A comparative study of nitrogen and micronutrients application and their effect on onion yield and yield components

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Demo, El-Fayoum Governorate during two successive seasons 2003/2004 and ’ 2004/2005 to study the effect of different sources and rates of nitrogenous fertilizer and folia spray of Fe and Zn on growth, yield and storage ability of bulb onions. Three forms of nitrogenous fertilizers (ammonia anhydrous, ammonium sulphate and urea) were applied at three rates (80, 100 and 120 kg N/fed), Plant samples were taken from the different treatment during the growing season. Plant growth was expressed by measuring dry weight of leaves and bulbs. The chemical analysis of leaves and bulbs includes the determination of N, P, K, Fe, Zn, chlorophyll, total soluble solids, carbohydrate and pungency.The obtained data are summarized as follows : dry weight of leaves and bulbs differed significantly with different sources of nitrogen during both seasons of this study. In this respect, application of 120 kg N / fed as ammonia anhydrous in combination with micronutrients gave the highest dry weight of leaves and bulbs compared with other treatments, Nitrogen, phosphorus and potassium uptake of different plant parts, i.e. leaves and bulbs were significantly increased with increasing nitrogen rate. The maximum values in this connect were obtained with ammonia anhydrous, ammonium sulphate and urea, respectively, 149Summary Application of Zn or Fe, alone or in combination caused a significant increase of N, P and K uptake during the growing seasons. A high increase was recorded with (Zn+Fe), Zn and Fe concentration in leaves were significantly increased with increasing N rate. Application of Zn, Fe and their combination increased the concentration of Zn and Fe by leaves of onion plant.Chlorophyll a, b and total chlorophyll were increased by increasing N application rate. the best treatment which produced the highest concentration of chlorophyll was the application of 120 kg N/fed as ammonia anhydrous. the micronutrients application as foliar spray on plants led to significant increases in chlorophyll a, b and total chlorophyll (a+b) during both seasons of study compared with the untreated treatment. The maximum values of photosynthetic pigments were connected with mixture of Fe+Zn. the highest total soluble solids (TSS) in bulbs were obtained by ammonia anhydrous application, While urea gave the lowest total soluble solids (TSS).The total soluble solids (TSS) were decreased by increasing application rate of N, the ’ best treatment which produced the high (TSS) concentration during the whole growth period was the application of 80 kg N/fed as ammonia anhydrous, the carbohydrates percentage in bulbs was significantly increased as a result of application of N-fertilizer. The highest values were obtained as a result of using micronutrients as foliar spray treatments during both seasons.5 the highest pungency concentration in bulbs was obtained with ammonium sulphate application, the lowest pungency concentration with urea application, the most effective treatments which produced bulbs with lowest moisture percent throughout the whole storage period was the application of 80 kg N/fed as ammonium sulphate, the highest loss in moisture particularly during the first five months of storage and in turn keeps bulbs from sprouting and decay was the application of 120 kg N/fed as urea, Application of micronutrients gave significant decreases in weight loss during the storage period, 151.