Physiological studies on some umbelliferae plants

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SUMMARY AND CONCLUSIONTwo field experiments were carried out during the growing winter seasons of 1985/86 and 1986/87 at the Jbcperimental Farm of the National Research Centre, Dokki, Giza on coriander plants ”Coriandrum sativum var. dulce L. cv. Balady”. First ExperimentThis study was performed to investigate the effect of N and P fertilizers on fresh herb and seed yields as well as their chemical content specially the volatile oils con-tent and its chemical constituents. Four levels of N ferti-lizer (0, 20, 40 and 60 kg/fed.) combined with four levels of P-fertilizer (0, 16, 32 and 48 kg P205/fed. forming 16 treatments, were used. Obtained results can be summerized as follows :1. Increasing nitrogen fertilizers rate up to 60 kg N/fed., gradually increased plant height, fresh weight per plant and dry matter percentage of coriander herb. In addition, fresh herb and seed yields as well as seed index (weight of 100 seeds) had been also improved. The highest N—fertilizer usod ruts: (60 kg/fed.) Provt, d to t*;in improving volatile oil, N,P,K and carbohydrates contents of both fresh herb and dry seeds of coriander plants.2.Medium phosphorus fertilizer rate (32 kg P205/fed.) showed the most improving effect in all studied char-acters comparing with either lower or higher used phos-phorus rates, except N,P and K content of fresh herb, which reached its maximum values by using 48 kg P205/fed.3.The combination of 60 kg N plus 327kg. P205/fedais soilapplication exceeded all other tested treatments regarding a4,13t4 and 1productivity and quality of either fresh herb ordry seeds of coriander plants.4.Regarding quality of coriander seed oils, using 40 - 60 kg N and 16-32 kg P205/fed. surpassed all other used fertilization treatments and increased of the linalool component whichrepresents the major volatile oil contituents a coriander seeds. Second Experiment :This experiment consisted of 13 treatments gained from 4 levels of each of GA3 (25, 50, 100 and 200 ppm), NAA (50, 100, 150 and 200 ppm) and CCC (250, 500, 1000 and 2000 ppm) plus untreated control treatment. Growth regulators were sprayed on coriander plants three times at 15 days intervals starting 20 days after seed sowing.The most important results were as follows :1. Foliar spray of either 100 ppm GA3, 150 ppm NAA or 1000 ppm CCC on coriander plants resulted in the highest values ofvegetative growth characters, fresh herb yield (ton/fed.) seed yield (kg/fed.) and best seed quality (weight of 100seeds).2. The same previously mentioned treatments could be alsorecognized as the most favourable and effective treatmentsfor increasing the yield and percentage of essential oilas well as carbohydrates content in coriander herb andseeds.3. With regard to quality of seed volatile oil, it is advic-able to use some growth regulator, as foliar spray on coriander plants such as 100 - 200 ppm GA3, 100 - 150 ppm NAA, or 1000 - 2000 ppm CCC to obtain seeds of high oil components specially d-linalool and capentene.