of N-fertilizer came in the second rank after ammonium sulphate in this regard.5-Application of 60 kg N/fad. as ammonium sulphate signifi-cantly increased N, P and K content of carrot plant roots.Using 60 kg. N/fad. of nitrogen fertilizer as calcium nitrate at both growing seasons resulted in the significantly highest value of NO3-N content in carrot roots. Moreover, using lower levels of N-fertilizer (0, 30 and 45 kg N/fad.) or higher one (75 kg N/fad.) as ammonium sulphate showed lower values of NO3-N in carrot roots. It is worthy to mention that application of the lowest used level (30 kg N/fad.) as ammonium sulphate or the control treatment (0.0 kg N/fad.) resulted in the lowest values of NO3-N in carrot roots.7-Carrot plants which received 60 kg N/fad. as urea or calcium nitrate contained the highest content of total carbohydrates aspercentage in carrot roots.8-Application of nitrogen fertilizer at the level of 60 kg N/fad. as calcium nitrate or ammonium nitrate resulted in the highest accumulation of total sugars in carrot roots.9-Application of nitrogen fertilizer at level of 60 kg N/fad. in the form of ammonium sulphate significantly increased beta-carotene content of carrot roots.10-Generally, it could be concluded that under similar conditions of such experiments, fertilization of carrot plants with 60 kg N/fad. as ammonium sulphate may lead to the production of the highest root yield with good quality.