

**RESPONSE OF CABBAGE (*BRASSICA OLERACEA* VAR. *CAPITATA*) AND
 CAULIFLOWER (*BRASSICA OLERACEA* VAR. *BOTRYTIS*) CROPS TO SULPHUR
 FERTILIZATION LEVELS.**

BY

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ABSTRACT

Two separate field experiments were conducted at Qaha Experimental Farm of Horticultural Research Institute, Qalyoubia Governorate, on cabbage and cauliflower during the two winter seasons of 2005/2006 and 2006/2007 respectively, to study the effect of 5 sulfur fertilization levels on growth, yield, quality and chemical constituents in cabbage head and cauliflower curds. The sulfur levels there were without, 25, 50, 100 and 150 kg S/fed. The experimental design for each crop was complete randomized blocks. The obtained results indicated, in general, that increasing the application of sulfur levels from 0 up to 100 kg significantly improved all vegetative growth parameters (plant height, number of leaves, total plant fresh weight, head weight, total, marketable and edible head yield of cabbage and cauliflower curds) as well as total chlorophyll in leaves, head cabbage and curd cauliflower quality (length, diameter and compactness) and the chemical constituents, i.e., N, P, K and S contents. Moreover, Vit-C, sinigrin and glucoraphanin contents in heads and curds were also increased by S application. Furthermore, there is a positive correlation was found between sulphur levels and each of sinigrin and glucoraphanin contents in both cabbage and cauliflower crops. In this respect, it could be recommended that application of sulphur at the rate of 100 kg S /fed. for both cabbage and cauliflower gave the best vegetative growth, high yield and quality as well as higher content of Vit-C, sinigrin and glucoraphanin as anticancer substances in heads and curds.

INTRODUCTION

Cabbage and cauliflower are two of the most important cole crops grown in Egypt. They have a high nutritive value due to their content of Vit-C., Vit-B₁ (thiamin), B₇ (Niacin) and moderate content of Ca and Mg. In addition, cole crops are considered as anti-cancer and antioxidant. Farnham *et al.* (2005) on broccoli found that the concentration of glucoraphanin compound associated with vegetables cancer-inhibiting abilities is influenced more by genetics than by environment. Fahey (2005) on broccoli and some cole crops mentioned the cancer protective effects of broccoli and other cruciferous vegetables.

Sulphur application plays an important role in soils, it is used as a soil amendment to improve the availability of nutrients

such as P, Fe, Zn, Mn and Cu. (Heter, 1985). Moreover, Abd El-Fattah *et al.* (1990) found that the addition of sulfur element decreased the pH and converted the unavailable phosphorus to available form for plant absorption.

Bhagavantagoudra and Rokhad (2001) on cabbage mentioned that application of sulphur with 40 kg/ha gave the highest yield (43.71 ton/ha), number of inner leaves, head diameter and chemical contents of ascorbic acid, protein, dry matter production and S uptake. However, Sanderson (2003) on broccoli and cauliflower studied the effect of sulphur and calcium and found gypsum increased yield by 14% for broccoli and 25% for cauliflower, increased S content of tissue and decreased soil pH.