Improving globe atichoke productivity by using some agricultural treatments

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This investigation was carried out at Vegetable Research Farm in Kaha (Kaliobia governorate), Horticultural Research Institute , Agricultural Research Center during the two growing seasons of 2009/2010 and 2010/2011. The aim of this study was to investigate the effect of propagation materials (old crown pieces or offshoots) and growth stimulants as well as antiseptic substances on survival plant percentage, vegetative growth, flowering behavior, flower head yield and its components as well as flower heads quality for globe artichoke cv. Hyrious . the soil of the experimental field was clay loam in texture soil with pH 7.49. This study included 12 treatments resulted from the combination of two propagation materials i.e., using stumps or offshoots in propagation and six treatments for growth stimulants and antiseptic substances (yeast extract at 5 g/1 for 20 min., garlic extract at 50 m1/1 for 10 min. , salicylic acid at 100 ppm for 5 min. , borax at 5% for 5 sec., fungicides mixture .i.e, Reyzolex plus Topsen plus Redomil at 3:2:1.5 g/l for each of them, respectively for 30 min. in addition to the control treatment). Spit plot design with three replicates was adopted where the propagation materials were located in the main plots while the growth stimulants, antiseptics and antifungi treatments were distributed randomly in the sub-plots. Obtained results can be summarized as follows:5-1 - Survival plant percentage.a- Using old crown pieces in propagation of globe artichoke cv. Hyrious or French significantly increased number of survivalSummary and Conclusion -52-plant percentage compared to the use of offshoots in planting during the two seasons of study.b-Application of growth stimulants and disinfectants (yeast extract, garlic extract, salicylic acid, borax, fungicides mixture) as pre planting soaking treatments significantly increased the percentage of survival plants compared to the control treatment. In this respect, pre planting soaking of propagation materials in garlic extract solution at 50 mill and antifungi (3g Rizolex + 2 g Topsen M70 + 1.5 g Redomel per liter) and borax at 5% reflected the highest values in this regard .c-The percentage of plant stand during both seasons of study was not significantly differ as a result of pre planting treatment of propagation materials with any used growth stimulants or antiseptic substances .5-2- Vegetative growth characters .a-Using old crown pieces in planting exhibited the highest values of all measured plant growth traits (plant height, number of offshoots and leaves per plant) during the two seasons of study.b-All the studied growth parameter i.e. plant height , number of leaves and offshoots per plant were positively enhanced as a result of pre planting soaking in all tested growth stimulants and disinfectants compared to the control treatment in both seasons of study.c-Soaking the used propagation materials especially stumps in garlic extract solution at 50 m1/1 gave the highest values forSummary and Conclusion -53-all measured growth parameters compared with other interaction treatments.5-3- Flowering behaviora-using either stumps or offshoots in propagation did not significantly affect both number of days elapsed from planting to flowering and number of days from planting to the first harvest. However, the lowest number of days elapsed from planting until starting of blooming and harvest was recorded in case of using offshoots in propagation.b-Pre-planting soaking of propagation materials in all tested substance significantly affected the number of days elapsed from plating till the flowering and the first harvest compared to the control treatment . In this respect , using the antifungi mixture (Rizolex + Topsen M70 + Redomel at 3:2:1.5 g/1 , respectively) followed by garlic extract and borax reflected the lowest number of days from planting to flowering and first

harvest.c-The lowest number of days from planting until flower bud appearance was recorded as a result of using stumps in propagation combined with using antifungi mixture. Also the same treatment reflected the lowest number of days from planting to the first harvest followed by pre planting soaking in garlic or borax solution.5-4- Flower head yield and its components.a- Propagated artichoke by using stumps significantly increased the total produced flower head yield and its components early and late flower head yield either per plant or feddan . In this respect, either early yield per plant in the first season or lateSummary and Conclusion -54-yield per plant and early yield per feddan in the second season were not significantly affected due to differ propagation materials.b-Treatment of propagation materials (stumps and offshoots) with different studied growth stimulants and disinfectants materials significantly increased early, late and total produced yield compared with the control treatment. In this respect , pre planting treatment of propagation materials with the mixture of fungicides (Rizolex + Topsen M70 + Redomel at 3:2:1.5 g/l, respectively) followed by garlic extract at 50 m1/1 salicylic acid at 100 ppm and borax at 5 % reflected the highest values for early , late and total yield for both plant and feddan.c-Using old crown pieces in propagation combined with pre planting treatment with mixture of fungicides or garlic extract solution exhibited the highest values for total yield and its components either for plant or feddan during the two seasons of study.5-5- Flower head physical qualitya-Propagated artichoke plant either with using offshoots or stumps did not affect average flower head weight, length and diameter as well as edible part weight. in this respect, using offshoots in propagation reflected the highest values for flower head parameters during the first seasons. However, in the second seasons using stumps was superior in this respect.b-Pre planting treatment of propagation materials by the tested growth stimulants and antiseptic substances enhanced all measured flower head parameters compared with the controlSummary and Conclusion -55-treatment. In addition , using borax solution at 5 % reflected the highest values for average head weight in case of early yield. Moreover, garlic extract at 50 ml/l and antifungi mixture gave the highest values of average head weight in case of late yield, head length, head diameter and edible part weight without significant differences among them in most cases.c-The interaction between propagation materials and pre planting treatments with growth stimulants and disinfectant treatments did not affect all flower head parameters except average head weight and edible part weight of late yield in the first season and average, head length and head diameter of early yield in the first and second season respectively . In addition , using offshoots in propagation combined with using the different pre planting treatments reflected generally the highest values. In this respect.5-6- Flower head chemical qualitya-There were no significant differences in all measured chemical quality aspects (dry matter, inuline, fibers and total carbohydrates) of flower heads either in early or late flower head yield among the different plant parts used in propagation i.e. offshoots or stumps during the two seasons of study. However, the highest values were recorded as a result of using stumps in planting.b-Pre-planting treatment of propagation materials with all tested substances positively affected dry matter, inuline, and total carbohydrates percentage in early and late flower head yield, in the same time it lowered the content of fibers comparedSummary and Conclusion -56-with the control treatment during both seasons of growth . In this respect, the highest values in all assayed chemical constituents and the lowest value of fibers were recorded as a result of pre-planting treatment with garlic extract at 50 m1/1.c- The highest values of dry matter and inuline percentage were recorded in case of using stumps in propagation and pre planting treatment with garlic extract at 50 m1/1. However, using offshoots in propagation with pre planting treatment with any of tested materials reflected the highest values of fiber and total carbohydrates content during both seasons of growth.