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EFFECT OF VERNALIZATION AND GIBBERELLIC ACID ON EARLINESS, TOTAL YIELD AND QUALITY OF GLOBE ARTICHOKE.

BY

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ABSTRACT

Two field experiments were conducted at Kaha Vegetables Research Farm, Horticulture Research Institute, Agriculture Research Centre to study the effect of vernalization treatment and GA_3 spraying, on vegetative growth, yield and its quality as well as chemical constituents of globe artichoke. The obtained results show that vernalizing of old crowns at 5 °C for 7 days before transplanting enhanced plant height while each of leaves and offshoots number per plant were significantly decreased with vernalization treatment (7 days) or with GA_3 application up to 40 ppm. Obtained data indicate also, that there were no significant differences between the values of head weight, head length and edible part fresh weight as a result of vernalization treatments while this characteristics were significantly higher in case of the control treatment. Furthermore, head diameter was increased while number of days from transplanting until emergence of first flower were significantly decreased by vernalization treatment. Vernalization for 7 days before transplanting plus GA_3 spraying at 20 ppm increased number of early heads per plant and per fed., while the control treatment (without application of GA_3 and vernalization) possess higher late and total yield. Application of GA_3 at 20 ppm significant increased total nitrogen, protein and inulin percentages of globe artichoke heads, while GA_3 at 40 ppm as single or combined with vernalization at 7 days gave the highest values of crude fibers in the heads of globe artichoke.

Key words: Globe Artichoke, vernalization, GA_3, vegetative growth, yield and quality as well as nitrogen, protein, inulin and crude fibers.

INTRODUCTION

Globe artichoke (*Cynara scolymus L.*) is considered one of the most important vegetable crops in the countries bordering the Mediterranean basin including Egypt. These days, in Egypt more attention is given to promoting globe artichoke production to satisfy the increased demands of local consumption as well as for exportation. The early harvest period from December to February for globe artichoke in Egypt is economically interesting because there is no production in most European countries during these months. In order to accelerate the early production of heads and obtain increased benefits from higher prices vernalization, low level of GA_3 and / or their interaction can use. Since the use of growth substances for fresh market vegetable production may have some residual effects, it was through to use other physical treatments that can replace or reduce the injurious effect of growth regulators, i.e., vernalization. Low temperatures treatments the vernalization is promotion of the flowering (Salisbury and Ross, 1999). The biennial vegetables initiate the floral formation after the exhibition prolonged (several weeks or months) to the low temperatures. In artichoke, the change from vegetative to reproductive stage requires an exposure to certain amount of cold hours (García, *et al.*, 2004). Low temperature improved the effectiveness of GA_3 on bolting, start of harvest and heads produced during the winter and at the end of the cropping cycle. This, probably, suggests that vernalization and GA_3 effects are additive (Mauromicale, *et al.*, 2005).