Effect of some irrigation treatments on growth and chemical composition of almond transplants

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The present investigation was carried out in a private nursery at El-Katameia region, Cairo Governorate, Egypt. This study was conducted during both 2008 and 2009 seasons. One-year-old ”Ne plus ultra” almond seedlings grafted on both Nemagurd and Bitter almond rootstock grown in a soil collectedfrom new valley governorate (El-Farafra Oasis).Eight treatments represented the different possible combinations between the following two investigated factors.- Two rootstocks (Nemagurd peach and Bitter almond) graftedwith Ne plus ultra almond as a scion.- Four irrigation regimes, taking in consideration that irrigation with 100 % field capacity is the control.Thus the investigated irrigation regimes which wereinvestigated by two rootstock were as follows:1)Ne plus ultra almond on Nemagurd peach and irrigation with 100 % from field capacity (common irrigation) as the control.2)Ne plus ultra almond on Nemagurd peach and irrigation with75 % from field capacity.3)Ne plus ultra almond on Nemagurd peach and irrigation with50 % from field capacity.4)Ne plus ultra almond on Nemagurd peach and irrigation with25 % from field capacity.5)Ne plus ultra almond on Bitter almond and irrigation with 100 % from field capacity (common irrigation) as the control.6)Ne plus ultra almond on Bitter almond peach and irrigationwith 75 % from field capacity.7)Ne plus ultra almond on Bitter almond and irrigation with 50 %from field capacity.8) Ne plus ultra almond on Bitter almond and irrigation with 25 % from field capacity.Obtained data could be summarized as follows: V.I. Vegetative growth measurements.V.I.1- Average shoot length.A.Specific effect:Regarding the specific effect of rootstock type on shoot length data revealed that, Nemagurd peach rootstock was better than the other investigated rootstock, concerning the specific effect of the different irrigation regime (100 % 75 %, 50 % and 25 % of field capacity) on Ne plus ultra almond shoot length, data revealed that, water addition through irrigation with full field capacity (control) was superior in this respect where it was able to increase significantly shoot length as compared with the different investigated irrigation regime (100 %, 75 %, 50 % and 25 % of field capacity) during both seasons of study. Irrigation with 75 % of field capacity came in the second rank, we can concluded that, there was positive relation between shoot length of increment Ne plus ultra almond and amount of water through irrigation.B.Interaction effect:Regarding the interaction effect of the two investigated factors i.e., rootstock type and different irrigation regime (100 %, 75 %, 50 % and 25 % of field capacity) on Ne plus ultra almond shoot length, data show a considerable and statistically effect in both seasons of the study, where the highest shoot length was obtained with the combination between Nemagurd peach rootstock irrigated with 100 % of field capacity (control), however the lowest decrease in shoot length was noticed by Ne plus ultra almond grafted on Bitter almond rootstocks andirrigated with 25 % of field capacity as compared with the other two irrigation regime and control during the two seasons of study.V.I.2- Total number of shoot/transplant, shoot diameter and total number of leaves/transplant.A.Specific effect:Data show that, Bitter almond rootstock was better than Nemagurd peach rootstock in this respect, where it improved statistically the three investigated parameter for both seasons of study. With respect to the different irrigation regime on shoot number/transplant, shoot diameter and number of leaves/transplant, data revealed that shoot number/transplant , shoot diameter and number of leaves/transplants were statistically increased when the transplants were irrigated with the highest rate irrigation (100 %) of field capacity as

compared with the other irrigation regime during both seasons of study.B.Interaction effect:Data cleared that, the maximum improvement in both shoot number/ transplant, shoot diameter and number of leaves/transplant parameters were noticed with such combined of Bitter almond rootstock irrigated with 100% of field capacity. On the other hand, the lowest decrease in and of Ne plus ultra almond was obtained when Nemaguard peach used as rootstock and the transplants were irrigated with 25 % of field capacity in both seasons of study.V.I.3- Average leaf area (cm2) A. Specific effect:Regarding the specific effect of the rootstock type (Bitter almond and Nemaguard peach) and different irrigation regime (100 %, 75 %, 50 % and 25 %) beside the control (100 % of fieldcapacity) on the average leaf area (cm2) Ne plus ultra almond, data revealed that Nemaguard peach rootstock had a greater value of leaf area than the other investigated rootstock (Bitter almond) during both seasons of study.Regarding the specific effect of different irrigation regime on average leaf area (cm2), data indicated that, all the investigated irrigation regime significantly decreased average leaf area (cm2) of Ne plus ultra almond as compared with control which was irrigated with 100 % of field capacity. Control irrigation treatment gave the highest value of the average leaf area (cm2).B. Interaction effect:Concerning the interaction effect of the two investigated factors i.e., rootstock type and different irrigation regime on average leaf area (cm2), data showed that, the most increment of leaf area per transplant was that combination between Nemaguard peach rootstock and the highest irrigation rate (100 % of filed capacity, control). On the other hand, the most depressive in the average of leaf area value per transplant was detected by Ne plus ultra almond grafted on Bitter almond rootstock and irrigated with 25 % of filed capacity during both seasons of study. The other combinations were in between.V.I.4- Top fresh weight, root fresh weight and top/root ratio. A. Specific effect:Concerning the specific effect of the two investigated factors i.e., rootstock type and the different irrigation regime on top fresh weight , root fresh weight and top/root ratio, data indicated that Bitter almond rootstock gave the highest values of three investigated parameters as compared with the other investigated rootstock (Nemaguard peach).