RESULTS AND DISCUSSION

IV- RESULTS AND DISCUSSION

This investigation was carried out to cover the influence of the two investigated factors namely: 1- N, K fertilizer soil applied at two levels, 2- some bio-stimulants compounds Nitrobein, Phosphorene and active dry yeast either alone or together) and their possible combinations on "Canino" apricot trees were studied during both 2006 and 2007 seasons. Such influence was evaluated through the response of some vegetative growth measurements, nutritional status (leaf mineral composition) and some fruiting aspects as well as some fruit characteristics of the treated "Canino" apricot trees.

Therefore, obtained results in this study dealing with any of the abovementioned four aspects are separately during both seasons of study discussed as follows:

IV-I- Response of some vegetative growth measurements.

IV-II- Response of nutritional status "Leaf mineral composition".

IV-III- Response of some fruiting parameters.

IV-IV- Response of some fruit characteristics "fruit quality".

IV-I- Response of some vegetative growth measurements.

In this regard net increase in shoot length; average number of leaves per shoot; increment percentage of trunk diameter; leaf dimension (leaf length and width); leaf shape index (leaf length : width ratio); leaf area and leaf dry weight were the eight growth

measurements of "Canino" apricot trees investigated pertaining their response to the specific effect of investigated variables of each studied factor i.e., (two levels of NK soil applied) and three bio-stimulants compounds soil applications as well as interactions effect of the combinations between the variables of both investigated factors.

IV-I-1- Average increase % in shoot length (cm.)

A- Specific effect:

With regard the specific effect of (NK) soil application level, data presented in Tables (3 & 4) revealed clearly that the net increase in shoot length responded specifically to the NK levels throughout the first and second seasons of study. However, the greatest net increase in shoot length was significantly exhibited by those "Canino" apricot trees supplied with N_2K_2 treatment (2.0 kg) from each nutrient element source divided to be soil applied at two equal doses. On the other hand the opposite trend was detected with the lowest NK level i.e., (N_1K_1) treatment which induced significantly the least net increase in shoot length. Such trend was true during both 2006 and 2007 seasons of study.

Considering the specific effect of some investigated bio-stimulants under study i.e., (Nitrobein, Phosphorene and active dry yeast) as soil added, it is quite evident from tabulated data in the same Tables that all tested bio-stimulants either alone or together surpassed statistically the control trees. Moreover, the (Nit x Phos x y) treated trees were more effective than any bio-stimulants treatments which induced statistically the greatest value in net increase in shoot length of "Canino" apricot trees

however both (Nit x Y) and (Nit x Phos) ranked statistically second and third, respectively. In addition to that, the control trees was statistically the inferior as exhibited the least value in net increase of shoot length during the two seasons of study. Furthermore, differences in the net increase of shoot length due to bio-stimulants soil applied were more pronounced than those previously discussed with the NK application level hence, differences between all used bio-stimulants were significant as each treatment compared the others. Such trend was true during both 2006 and 2007 seasons of study.

B- Interaction effect:

Referring the interaction effect of the different combinations treatments between the various variables of both investigated factors on the net increase of shoot length of "Canino" apricot trees, data represented in Tables (3 & 4) displayed obviously that the specific effect of each factor i.e., (NK level and bio-stimulants) soil applied was directly reflected on their combinations during the first and second seasons of study. However, the combinations between the (N_2K_2) soil application level from one hand and the (Nit x Phos x y) soil added from another i.e., (N_2K_2 x Nit x Phos x y) combination treatment exhibited statistically the greatest value in the net increase of shoot length of "Canino" apricot trees. Since, (N_2K_2 x Nit x y) ranked statistically the second, but difference did not reach level of significant in the second season (2007) only, then followed by combination treatments of (N_1K_1 x Nit x Phos x y), (N_2K_2 x Nit x Phos) and (N_2K_2 x Phos x y). In addition, the control treatment of "Canino" apricot trees showed statistically the inferior as induced the least value in net increase of shoot

length in both seasons of study. Meanwhile, other combinations treatments were intermediate the abovementioned discussed combinations treatments.

The obtained data regarding the response of the net increase in shoot length to the different levels of (NK) soil applied are in general agreement with those found by **Janjic (1978), Tatini *et al.*, (1986); Hegazy and Kilany (1987); Kilany and Kilany (1991), Hipps (1992); Mekhael (1994) ; Nasef (2000); Wahba (2002); Kabeel (2004) and Kabeel *et al.*, (2007)** on apple, peach, pear, persimmon and apricot trees. They revealed that shoot length significantly increased by increasing the level of (NK) fertilization. Meanwhile, the influence of bio-stimulants present results goes in the line with the findings of **Ahmed *et al.*, (1997)** on grapevines, **Mansour (1998)** on apple; **Mahmoud and Mahmoud (1999)** on peach; **Abou Grah-Fatma (2004) and Wahba (2007)** on persimmon; **Eissa-Fawzia (2003), Shddad *et al.*, (2005) and Kabeel *et al.*, (2005) on apricot and Kabeel *et al.*, (2007)** on apple trees. Who indicated that treated trees with some bio-stimulants as soil applied resulted in increasing the net shoot length.

IV-I-2- Average number of leaves per shoot.

A- Specific effect:

With respect to the specific effect of (NK) soil applied level, data in Tables (3 & 4) indicated clearly that the average number of leaves per shoot responded specifically to the level of (NK) soil surface application. Whereas, the same trend previously found with the net increase of shoot length was also detected in this concern. In other words, the (N_2K_2) treatment was the superior and showed the highest number of leaves per

shoot. On the contrary, the least number of leaves per shoot was statistically produced by the lower (NK) soil applied level i.e., (N_1K_1). Moreover, difference was significant when the (N_2K_2) treated trees were compared to those treated with (N_1K_1) treatment.

As for the specific effect of some investigated bio-stimulants, results in Tables (3 & 4) revealed that the number of leaves per shoot followed approximately the same trend during the two seasons of study. Whereas, all studied bio-stimulants treatments significantly exhibited the highest number of leaves per shoot as compared to control during both 2006 and 2007 seasons. However, the highest number of leaves per shoot was significantly in concomitant to the (Nit x Phos x y) treated trees followed statistically by (Nit x y) in the first season and by (Nit x y); (Nit); (Phos x y), (Nit x Phos) and (y) however, differences between these treatment were not significant in the second season. On the other hand, the reverse was true with those untreated trees with bio-stimulants which induced statistically the least number of leaves per shoot. Such trend was detected throughout the first and second seasons of this investigation.

B- Interaction effect:

Regarding the interaction effect of the different (NK x bio-stimulants) combinations treatments on the number of leaves per shoot, data in Tables (3 & 4) displayed clearly that the highest number of leaves/shoot was always in concomitant with those two combinations between the (N_2K_2) from one hand and any the (Nit x Phos x y) and (Nit x y) from the other, then followed by the (N_1K_1 x Nit x Phos x y) combination treatment. Contrary to that, the opposite trend was detected with the control

and (N_1K_1) treatments, whereas both resulted significantly in the least number of leaves per shoot during both 2006 and 2007 seasons of study. In addition, other combinations treatments were in between the abovementioned two extents with relatively variable tendency of response.

Data obtained on the influence of NK level as soil application on the number of leaves/shoot were supported by the findings of many investigators, **Sharaf *et al.*, (1994), Khamis *et al.*, (1994), Nasef (2000), Wahba (2002), Kabeel (2004) and Kabeel *et al.*, (2007)** on some deciduous fruit trees and seedlings, they mentioned that the number of leaves per shoot was positively affected the different treatments of NK fertilization. Meanwhile, a similar observation were achieved by **Eissa-Fawzia (2003), Shddad *et al.*, (2005) and Kabeel *et al.*, (2005)** on apricot; **Abou Grah-Fatma (2004) and Wahba (2007)** on persimmon and **Kabeel *et al.*, (2007)** on "Anna" apple trees with respect of influence of bio-stimulants soil applied on the number of leaves per shoot.

IV-I-3- Increment percentage of trunk diameter.

A- Specific effect:

With respect to the specific effect of the NK soil applied level, data obtained during both 2006 and 2007 seasons as shown in Tables (3 & 4) revealed obviously that the increment percentage of trunk diameter was significantly influenced. However, the highest percentage in trunk diameter increment was resulted by the higher level of NK fertilizer treatment i.e., (N_2K_2), whereas the opposite trend was detected with the lower level of NK i.e., (N_1K_1) which induced the least increment

percentage of trunk diameter. Also, it could be noticed that differences in trunk diameter increment (%) were significant as the two (N_2K_2) and (N_1K_1) fertilization treatments were compared each other, such trend was true during the first and second seasons of study.

Referring the response to specific effect of bio-stimulant treatments soil applied, it was clear that the increment percentage of trunk diameter responded significantly to the different bio-stimulants treatments. Whereas, the (Nit x Phos x y) treatment was statistically the superior and more effective than the other bio-stimulants treatments. On the other hand, the opposite trend was true with the control treatment which exhibited significantly the least value of trunk diameter increment (%). Moreover, differences were significant as all bio-stimulants were compared each other in most cases during both 2006 and 2007 seasons of study.

B- Interaction effect:

Considering the interaction effect of the different combinations between the two investigated factors (NK x bio-stimulants), data tabulated in Tables (3 & 4) show clearly that the highest increment percentage of trunk diameter was in closed relationship with those trees received the N_2K_2 combined with both Nit x Phos x y and Nit x y from one hand and the N_1K_1 combined with Nit x Phos x y i.e., (N_2K_2 x Nit x Phos x y), (N_2K_2 x Nit x y) and (N_1K_1 x Nit x Phos x y) combinations treatments. Since, the three abovementioned combinations treatments were equally effective from the stand point of statistic. On the other hand, the opposite trend was observed by those trees subjected to the control treatment which exhibited

Table (3): Average increase % in shoot length, number of leaves/shoot and increment (%) in trunk diameter of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Average increase % in shoot length			Number of leaves/shoot			Increment (%) in trunk diameter		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	63.33j	68.33h	**65.73F**	36.05i	39.63h	**37.83F**	12.19f	12.56ef	**12.38DE**
Nitrobein (Nit)	76.00de	81.67b	**78.83C**	45.29ef	47.14cd	**46.21C**	12.67ef	15.70bc	**14.39C**
Phosphorene (Phos)	66.67i	71.67f	**69.17E**	37.19i	44.55f	**40.87E**	12.24f	13.04d-f	**12.62DE**
Active dry yeast (y)	70.00g	75.00e	**72.43D**	42.12g	45.35ef	**43.73D**	12.57ef	14.70c-e	**13.63CD**
(Nit x Phos)	76.67d	82.00b	**79.30B**	45.25ef	47.22cd	**46.23C**	13.51c-f	17.80ab	**15.35C**
(Nit x y)	78.33c	81.67b	**79.93B**	45.35ef	49.46ab	**47.10B**	15.12b-d	18.60a	**16.86B**
(Phos x y)	68.33h	78.33c	**73.30D**	45.28ef	46.55de	**45.90C**	12.74ef	13.64c-f	**13.17D**
(Nit x Phos x y)	81.67b	96.67a	**89.13A**	48.35bc	50.51a	**49.43A**	18.20a	18.69a	**18.43A**
Control	63.33j	63.33j	**63.33G**	37.19i	37.19i	**37.19F**	11.43fg	11.43fg	**11.43E**
Mean**	**71.59B**	**77.63A**		**42.45B**	**45.28A**		**13.40B**	**15.08A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (4): Average increase % in shoot length, number of leaves/shoot and increment (%) in trunk diameter of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Average increase % in shoot length			Number of leaves/shoot			Increment (%) in trunk diameter		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	67.00i	74.00gh	**70.47E**	43.70j	45.77i	**44.73D**	11.22g	12.14fg	**11.67E**
Nitrobein (Nit)	75.63ef	79.33d	**77.43C**	48.28fg	49.66c-e	**48.97B**	13.07d-f	14.09c-e	**13.57D**
Phosphorene (Phos)	73.00h	77.00e	**75.00D**	45.63i	48.88ef	**47.17C**	11.30g	12.79ef	**12.03E**
Active dry yeast (y)	75.67ef	79.00d	**77.30C**	47.30gh	49.45d-f	**48.37B**	14.00c-e	14.06c-e	**14.01D**
(Nit x Phos)	79.33d	81.67bc	**80.43B**	47.00g-i	49.99c-e	**48.49B**	14.05c-e	16.18b	**15.10C**
(Nit x y)	80.33cd	85.00a	**82.63AB**	50.14c-e	52.29b	**51.21B**	14.38cd	18.47a	**16.43B**
(Phos x y)	75.00fg	81.33bc	**78.13C**	46.47hi	50.68cd	**48.57B**	14.28cd	15.09bc	**14.58CD**
(Nit x Phos x y)	82.33b	85.67a	**84.00A**	51.34bc	53.80a	**52.57A**	18.96a	19.15a	**19.03A**
Control	65.33j	65.33j	**65.33F**	43.03j	43.03j	**43.03E**	9.76h	9.76h	**9.76F**
Mean**	**74.83B**	**79.47A**		**46.98B**	**49.28A**		**13.44B**	**14.63A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

statistically the least increment percentage of trunk diameter throughout the first and second seasons of study. In addition, other combinations were in between with a tendency of variability in their effectiveness. Such trend was detected during both 2006 and 2007 seasons of study.

The obtained data regarding the response of increment percentage of trunk diameter to NK soil applied level are confirmed with the findings of **Fielder (1975); Neilson *et al.*, (1984); Ystaas (1990); Nasef (2000); Wahba (2002) and Kabeel (2004)** on some deciduous fruit trees, they indicated that trunk diameter was increased by increasing the level of NK soil application. Whereas, the obtained results concerning the effect of some bio-stimulants go in line with those reported by **Abou Grah-Fatma (2004) and Wahba (2007)** on persimmon trees.

IV-I-4- Leaf dimensions (leaf length and width).

A- Specific effect:

With respect to the specific effect of the (NK) soil application level, obtained data during both 2006 and 2007 seasons as shown in Tables (5 & 6) displayed obviously that both leaf dimensions, leaf length and width were significantly influenced. The greatest value of both leaf measurements (length and width) was inclosed relationships with the highest NK level i.e., "N_2K_2". On the other hand, the opposite trend was generally coupled with the lowest NK level i.e., " N_1K_1" treated trees. Moreover the response of leaf length was not only more pronounced but also followed a firmer trend as compared to the analogous one exhibited with leaf width. Furthermore, the difference in leaf length and leaf width were significant as the

two N_1K_1 and N_2K_2 fertilization treatments were compared each other during both the first and second seasons of study.

Referring the leaf dimensions (leaf length and width) of "Canino" apricot trees as affected by the specific effect of some bio-stimulants soil applied under study. Tables (5 & 6) show clearly that both growth measurements followed topically the same trend during the two seasons of study. Whereas, the highest value of both characteristics was significantly in concomitant to the (Nit x Phos x y) treated trees followed by both treatments of (Nit x Y) and (Phos x Y) stimulants soil application. On the other hand, the opposite trend was found with those trees subjected to the control treatment. However, the decrease exhibited by the control trees was significant as compared to those of any stimulants investigated trees during both 2006 and 2007 seasons of study.

B- Interaction effect:

Regarding the interaction effect of the different combinations treatments between the variables of each investigated factor obtained data in Tables (5 & 6) indicated clearly that the highest value of leaf dimensions (leaf length and width) was in closed relationship with those trees received the "N_2K_2" combined with both (Nit x Phos x y) and (Nit x y) soil application followed by the combination treatment of (N_1K_1 x Nit x Phos x y) during the two seasons of study, respectively. On the other hand, the opposite trend was detected by those control trees and (N_1K_1 x no stimulants) soil application. Since, those two abovementioned combinations treatments exhibited statistically the least value of leaf dimensions (leaf length and width) during both the first and second seasons of study. In

addition, other combinations treatments were in between in spite of the combinations between "N_2K_2" from one hand and (Nit x Phos x y), (Nit x y), (Phos x y), (Nit) and (Y) from the other tended statistically to be more effective, followed by those "N_1K_1" combined with the same aforesaid bio-stimulants soil applications.

The present results are in a general agreement with those mentioned by some investigators, **Sharma and Singh (1980); Rezeto (1984); Raesse (1990); Mekhael (1994); Nasef (2000); Wahba (2002) and Kabeel (2004)** on apple, pear, persimmon, peach trees as for the influence of NK soil applied level. Meanwhile, a similar observations were achieved by **Eissa-Fawzia (2003); Shddad *et al.*, (2005) and Kabeel *et al.*, (2005)** on apricot trees with respect of the influence of bio-stimulants soil application on leaf dimensions.

IV-I-5- Leaf shape index.

A- Specific effect:

Tables (5 & 6) displayed obviously that the leaf shape index (leaf length/width ratio) of "Canino" apricot trees was generally responded to specific effect of the NK level. However, the leaf blade tended to be slightly oblonged as the NK applied level was increased while the response was completely absent from the stand point of statistic. In other words, leaf shape index (leaf length/width ratio) of "Canino" apricot trees treated with (N_1K_1) and (N_2K_2) soil application were statistically the same. The differences were insignificant as leaf shape index of trees received any of (N_1K_1) and (N_2K_2) treatments were compared each other. Such trend was true during both 2006 and 2007 seasons of study.

As for the specific effect of the investigated bio-stimulants soil applied obtained data represented in the same two the Tables indicated clearly that all stimulant treatments including the control and (NK treatment only did not significantly differ pertaining their specific effect on the leaf shape index (leaf length/width). Such trend was true in the second season (2007) only. Whereas, in the first one (2006 season); treated trees with (Nit x Phos x y), control and NK were induced significantly the greatest values of leaf length: leaf width ratio (leaf shape index) as compared to the analogous values of the bio-stimulants treatments of (Y), (Phos x y), (Nit x Phos) and (Phos) treated trees. However, other bio-stimulants were in between the two abovementioned extents where showed the same effectiveness from the stand point of statistic.

B- Interaction effect:

Concerning the differences in the leaf shape index of "Canino" apricot trees due to the interaction effect of different combinations between the two investigated factors (NK level x bio-stimulants) obtained data in Tables (5 & 6) show clearly that of "Canino" apricot trees in all cases during the first season (2006) induced leaves had significantly the same shape index value except those received treatment of "N_1K_1" combined with (Phos) which statistically depressed the obligation tendency of leaf blade than the other (NK x bio-stimulants) combinations treatments. Moreover, in the second season (2007) the response of leaf shape index to the different combinations treatments under study follow the same trend with some exceptions. This may be due to the unparalleled level of response exhibited in both leaf dimensions to a given variable of the same investigated

Table (5): Leaf dimensions (leaf length and width) and its shape index of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Leaf length (mm.)			Leaf width (mm.)			Leaf shape index (Leaf length/width ratio)		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	63.0j	68.3gh	**65.63F**	58.0g	63.3e	**60.53E**	1.087a	1.080a	**1.085A**
Nitrobein (Nit)	68.0h	69.3e-g	**68.60D**	62.7e	65.7d	**64.17D**	1.084a	1.057ab	**1.070AB**
Phosphorene (Phos)	65.3i	69.0f-h	**67.13E**	62.7e	65.3d	**64.80D**	1.041b	1.057ab	**1.049B**
Active dry yeast (y)	68.7gh	71.00cd	**69.83CD**	64.7d	67.3bc	**66.00C**	1.062a	1.055ab	**1.058B**
(Nit x Phos)	70.0d-f	70.7cd	**70.33C**	66.7c	66.7c	**66.70B**	1.049ab	1.060a	**1.054B**
(Nit x y)	70.3de	76.0a	**73.13B**	67.0c	69.0a	**68.00A**	1.049ab	1.102a	**1.075AB**
(Phos x y)	69.0f-h	71.7c	**70.33C**	65.7d	67.3bc	**66.47BC**	1.050ab	1.065a	**1.057B**
(Nit x Phos x y)	73.7b	75.7a	**74.70A**	67.7b	69.0a	**68.33A**	1.089a	1.097a	**1.093A**
Control	63.0j	63.0j	**63.00G**	57.3g	57.3g	**57.30F**	1.099a	1.099a	**1.099A**
Mean**	**67.89B**	**70.52A**		**63.61B**	**65.66A**		**1.068A**	**1.075A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (6): Leaf dimensions (leaf length and width) and its shape index of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Leaf length (mm.)			Leaf width (mm.)			Leaf shape index (Leaf length/width ratio)		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	68.3g	68.7fg	**68.47E**	65.0g	67.0f	**66.00F**	1.051ab	1.025b	**1.038A**
Nitrobein (Nit)	69.3e-g	70.7c-e	**70.00C**	67.7e	67.7e	**67.00E**	1.024b	1.044ab	**1.034A**
Phosphorene (Phos)	69.7d-f	69.7d-f	**69.70D**	67.7e	68.3d	**68.00C**	1.030b	1.021b	**1.025A**
Active dry yeast (y)	70.0de	70.7c-e	**70.33C**	68.0d	69.0c	**68.47C**	1.029b	1.025b	**1.027A**
(Nit x Phos)	70.0de	71.3c	**70.63C**	67.7e	68.0d	**67.83D**	1.034ab	1.040ab	**1.042A**
(Nit x y)	71.0cd	74.3b	**72.63B**	68.7c	71.3a	**70.00B**	1.033ab	1.042ab	**1.037A**
(Phos x y)	70.7c-e	73.3b	**72.00B**	69.3b	71.0b	**70.30B**	1.020b	1.032ab	**1.026A**
(Nit x Phos x y)	73.3b	77.7a	**75.47A**	71.0b	71.7a	**71.33A**	1.032ab	1.084a	**1.058A**
Control	65.7h	65.7h	**65.70F**	64.3h	64.3h	**64.30G**	1.022b	1.022b	**1.022A**
Mean**	**69.78B**	**71.34A**		**67.61B**	**68.70A**		**1.031A**	**1.038A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

factor whereas any of leaf length or width showed its own level of response to each individual combination.

In general, the present results are coincident in most cases with those mentioned by **Nasef (2000);** on pear; **Wahba (2002)** on persimmon **and Kabeel (2004)** on peach trees for the influence of (NK) soil applied level. However, the trend of response to the bio-stimulants soil added goes in line with those reported by **Eissa-Fawzia (2003); Shddad *et al.*, (2005) and Kabeel *et al.*, (2005)** on apricot trees.

IV-I-6- Leaf area (cm^2).

A- Specific effect:

Considering the area of "Canino" apricot leaf in response to the specific effect of the (NK) soil applied level, data represented in Tables (7 & 8) displayed clearly that this growth measurements (leaf area) followed typically the same trend during both seasons of study. However, the highest value of this studied characteristic i.e., leaf area was significantly in concomitant to the highest NK level (N_2K_2) treated trees. Meanwhile, the opposite was found with those trees subjected to the lowest NK fertilization treatment i.e., N_1K_1 level. Moreover, the decrease exhibited by the N_1K_1 treated trees was significant as compared to those of the N_2K_2 treated trees during the first and second seasons of study.

Regarding the specific effect of some investigated bio-stimulants in this study i.e., Nitrobein, Phosphorene, and Active dry yeast as soil application, data tabulated in the same tow Tables showed obviously that the leaf area followed the same trend during both 2006 and 2007 seasons of study. Such trend revealed that the positive relationships between studied bio-

stimulants soil applied and leaf area of "Canino" apricot cv. However, all the bio-stimulants tested treatments soil added were increased significantly the leaf area as compared to the control trees in the two seasons of study. In addition, it could be observed that the highest values of leaf area (53.30 and 52.41 cm^2) were obtained from (Nit x Phos x y) treatment in both 2006 and 2007 seasons, respectively. On the other hand, the opposite trend was detected with the control treatment which induced statistically the lowest value of leaf area during the two seasons of study. Furthermore, other bio-stimulant treatments recorded in between, while differences in all cases were significant as compared to those subjected to the aforesaid two extents in the first and second seasons of study.

B- Interaction effect:

With regard to the interaction effect of the different combinations between the two variables of the investigated factors i.e., NK and some bio-stimulants soil application, data in Tables (7 & 8) revealed that the specific effect of each studied factor was directly reflected on their interaction effect, whereas the highest values of leaf area of "Canino" apricot cv., was inclosed relationship with those trees received the highest level of the NK i.e., N_2K_2 combined with both (Nit x Phos x y) and (Nit x y) bio-stimulants treatments during the two seasons, respectively. In other words, both (N_2K_2 x Nit x Phos x y) and (N_2K_2 x Nit x y) combinations treatments exhibited statistically the largest area of "Canino" leaf, respectively. Differences between the abovementioned two combinations treatments were significant during the first and second seasons of study. On the other hand the opposite trend was detected with both (N_1K_1 x

without bio-stimulants) and the control treatments which they resulted in statistically the least values of leaf area during both seasons. In addition, other combinations were in between with a tendency of variability in their effectiveness. Such trend was true during both 2006 and 2007 seasons of study.

The obtained results regarding the response of leaf area to both NK levels and some bio-stimulants soil application are coincident with that mentioned by **Khamis *et al.*, (1994); Sharaf *et al.*,(1994) Nasef (2002) Eissa-Fawzia (2003); Kabeel (2004) and Shddad *et al.*, (2005)** on some deciduous fruit species.

IV-I-7- Leaf dry weight (mg.).

Referring the leaf dry weight (mg.) of "Canino" apricot cv., in response to the specific effect of the NK soil added level data tabulated in Tables (7 & 8) indicated that a firm trend was obviously detected. Since, the highest NK level soil added i.e., (N_2K_2) the greatest leaf dry weight content was obviously recorded, meanwhile the opposite trend was observed with the lowest NK applied level i.e., N_1K_1 which resulted in the least value of leaf dry weight. Moreover, differences were significant between the two NK investigated levels. Such trend followed typically the same trend during both the first and second seasons of study.

As for the response to specific effect of some investigated bio-stimulants compounds under study, it was clear from data in the same Tables that the leaf dry matter content responded significantly. Whereas, the leaf dry weight was generally increased with using studied bio-stimulants as soil applied. Differences were significant as any bio-stimulant treated trees were compared to either the control or NK x without bio-stimulant added treatments. Moreover, the (Nit x Phos x y)

treatment was significantly more effective as compared to those of the other bio-stimulants. On the other hand, the other bio-stimulants treatments were in between with relatively variable tendency of response. Such trend was detected during both 2006 and 2007 seasons of study.

B- Interaction effect:

Concerning the interaction effect resulted by the different combinations of the two investigated levels of NK and some bio-stimulants soil applied treatments, data represented in Tables (7 & 8) displayed clearly the specific effect of both factors under study reflected directly in their interaction effect. Whereas, the combinations between the highest NK soil application level i.e., (N_2K_2) from one hand and (Nit x Phos x y) bio-stimulants compounds as soil applied from the other had exhibited statistically the greatest leaf dry matter content during the first and second seasons. Moreover, both combinations of (N_2K_2 x Nit x y) and (N_1K_1 x Nit x Phos x y), descendingly ranked second or third, whereas differences between the aforesaid superior combination and the two latter ones were significant. On the other hand, the least significant value of leaf dry matter content were closely related to both (N_1K_1 x without bio-stimulants) and the control treatments. In addition, other combination were intermediate. Such trend true during both 2006 and 2007 seasons of study.

The obtained results concerning the response of leaf dry weight to the NK level and some bio-stimulants soil applied were supported by the findings of many investigators, **Kilany and Kilany (1991); Sharaf *et al.*, (1994); Nasef (2000); Wahba (2002), Abou Grah-Fatma (2004); Shddad *et al.*, (2005) and Kabeel *et al.*, (2007)** on some deciduous fruit species.

Table (8): Leaf area (cm^2) and leaf dry weight (mg)of "Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Leaf area (cm^2)			Leaf dry weight (mg.)		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	37.22l	38.13k	**37.68H**	417.0h	420.0gh	**419.0F**
Nitrobein (Nit)	40.58i	42.07h	**41.32F**	430.0f-h	447.0d-f	**438.0DE**
Phosphorene (Phos)	39.18j	40.01i	**39.60G**	420.0gh	437.0e-g	**428.0E**
Active dry yeast (y)	41.39h	43.24g	**42.31E**	437.0f-h	450.0de	**441.0D**
(Nit x Phos)	47.79e	46.90f	**47.35D**	443.0d-f	453.0c-e	**448.0D**
(Nit x y)	50.48c	51.37b	**50.92B**	457.0cd	497.0a	**477.0B**
(Phos x y)	48.46de	48.83d	**48.65C**	447.0d-f	470.0bc	**459.0C**
(Nit x Phos x y)	51.85b	52.97a	**52.41A**	477.0b	507.0a	**492.0A**
Control	34.49m	34.49m	**34.49I**	393.0i	393.0i	**393.0G**
Mean**	**43.49B**	**44.22A**		**435.0B**	**453.0A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (7): Leaf area (cm^2) and leaf dry weight (mg)of "Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Leaf area (cm^2)			Leaf dry weight (mg.)		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	39.70k	40.43ij	**40.07H**	393.0hi	423.0d-f	**408.0D**
Nitrobein (Nit)	40.93i	42.96h	**41.94F**	413.0ef	433.0d	**423.0CD**
Phosphorene (Phos)	39.94jk	42.47h	**41.20G**	407.0f	427.0de	**417.0D**
Active dry yeast (y)	42.58h	44.19g	**43.38E**	417.0f-h	430.0de	**423.0CD**
(Nit x Phos)	44.83g	46.32f	**45.58D**	417.0f-h	460.0c	**438.0C**
(Nit x y)	49.47d	52.80b	**51.13B**	433.0d	490.0b	**461.0B**
(Phos x y)	47.02e	47.47e	**47.24C**	427.0de	463.0c	**445.0BC**
(Nit x Phos x y)	50.77c	55.80a	**53.78A**	477.0bc	510.0a	**493.0A**
Control	38.29l	38.29	**38.29I**	387.0i	387.0i	**387.0E**
Mean**	**43.73B**	**45.64A**		**419.0B**	**447.0A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

IV-II- Response of nutritional status "leaf mineral content":

In this regard the leaf mineral content of "Canino" apricot trees as affected by the differential N; K and some bio-stimulants treatments were investigated. The leaf N; P; K; Ca; Mg; Fe; Zn and Mn contents estimated each either as an absolute value per an individual leaf (mg./leaf) or as a ratio on the dry weight base (percentage for the five macro-elements, i.e., N; P; K; Ca and Mg and ppm for the three micro-nutrients i.e., Fe; Zn and Mn were concerned). Data obtained during both 2006 and 2007 seasons were tabulated in Tables (9), (10), (11), (12), (13), (14), (15) and (16) for N; P; K; Ca; Mg; Fe; Zn and Mn, respectively.

IV-II-1- Leaf nitrogen content.

A- Specific effect:

Regarding the leaf N content of "Canino" apricot trees in response to the specific effect of NK soil application levels, it is quite evident from Table (9) that a firm trend was obviously detected. Since, the highest (NK) level i.e., (N_2K_2) soil applied the greatest leaf N content was obviously recorded. While the opposite was true with the lowest (NK) soil added level (N_1K_1) i.e., (1.0 kg from ammonium sulphate (20.6 % N/tree/year) and 1.0 kg from potassium sulphate (48 % K_2O)/tree/year). Moreover, differences were significant between the two (NK) investigated levels. Such trend was detected during both 2006 and 2007 seasons regardless of the base of estimation leaf N content i.e., as either a percentage of the leaf dry weight or absolute value "mg. per leaf".

Concerning the response to the specific effect of some stimulants compounds i.e., (Nitrobein, Phosphorene and active dry yeast) either alone or combined together, it was clear that leaf N content responded significantly. However, the leaf N content was generally increased with using all studied bio-stimulants compounds either alone or in combined together as compared to either the (NK) soil applied levels only or the control treatments during both the first and second seasons of study. The increase exhibited in leaf N content in this respect was significant. On the other hand, the differences were more pronounced as the "Canino" apricot trees were provided with the treatment of (Nit x Phos x y). In other words, (Nit x Phos x y) treated trees induced statistically the richest leaves in their N content as compared to any bio-stimulants treatments during the two seasons of study. Furthermore, such trend was detected as the level of N content was expressed either as a percent or an absolute value.

B- Interaction effect:

With respect to the interaction effect resulted by the different combinations of the rates or levels investigated of both (NK) and some biofertilizers soil applications, data in Table (9) displayed clearly that the specific effect of both factors under study reflected directly on their interaction effect. Hence, the combinations between the highest (NK) soil applied level i.e., (N_2K_2) from one hand and (Nit x Phos x y) combined with them from the other exhibited statistically the greatest leaf N content. Meanwhile, the combinations between (N_2K_2 x Nit x y) and (N_1K_1 x Nit x Phos x y) in the first season and the treatment of

(N_1K_1 x Nit x Phos x y) in the second one ranked second to the abovementioned superior combination i.e., (N_2K_2 x Nit x Phos x y) in spite of differences did not reach level of significance. On the other hand, both treatments of the combination between (N_1K_1 x no fertilizer compounds) and the control treatment were statistically the inferior as both showed significantly the least value of leaf N content regardless of estimation method used for determining the concerned nutrient element. Such trend was true during both 2006 and 2007 seasons of study. In addition, other (NK x bio-stimulants) combinations were intermediate with a tendency of variability in their effectiveness as compared to the abovementioned two extents.

The obtained results regarding the response of leaf N content of "Canino" apricot trees to NK soil applied level were supported by the findings of many investigators, **Sadoweski *et al.*, (1990); Ystaas (1990); Khamis *et al.*, (1994); Mekhael (1994); Sharaf *et al.*, (1994); Kabeel *et al.*, (1998); Nasef (2000); Wahba (2002); Kabeel (2004); Wahba (2007) and Kabeel *et al.*, (2007)** on some deciduous fruit species.

However, they revealed that leaf N content increased by increasing the level of the NK soil application. Furthermore, the influence of some biofertilizer compounds under study (Nitrobein, Phosphorene and active dry yeast) as soil added was in harmony with that mentioned by **Mansour (1998); Fathi *et al.*, (2002)** on apple trees; **Eissa-Fawzia (2003); Shddad *et al.*, (2005); Kabeel *et al.*, (2005)** on apricot trees; **Kabeel *et al.*, (2007) and Kabeel *et al.*, (2008)** on apple and pear trees.

Table (9): Leaf nitrogen content of "Canino" apricot trees as influenced by (NK) soil application levels; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Nitrogen (%)						Nitrogen (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	1.87i	2.10ah	**1.98G**	2.07j	2.20hi	**2.13F**	5.74i	7.39d-f	**6.56D**	6.37l	7.60h-j	**6.99G**
Nitrobein (Nit)	2.20fg	2.33d-f	**2.27E**	2.30f-h	2.37fg	**2.33DE**	6.87f-h	7.88cd	**7.38C**	7.16jk	8.09f-h	**7.63F**
Phosphorene (Phos)	2.03h	2.20fg	**2.12F**	2.27gh	2.30f-h	**2.28E**	6.53gh	7.74c-e	**7.13C**	7.48i-k	8.16fg	**7.82EF**
Active dry yeast (y)	2.27ef	2.40c-e	**2.33DE**	2.33fg	2.40ef	**2.37D**	7.11e-g	8.14c	**7.62C**	7.73g-i	8.49ef	**8.11E**
(Nit x Phos)	2.40c-d	2.53bc	**2.47C**	2.40ef	2.50de	**2.45C**	7.95cd	9.84ab	**8.89B**	7.98gh	8.94de	**8.46D**
(Nit x y)	2.53bc	2.60ab	**2.57B**	2.57cd	2.67bc	**2.62B**	8.35c	9.38b	**8.87B**	9.31cd	9.64bc	**9.48C**
(Phos x y)	2.37de	2.47b-d	**2.42CD**	2.67bc	2.60cd	**2.63B**	8.02cd	9.83ab	**8.93B**	10.07b	9.69bc	**9.88B**
(Nit x Phos x y)	2.60ab	2.73a	**2.67A**	2.77ab	2.80a	**2.78A**	9.65ab	10.14a	**9.90A**	11.14a	11.07a	**11.11A**
Control	1.97hi	1.97hi	**1.97G**	2.13ij	2.13ij	**2.13F**	6.32hi	6.32hi	**6.32D**	7.04k	7.04k	**7.04G**
Mean**	**2.25B**	**2.37A**		**2.39B**	**2.44A**		**7.39B**	**8.52A**		**8.25B**	**8.75A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

IV-II-2- Leaf phosphorus content.

A- Specific effect:

Considering the leaf P content of "Canino" apricot trees in response to the specific effect of (NK) soil added levels. Data in Table (10) revealed obviously that leaf P content responded specifically to the soil application level of (NK) fertilizer. However, the (N_2K_2) treated trees had leaves contained the highest phosphorus level, whereas the least leaf P content was in closed relationship to the trees subjected to (N_1K_1) treatment. Such trend was true during both 2006 and 2007 seasons of study either the leaf P content was estimated as a percentage of dry matter or as an absolute value (mg./leaf). The differences were significant as leaf P content of trees received any of the (N_1K_1) and (N_2K_2) treatments were compared each other.

Referring the specific effect of some biofertilizers compounds i.e., Nitrobein, Phosphorene and active dry yeast either alone or in combined together as soil application, data obtained during both seasons indicated clearly that all investigated bio-stimulants compounds increase significantly the leaf P content than the control and (NK) treatment alone. Moreover, the treatment of (Nit x Phos x y) soil application was significantly more effective, while the opposite trend was detected with the (Nit) treatment soil added which exhibited statistically the least leaf P content. Such trend was so firmer during the two experimental seasons of study as the two ways of estimating leaf P content were taken into consideration in spite of the rate of response was more pronounced with estimating leaf P content in mg./leaf.

B- Interaction effect:

The leaf P content of "Canino" apricot trees was obviously responded to the different (NK x bio-stimulants) combinations, whereas the richest leaf P content was achieved by those trees subjected to the (N_2K_2 x Nit x Phos x y) followed by the (N_1K_1 x Nit x Phos x y) treated trees. The superiority of the aforesaid two combinations over the other investigated combinations treatments was clearly observed during both 2006 and 2007 seasons of study. Moreover, differences were significant either the leaf P content was expressed as percentage of dry matter or mg. per leaf.

On the other hand, the lowest leaf P content was always in concomitant to those "Canino" apricot trees received the two combinations treatments of (N_1K_1) and (control) which clearly that the response was completely absent from the stand point of statistic. In addition, other combinations treatments of (NK x bio-stimulants) came in between the abovementioned two extents with variable tendency of effectiveness.

Nevertheless, the rate of changes in the leaf P content expressed either as percentage of dry matter or as an absolute value "mg./leaf" showed approximately the same tendency. Such trend was true during both the first and second seasons of study.

The obtained results regarding the influence of (NK) soil application level on leaf P content are confirmed with those findings by **Neilsen *et al.*, (1991); Khamis *et al.*, (1994); Nasef (2000); Wahba (2002) and Kabeel (2004)** on several deciduous fruit trees.

Table (10): Leaf phosphorus content of "Canino" apricot trees as influenced by (NK) soil application leves; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Phosphorus (%)						Phosphorus (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	0.16k	0.22hi	**0.19F**	0.17j	0.19hi	**0.18F**	0.250k	0.370gh	**0.310H**	0.257k	0.330i	**0.293G**
Nitrobein (Nit)	0.19j	0.21i	**0.20F**	0.18i	0.21g	**0.20E**	0.293j	0.363h	**0.328G**	0.283j	0.367h	**0.325F**
Phosphorene (Phos)	0.22hi	0.24e-g	**0.23DE**	0.22g	0.24ef	**0.23D**	0.360h	0.410e	**0.385E**	0.357h	0.420f	**0.388D**
Active dry yeast (y)	0.22hi	0.23g-i	**0.23E**	0.21gh	0.21gh	**0.21E**	0.343i	0.390f	**0.367F**	0.337i	0.370h	**0.353E**
(Nit x Phos)	0.25d-f	0.26cd	**0.26C**	0.24ef	0.26cd	**0.25C**	0.417e	0.500c	**0.458C**	0.393g	0.460e	**0.427C**
(Nit x y)	0.23g-i	0.25d-f	**0.24D**	0.22g	0.24ef	**0.23D**	0.383fg	0.460d	**0.422D**	0.400g	0.437f	**0.418C**
(Phos x y)	0.27c	0.28c	**0.28B**	0.26cd	0.27bc	**0.26B**	0.463d	0.541b	**0.502B**	0.483d	0.503c	**0.493B**
(Nit x Phos x y)	0.30b	0.32a	**0.31A**	0.28b	0.31a	**0.30A**	0.553b	0.650a	**0.602A**	0.573b	0.613a	**0.593A**
Control	0.16k	0.16k	**0.16G**	0.17j	0.17j	**0.17F**	0.263k	0.263k	**0.263I**	0.277j	0.277j	**0.277H**
Mean**	**0.23B**	**0.25A**		**0.22B**	**0.23A**		**0.370B**	**0.439A**		**0.373B**	**0.420A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

However, a similar observation was achieved by **Shddad *et al.*, (2005); Kabeel *et al.*, (2005)** on "Canino" apricot trees; **Wahba (2007)** on "Costata" persimmon trees and **Kabeel *et al.*, (2007)** on "Anna" apple trees with regard to the response of leaf phosphorus content to some bio-stimulants soil added.

IV-II-3- Leaf potassium content.

A- Specific effect:

With respect to the leaf potassium content of "Canino" apricot trees as influenced by the specific effect of (NK) soil application leaves, it is quite evident from data represented in Table (11) that a firm trend was obviously detected. However, the highest leaf K content was significantly exhibited by the highest (NK) level added i.e., (N_2K_2) treated trees of "Canino" apricot cultivar. Whereas, the opposite trend was observed by those of "Canino" apricot trees subjected the lowest (NK) soil applied level i.e., (N_1K_1). Furthermore, differences were significant as each NK level was compared to each other. Such trend was true during both the first and second seasons of study irrespective of the base of estimation leaf potassium content i.e., as either the percentage of dry matter or as an absolute values "mg per leaf".

Regarding the specific of some investigated bio-stimulants in this study i.e., (Nitrobein, Phosphorene and active dry yeast) on the leaf potassium content of "Canino" apricot trees, data obtained during the two seasons of study and tabulated in the same Table displayed clearly that the leaf K content was generally responded significantly. Whereas, "Canino" apricot trees were provided with (Nit x Phos x y)

treatment was significantly more effective and induced statistically the richest leaves in their K content as compared to any (other) stimulants treatments. On the other hand, it could be observed that both (Nit) and (Phos) treated trees had leaves were relatively poorest in the K content than the other bio-stimulants treated ones.

Such trend was detected throughout 2006 and 2007 seasons of study regardless of the base on which the leaf potassium content was expressed.

B- Interaction effect:

Considering the leaf K content of "Canino" apricot trees in response to the interaction of different NK and Nit, Phos & y combinations, data in Table (11) shows obviously that the specific effect of each investigated factor was reflected on the interaction effect of its combinations. Thus, "Canino" apricot trees subjected to the (N_2K_2 x Nit x Phos x y) combinations treatment induced leaves with the highest value of leaf K content. Meanwhile, the combinations between N_2K_2 in the second season or N_1K_1 in the first season with (Nit x Phos x y soil application ranked second and third with a tendency. Moreover, the superiority of the abovementioned three combinations treatments over the other investigated treatments was clearly observed during the two seasons of study. On the other hand, the lowest and poorest leaf K content was always in concomitant to those "Canino" apricot trees received both the control and N_1K_1 without stimulants soil applied treatments. In addition, other (NK x stimulants) soil added combinations treatments came in between the abovementioned two extents

Table (11): Leaf potassium content of "Canino" apricot trees as influenced by (NK) soil application leves; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Potassium (%)						Potassium (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	1.90ij	2.10f-h	**2.00G**	1.77k	1.93h	**1.85E**	2.92j	3.54fg	**3.23F**	2.73f	3.34d	**3.03E**
Nitrobein (Nit)	2.03g-i	2.27de	**2.15EF**	1.93hi	2.07f-h	**2.00D**	3.18hi	3.89de	**3.53E**	3.01e	3.53d	**3.27D**
Phosphorene (Phos)	2.00h-j	2.23d-f	**2.12F**	1.83ij	2.00gh	**1.92DE**	3.20hi	3.82de	**3.51E**	3.02e	3.55d	**3.29D**
Active dry yeast (y)	2.17e-g	2.37b-d	**2.27CD**	2.00fg	2.20d-f	**2.15C**	3.40gh	4.01d	**3.71D**	3.48d	3.89c	**3.69C**
(Nit x Phos)	2.13e-h	2.33cd	**2.23DE**	2.10fg	2.33b-d	**2.21C**	3.53fg	4.41c	**3.97C**	3.49d	4.17bc	**3.83C**
(Nit x y)	2.23d-f	2.43a-c	**2.33BC**	2.27c-e	2.43b	**2.35B**	3.68ef	4.45c	**4.06C**	4.11c	4.40b	**4.26B**
(Phos x y)	2.27de	2.50ab	**2.38B**	2.13e-g	2.37bc	**2.25C**	3.84de	4.85b	**4.35B**	4.03c	4.41b	**4.22B**
(Nit x Phos x y)	2.43a-c	2.57a	**2.50A**	2.43b	2.60a	**2.51A**	4.52c	5.20a	**4.86A**	4.90a	5.14a	**5.02A**
Control	1.87j	1.87j	**1.87H**	1.63k	1.63k	**1.63F**	3.01ij	3.01ij	**3.01G**	2.70f	2.70f	**2.70F**
Mean**	**2.12B**	**2.30A**		**2.11B**	**2.30A**		**3.47B**	**4.13A**		**3.50B**	**3.90A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

with variable tendency of effectiveness. Such trend was generally true during both 2006 and 2007 seasons of study. Moreover, differences were significant either the leaf K content was expressed as percentage of dry matter or as on absolute value (mg per leaf).

Data obtained on the influence of NK level on leaf K content are in general with those reported by **Holland *et al.*, (1975); Awathi *et al.*, (1997), Attala-Eman (1998); Nasef (2000); Wahba (2002); Kabeel (2004) and Kabeel *et al.*, (2009)** on some deciduous fruit species. They indicated that leaf K content significantly increased by increasing the rate of NK soil application. Meanwhile, the beneficial effect of some stimulants under study as soil applied on raising leaf K content is in general agreement with those found by **Ahmed *et al.*, (1997)** on grapevines; **Abou Grah-Fatma (2004) and Wahba (2007)** on persimmon; **Kabeel *et al.*, (2005) and Shddad *et al.*, (2005)** apricot and **Kabeel (2007)** on apple fruit trees subjected to from their working on trees as they indicated that application with (Nit x Phos x y) resulted increasing leaf K content.

IV-II-4- Leaf calcium content.

A- Specific effect:

Regarding the leaf calcium content of "Canino" apricot trees in response to the specific effect of (NK) soil applied levels, it is quite evident from data tabulated in Table (12) that N_2K_2 treated trees had leaves contained the greatest leaf calcium content, while the opposite was true with those trees subjected to the lowest level of NK soil application i.e., (N_1K_1). The differences were significant as leaf Ca content of trees received

any of the (N_1K_1) and (N_2K_2) treatments were compared each other. Such trend was detected during both 2006 and 2007 seasons either the leaf Ca content was estimated as part per million of the leaf dry matter (ppm) or as an absolute value "mg./leaf".

As for the specific effect of some bio-stimulants soil application. It could be noticed clearly from data represented in the same Table during both the experimental seasons of study that leaf Ca content responded significantly. However, leaf Ca content was generally increased significantly by treated trees with bio-stimulants as compared to either NK soil applied alone or the control treatments. Moreover, the treatment of (Nit x Phos x y) combination treatment was significantly more effective than any bio-stimulants in all cases, since induced statistically the richest leaves in their Ca content followed by (Phos x y) and (Nit x y) treatments, respectively. Such trend was true during both the first and second seasons of study either leaf Ca content was expressed as a part per million (ppm) or as an absolute value "mg./leaf".

B- Interaction effect:

Referring the interaction effect of the different (NK x some bio-stimulants) combinations on the leaf Ca content of the "Canino" apricot trees, data tabulated in Table (12) displayed obviously that the "Canino" apricot trees subjected to the (N_2K_2 x Nit x Phos x y) combinations treatment exhibited generally the highest value of leaf Ca content during both 2006 and 2007 seasons. The superiority of the abovementioned combination treatment over the other investigated ones was clearly observed

Table (12): Leaf Cacium content of "Canino" apricot trees as influenced by (NK) soil application leves; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Calcium (%)						Calcium (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	1.73l	1.93ik	**1.83G**	1.63g	1.80g	**1.72G**	2.66i	3.25fg	**2.96F**	2.52j	3.11hi	**2.81H**
Nitrobein (Nit)	1.87j-l	2.10gh	**1.98F**	1.80g	2.03f	**1.92F**	2.91g-i	3.60de	**2.26E**	2.80ij	3.47g	**3.14G**
Phosphorene (Phos)	1.83j-l	2.07hi	**1.95F**	1.80g	2.17ef	**1.98F**	2.94g-i	3.53d-f	**3.23E**	2.96i	3.85ef	**3.41F**
Active dry yeast (y)	1.97h-j	2.23fg	**2.10E**	2.03f	2.27de	**2.15E**	3.08gh	3.78de	**3.43E**	3.37gh	4.01de	**3.69E**
(Nit x Phos)	2.10gh	2.30ef	**2.20D**	2.17ef	2.37cd	**2.27D**	3.47ef	4.36c	**3.92D**	3.60fg	4.30cd	**3.95D**
(Nit x y)	2.33d-f	2.43c-e	**2.38C**	2.27de	2.50bc	**2.38C**	3.85d	4.45c	**4.15C**	4.11de	4.52c	**4.42C**
(Phos x y)	2.47cd	2.57bc	**2.52B**	2.40cd	2.63b	**2.52B**	4.18c	4.98b	**4.58B**	4.53c	4.91b	**4.72B**
(Nit x Phos x y)	2.63ab	2.77a	**2.70A**	2.57b	2.80a	**2.68A**	4.89b	5.61a	**5.25A**	5.17b	5.54a	**5.35A**
Control	1.80kl	1.80kl	**1.80G**	1.70g	1.70g	**1.70G**	2.90hi	2.90hi	**2.90F**	2.81ij	2.81ij	**2.81H**
Mean**	**2.08B**	**2.25A**		**2.04B**	**2.25A**		**3.43B**	**4.05A**		**3.54B**	**4.06A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

during the two experimental seasons of study. Moreover, the differences were significant either the leaf Ca content was estimated as a part per million of the leaf dry matter (ppm) or as an absolute value "mg./leaf". On the other hand, the treatments of (N_1K_1 alone), control and both (N_1K_1 x Nit) and (N_1K_1 x Phos) combinations treatments during both the first and second seasons resulted statistically in the lowest leaf Ca content, regardless of estimation method "part per million or mg./leaf". In addition, other (NK x bio-stimulants) combinations treatments came in between the aforesaid two extents with a tendency of variability in their effectiveness.

The obtained results concerning the response of leaf Ca content to NK soil applied level are in accordance with those mentioned by **Bhutani and Bhatia (1986), Ferree and Cahoon (1987), Kassem (1991), Nasef (2000), Wahba (2002), Kabeel (2004) and Kabeel (2008)** on some deciduous fruit species.

They reported that a significant increase in leaf Ca content was occurred with raising the (NK) applied levels. However, other investigators **Abou Grah-Fatma (2004) and Wahba (2007)** on persimmon trees and **Kabeel *et al.*, (2007)** on "Anna" apple trees mentioned a similar trend to that observed regarding the response of leaf Ca content to some bio-stimulants and they added that the leaf Ca content was positively related to some bio-stimulants soil application.

IV-II-5- Leaf magnesium content.

A- Specific effect:

Data represented in Table (13) shows that leaf Mg content was significantly responded to the investigated level of NK soil

application. Whereas, the highest leaf Mg content was significantly exhibited by (N_2K_2) treated trees of "Canino" apricot cultivar. Moreover, the reverse was exhibited by those trees subjected to the N_1K_1 soil applied which had significantly the poorest leaves in their Mg content. Differences were significant as each NK level was compared to the other. Such trend was detected during both 2006 and 2007 seasons of study either leaf Mg content was expressed as percentage of leaves dry matter or as an absolute value (mg./leaf).

Considering the specific effect of some biofertilizers compounds under study i.e., (Nitrobein, Phosphorene and active dry yeast) on the leaf Mg content of "Canino" apricot trees, data obtained during both the first and second seasons of study and tabulated in Table (13) displayed obviously that treated "Canino" apricot trees with (Nit x Phos x y) treatment soil applied had significantly the richest leaves in their Mg content, followed in a descending order by those received the (Nit x y) and (Phos x y). The opposite trend was noticed with those trees of "Canino" apricot trees subjected to the control treatment. On the other hand, other bio-stimulants compounds treatments were in between the aforesaid two extents. Such trend was true during both 2006 and 2007 seasons of study regardless of the base on which leaf Mg content was estimated (percentage of leaf dry weight or mg./leaf).

B- Interaction effect:

With respect to the leaf Mg content of "Canino" apricot trees in response to the interaction effect of various NK and some biofertilizers compounds combinations, data in Table (13)

revealed clearly that the specific effect of each investigated factor was reflected on interaction effect of its combinations. Thus, the "Canino" apricot trees subjected to the (N_2K_2 x Nit x Phos x y) combination treatment induced leaves with the highest value of leaf Mg content. Meanwhile, the combination between the (N_1K_1) soil applied level and the (Nit x Phos x y) stimulants compounds soil application ranked second. Moreover, the combination treatment of (N_2K_2 x Nit x y) came third, however such trend was generally true during both the first and second seasons of study, regardless of estimation base of leaf Mg content. On the other hand, the lowest leaf Mg content was significantly exhibited and always in concomitant to those "Canino" apricot trees received the combinations between the NK alone (without any stimulants compounds soil application) from one hand and the control treatment from the second, regardless of estimation method (part per million "ppm" or mg/leaf). In addition to that, other (NK x biofertilizers compounds) combinations came in between the abovementioned two extents with a slight variable tendency of effectiveness. Such trend was detected during both 2006 and 2007 seasons of study irrespective of the base on which leaf Mg content was expressed.

Data obtained on the influence of NK level on leaf Mg content are in a general agreement with those reported by **Kassem (1991), Nasef (2000), Wahba (2002), Kabeel (2004) and Kabeel *et al.*, (2008)** on apple, pear, persimmon and peach fruit trees. They indicated that leaf Mg content significantly increased by increasing the level of NK soil application. Moreover, the beneficial effect of biofertilizers compounds

Table (13): Leaf Magnesium content of "Canino" apricot trees as influenced by (NK) soil application leves; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Magnesium (%)						Magnesium (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	0.33h	0.36h	**0.35F**	0.29m	0.36k	**0.33H**	0.513j	0.600i	**0.557G**	0.447h	0.623fg	**0.535FG**
Nitrobein (Nit)	0.47fg	0.47fg	**0.47E**	0.321	0.39j	**0.36G**	0.743h	0.810h	**0.777F**	0.500h	0.673ef	**0.587F**
Phosphorene (Phos)	0.50ef	0.43g	**0.47E**	0.35k	0.41i	**0.38F**	0.803h	0.737h	**0.770F**	0.583g	0.733e	**0.658E**
Active dry yeast (y)	0.63d	0.55e	**0.59D**	0.41i	0.46g	**0.44E**	0.983f	0.933fg	**0.958E**	.687ef	0.817d	**0.752D**
(Nit x Phos)	0.70c	0.47fg	**0.59D**	0.44h	0.53e	**0.48D**	1.160e	0.893g	**1.027D**	0.730e	0.943c	**0.837C**
(Nit x y)	0.79b	0.73c	**0.76B**	0.53e	0.61c	**0.57B**	1.297cd	1.340c	**1.318B**	0.967c	1.110b	**1.038B**
(Phos x y)	0.73c	0.63d	**0.69C**	0.48f	0.59d	**0.54C**	1.243d	1.223de	**1.233C**	0.913c	1.093b	**1.003B**
(Nit x Phos x y)	0.80b	0.87a	**.84A**	0.67b	0.72a	**0.70A**	1.490b	1.773a	**1.632A**	1.357a	1.423a	**1.390A**
Control	0.35h	0.35h	**0.35F**	0.30m	0.30m	**0.30I**	0.567ij	0.567ij	**0.567G**	0.500h	0.500h	**0.500G**
Mean**	**0.59A**	**0.54B**		**0.42B**	**0.49A**		**0.978A**	**0.986A**		**0.743B**	**0.880A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

under study (Nitrobein, Phosphorene and active dry yeast) on raising the leaf Mg content was in harmony with that mentioned by **Shddad *et al.*, (2005), Kabeel *et al.*, (2005)** on apricot trees, **Wahba (2007)** on "Costata" persimmon trees and **Kabeel *et al.*, (2007)** on "Anna" apple trees.

IV-II-6- Leaf iron content.

A- Specific effect:

With regard to the influence of the different NK soil applied levels on leaf Fe content of "Canino" apricot trees, data represented in Table (14), displayed clearly that leaf Fe content was increased significantly by increasing the application level of NK soil applied. However, the highest value of leaf Fe content was significantly gained by "Canino" apricot trees supplied with (N_2K_2) treatment i.e., those received with 1 & 2 kg from each N and K fertilizer, respectively. While, the opposite was true with the lowest NK added level i.e., (N_1K_1) treated trees which had significantly the poorest leaves in their Fe content. Such trend was detected throughout both 2006 and 2007 seasons of study either the leaf Fe content was estimated as part per million of the leaf dry matter (ppm) or as an absolute value "mg/leaf".

Considering the response to specific effect of some bio-stimulants soil application used in this study (Nit, Phos and Y), it is quite evident from obtained data in the same Table that treated trees induced statistically the richest leaves in their Fe content as compared to either the control trees or (NK) soil applied levels only. Whereas, differences in most cases were significant except as both (Y) and (Nit x Phos) in both seasons and (Nit) and (Phos) in the second season only. Such trend was true as the leaf Fe

content was expressed as a part per million (ppm) or an absolute value (mg/leaf during the 1st and 2nd seasons of study).

B- Interaction effect:

With regard to the interaction effect of the different NK levels and some bio-stimulants soil applied combinations on the leaf Fe content of "Canino" apricot trees, data in Table (14) revealed clearly that the specific effect of each investigated factor was directly reflected on the interaction effect of its combinations. Hence, the "Canino" apricot trees subjected to the (N_2K_2 x Nit x Phos x y) combination exhibited significantly leaves with the highest value of "Leaf Fe content. Meanwhile both combinations treatments of (N_1K_1 x Nit x Phos x y) and (N_2K_2 x Nit x y) ranked second to the aforesaid superior combination i.e., (N_2K_2 x Nit x Phos x y) in spite of differences did not reach level of significance between the two latter combinations. However, such trend was generally true during both 2006 and 2007 seasons of study either leaf Fe content was expressed as a part per million (ppm) or an absolute value (mg./leaf). On the other hand, the lowest leaf Fe content was significantly induced and always in concomitant to those "Canino" apricot trees received the combinations between the (N_1K_1) and no bio-stimulants soil applied i.e., (N_1K_1 x no stimulants) from one hand and the control from another regardless of estimation method (ppm or mg./leaf). In addition, other (NK x bio-stimulants) combinations were intermediate the abovementioned two extents with variable tendency of effectiveness. Such trend was detected during both 2006 and

Table (14): Leaf Iron content of "Canino" apricot trees as influenced by (NK) soil application leves; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Iron (ppm.)						Iron (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	88.0h	112.0g	**100.0G**	95.33j	103.0j	**99.17F**	0.035k	0.048ij	**0.042G**	0.040h	0.044h	**0.042F**
Nitrobein (Nit)	116.0g	144.0e	**130.0E**	121.3hi	138.0f	**129.7E**	0.049ij	0.063g	**0.056E**	0.053fg	0.062e	**0.058E**
Phosphorene (Phos)	110.0g	130.0f	**120.0F**	118.3i	138.3f	**128.3E**	0.046j	0.058h	**0.052F**	0.051g	0.061e	**0.056E**
Active dry yeast (y)	124.0f	158.0cd	**141.0D**	130.0g	151.3de	**140.7D**	0.053hi	0.070ef	**0.062D**	0.057ef	0.070d	**0.064D**
(Nit x Phos)	128.0f	156.0cd	**142.0D**	126.0gh	147.3e	**136.7D**	0.055h	0.073de	**0.064D**	0.057ef	0.068d	**0.063D**
(Nit x y)	152.0de	168.0b	**160.0B**	160.0c	172.0b	**166.0B**	0.067fg	0.084b	**0.076B**	0.074cd	0.088b	**0.081B**
(Phos x y)	146.0e	162.7bc	**154.3C**	154.0c-e	157.0cd	**155.5C**	0.064fg	0.078cd	**0.071C**	0.069d	0.076c	**0.073C**
(Nit x Phos x y)	162.0bc	177.3a	**169.7A**	178.0b	194.0a	**186.0A**	0.083bc	0.090a	**0.087A**	0.085b	0.099a	**0.092A**
Control	94.0h	94.0h	**94.0H**	98.0j	98.0j	**98.0F**	0.037k	0.037k	**0.037H**	0.039h	0.039h	**0.039F**
Mean**	**124.4B**	**144.7A**		**131.2B**	**144.3A**		**0.054B**	**0.067A**		**0.058B**	**0.067A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

2007 seasons of study irrespective of the base on which leaf Fe content was expressed.

The obtained results concerning the response of leaf Fe content to NK soil added level are in a complete agreement with those stated by **Joolka *et al.*, (1990);** on apricot; **Kassem (1991); Mekhael (1994); Awasthi *et al.*, (1997) and Attala-Eman (1998)** on apple trees; **Nasef (2000) and Kabeel and El-Saadany (2004)** on pear trees, **Wahba (2002)** on persimmon trees and **Kabeel (2004)** on peach trees. They revealed that a significant increase in leaf Fe content was occurred with raising the NK added levels. Moreover, some researchers, **Abou Grah-Fatma (2004); Kabeel *et al.*, (2005); Shddad *et al.*, (2005), Kabeel *et al.*, (2007), Wahba (2007) and Kabeel *et al.*, (2008)** on persimmon, apricot, apple and pear trees, reported that treated trees with some bio-stimulants soil application resulting in increasing leaf iron content.

IV-II-7- Leaf zinc content.

A- Specific effect:

With regard to the leaf Zn content of "Canino" apricot trees in response to the specific effect of (NK) soil applied level, data tabulated in Table (15) shows that zinc was increased significantly by raising the applied level. Whereas, the richest leaves in their zinc content was statistically coupled with those N_2K_2 treated trees followed in a descending order by those of N_1K_1 treatment however, leaves of latter level i.e., (N_1K_1) were significantly the poorest. In other words, the (N_2K_2) treated trees had leaves contained the greatest value in leaf Zn content, while the opposite trend was observed with those trees subjected to the

lower of NK i.e., (N_1K_1) treatment. Moreover, the differences were significant as leaf Zn contents of trees received any of the N_1K_1 and N_2K_2 treatments were compared each other. Such trend was true during both 2006 and 2007 seasons of study regardless of zinc content was estimated as part per million of the leaf dry matter (ppm) only, whereas as an absolute value "mg/leaf", data obtained show that the response of leaf Zn content to the NK soil applied level was significantly absent during both 2006 and 2007 seasons of study.

As for the specific effect of some investigated bio-stimulants (Nitrobein, Phosphorene and active dry yeast), it could be observed obviously from data tabulated in the same Table during the two seasons of study that leaf Zn content responded significantly. However, treated trees with all bio-stimulants treatments increased significantly the leaf Zn content than either the control or NK without bio-stimulant soil application. However, differences were more pronounced as the "Canino" apricot trees were provided with (Nit x Phos x yeast). On the other hand, differences in the leaf Zn content due to some bio-stimulants used in this study as soil application were less pronounced then those previously discussed with the NK applied level. Whereas, differences between most bio-stimulants treatments so slight to reach level of significance in the two seasons of study.

B- Interaction effect:

Regarding the leaf Zn content of "Canino" apricot trees is response to the interaction effect of the different (NK x bio-

stimulants) combinations, data in Table (15) displayed clearly that the (N_2K_2 x Nit x Phos x y); (N_2K_2 x Nit x y) and (N_1K_1 x Nit x Phos x y) combinations treatments exhibited generally the highest values of study. The superiority of the abovementioned three combinations over the other investigated ones was clearly observed during the two seasons of study. Moreover, the differences were significant either the leaf Zn content was estimated as a part per million of the leaf dry matter (ppm.) or as an absolute value (mg./leaf). On the other hand, combinations between the (N_1K_1 no bio-stimulants) soil applied and the control treatment resulted statistically in the lowest leaf Zn content, regardless of estimation method either part per million (ppm) or as an absolute value (mg./leaf). Such trend was true during both the first and second seasons of study. In addition to that, other (NK x bio-stimulants) combinations were in between with tendency of variability in their effectiveness.

The present results concerning the response of leaf Zn content to the NK soil added level are in harmony with those mentioned by Rogers (1972), Joolka et al., (1990); Kassem (1991); **Mekhael (1994); Sharaf *et al.*, (1994) Awasthi *et al.*, (1997)**; **Nasef (2000) and Kabeel (2004)** on some deciduous fruit species, they stated that the leaf Zn content was positively related to the NK soil application. Meanwhile, other researchers **Kabeel *et al.*, (2005); Shddad *et al.*, (2005), Kabeel *et al.*, (2007), Wahba (2007) and Kabeel *et al.*, (2008)** mentioned a similar trend to that observed regarding the response of leaf Zn content to some bio-stimulants soil application.

Table (15): Leaf Zinc content of "Canino" apricot trees as influenced by (NK) soil application leves; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Zinc (ppm.)						Zinc (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	16.00g	18.00fg	**17.00G**	15.00h	17.00g	**16.00EF**	0.007c	0.008bc	**0.007CD**	0.006d	0.007cd	**0.007D**
Nitrobein (Nit)	20.00ef	21.00e	**20.50EF**	17.00g	20.00f	**18.50E**	0.008bc	0.009a-c	**0.009B-D**	0.007cd	0.009b-d	**0.008CD**
Phosphorene (Phos)	18.00fg	20.00ef	**19.00F**	15.00h	20.33f	**17.67E**	0.008bc	0.009a-c	**0.008B-D**	0.006d	0.009b-d	**0.008CD**
Active dry yeast (y)	22.00de	24.00cd	**23.00CD**	20.00f	24.00e	**22.00D**	0.010a-c	0.011a-c	**0.010A-D**	0.009b-d	0.011b-d	**0.010B-D**
(Nit x Phos)	22.00de	22.00de	**22.00DE**	19.00f	23.00e	**21.00D**	0.009a-c	0.010a-c	**0.010A-D**	0.009b-d	0.011b-d	**0.010B-D**
(Nit x y)	25.00bc	27.00ab	**26.00AB**	24.00e	34.00b	**29.00B**	0.011a-c	0.014a	**0.012AB**	0.011b-d	0.014ab	**0.013AB**
(Phos x y)	24.00cd	25.00bc	**24.50BC**	24.00e	28.00d	**26.00C**	0.011a-c	0.012a-c	**0.011A-C**	0.011b-d	0.013a-c	**0.012A-C**
(Nit x Phos x y)	26.00ab	28.00a	**27.33A**	30.00c	37.33a	**33.67A**	0.013b	0.014a	**0.014A**	0.014ab	0.017a	**0.016A**
Control	16.00g	16.00g	**16.00G**	15.00h	15.00h	**15.00F**	0.006c	0.006c	**0.006D**	0.006d	0.006d	**0.006D**
Mean**	**21.00B**	**22.33A**		**19.89B**	**24.30A**		**0.009A**	**0.010A**		**0.009A**	**0.011A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

IV-II-8- Leaf manganese content.

A- Specific effect:

With respect to the influence of the NK soil applied levels on leaf Mn content of "Canino" apricot trees, data presented in Table (16) indicates obviously that the leaf Mn content was significantly responded to the investigated rate of NK soil applied. Since, Mn content was increased significantly by increasing the NK added level, whereas the richest leaves in their manganese content were statistically in closed relationship with those N_2K_2 applied trees followed in a descending order by those of N_1K_1 treatment, whereas those of the latter treatment was significantly the poorest. Such trend was detected during both the first and second seasons of study, as Mn content was expressed as a rate of the leaf dry matter (ppm.), however differences between the N_2K_2 and N_1K_1 levels reach level of significance. On the other hand, with estimating leaf Mn content as absolute value per leaf "Mg./leaf" differences were completely absent from the standpoint of statistic in both 2006 and 2007 seasons of study.

Referring the response to specific effect of some investigated bio-stimulants soil application, it is quite evident from data in the same Table that treated trees with either the (Nit x Phos x y) or (Nit x y) bio-stimulants soil application increased significantly the leaf Mn content than the other remain treatments of bio-stimulants including the control. Moreover, the increase was more pronounced as the "Canino" apricot trees were treated with the (Nit x Phos x y) whereas such trees induced statistically the richest leaves in their Mn content as compared to other treated trees during both seasons of study. Such trend was true regardless of the Mn content was expressed

as a ratio of leaf dry matter base (ppm.) or absolute value (mg./leaf) when the leaf Mn content of (Nit x Phos x y) and (Nit x y) treated trees were compared to other bio-stimulants treatments during the two seasons of study. In addition, the control trees of "Canino" apricot cv., i.e., that received no bio-stimulants was statistically the inferior as exhibited the poorest leaves in their Mn content during both seasons of study. Meanwhile, other bio-stimulants treatments were in between the aforesaid discussed two extents, whereas differences in most cases were not significant with estimating the leaf Mn content as an absolute value (mg./leaf) only.

B- Interaction effect:

Concerning the interaction effect of the different NK x some bio-stimulants soil applied on the leaf Mn content of the "Canino" apricot trees, data tabulated in Table (16) shows clearly that the richest leaves in their Mn content expressed as either ppm or mg./leaf were achieved by those trees subjected to the (N_2K_2 x Nit x Phos x y) combinations. However, both combinations of (N_1K_1 x Nit x Phos x y) and (N_2K_2 x Nit x y) were equally effective and surpassed statistically the other (NK x bio-stimulants) combinations for increasing the leaf Mn content. Contrary to that, combinations of the N_1K_1 especially as associated with no stimulants treated trees and the control treatments were statistically the inferior regardless of estimation method of Mn content. In addition, other combinations were in between with a slight tendency of variability in their effectiveness. Such trend was detected during both 2006 and 2007 seasons regardless of estimation method used in this concern.

Table (16): Leaf Manganese content of "Canino" apricot trees as influenced by (NK) soil application leves; some bio-stimulants soil applied (Nitrobeine, Phosphoren and active dry yeast) as well as their combinations during both 2006 and 2007 seasons.

Treatments	Manganese (ppm.)						Manganese (mg./leaf)					
	2006 season			2007 season			2006 season			2007 season		
	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***	N_1K_1	N_2K_2	**Mean***
Without bio-stimulants	24.00h	26.00g	**25.00G**	20.00i	23.00h	**21.50F**	0.010de	0.011c-e	**0.011D**	0.009h	0.010f-h	**0.009EF**
Nitrobein (Nit)	26.00g	29.00ef	**27.50F**	25.00g	30.00e	**27.50D**	0.011c-e	0.013b-e	**0.012CD**	0.011e-h	0.014c-h	**0.012C-E**
Phosphorene (Phos)	26.00g	28.00f	**27.00F**	23.00h	27.00f	**25.00E**	0.011c-e	0.012c-e	**0.012CD**	0.010gh	0.012d-h	**0.011D-F**
Active dry yeast (y)	30.00e	33.00cd	**31.50D**	28.00ef	29.00ef	**28.50D**	0.013b-e	0.014b-e	**0.014B-D**	0.012d-h	0.013c-h	**0.013C-E**
(Nit x Phos)	28.00f	32.00d	**30.00E**	30.00e	35.00d	**32.50C**	0.012c-e	0.015a-d	**0.014B-D**	0.014c-h	0.016a-e	**0.015B-D**
(Nit x y)	34.00c	36.00b	**35.00B**	35.00d	38.00c	**36.50B**	0.015-e	0.018ab	**0.017AB**	0.016a-e	0.019a-c	**0.018AB**
(Phos x y)	32.00b	34.00c	**33.000C**	34.00d	37.00c	**35.50B**	0.014b-e	0.016a-c	**0.015BC**	0.015b-g	0.018a-d	**0.016BC**
(Nit x Phos x y)	37.00b	40.00a	**38.50A**	41.00b	43.00a	**42.00A**	0.019ab	0.020a	**0.020A**	0.020ab	0.022a	**0.021A**
Control	20.00i	20.00i	**20.00h**	20.00i	20.00i	**20.00G**	0.009e	0.009e	**0.009D**	0.008h	0.008h	**0.008F**
Mean**	**28.78B**	**31.33A**		**28.44B**	**31.33A**		**0.013A**	**0.014A**		**0.013A**	**0.015A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

The obtained results regarding the response of leaf Mn content to NK soil added level are in accordance with findings of **Janje and Ko (1985); Johanson and Samuleson (1990); Kassem (1991); Mekhael (1994); Sharaf *et al.*, (1994); Nasef (2000) and Kabeel and El-Saadany (2004).** They revealed that the leaf Mn content significantly increased by increasing the rate of NK applied. Meanwhile, the beneficial effects of some bio-stimulants compounds as soil application on raising Mn content in the leaves is in general agreement with those mentioned by **Kabeel *et al.*, (2005) and Shddad *et al.*, (2005),** on "Canino" apricot trees; **Kabeel *et al.*, (2007)** on "Anna" apple trees and **Kabeel *et al.*, (2008)** on "Le-Conte" pear trees. However, they pointed out that treated trees with some bio-stimulants resulted in increasing leaf manganese content.

IV-III- Response of some fruiting parameters:

In this regard the percentage of fruit set, yield (kgs/tree) and yield increment % in relation to the control were the fruiting parameters investigated in response to the specific effect, interaction and their combinations of the two investigated factors under study i.e., NK soil applied level and some bio-stimulants compounds soil application. Obtained data during both 2006 and 2007 seasons of study in this concern are tabulated in Tables (17 & 18).

IV-III-1- Fruit set percentage:

A- Specific effect:

Concerning the percentage of fruit set of "Canino" apricot trees in response to the specific effect of the NK soil applied level, it is obvious from data obtained during both 2006 and 2007 seasons and tabulated in Tables (17 & 18) that the fruit set

percentage was responded specifically to the investigated levels of the NK fertilizers. However, the higher NK level i.e., (N_2K_2) treated trees exhibited statistically the highest percentage of fruit set. Whereas, the "Canino" apricot trees subjected to the lower NK level i.e., (N_1K_1) induced significantly the lowest percentage of fruit set. Such trend was detected during both the first and second seasons of study.

With regard to the specific effect of some bio-stimulants compound under study, data obtained during the two seasons as shown from the same Tables displayed obviously that the fruit set percentage was significantly responded by al investigated bio-stimulants as soil applied as compared to the control treatment. Moreover, both (Nit x Phos x y) and (Nit x y) soil application treatments increased significantly the fruit set percentage of "Canino" apricot cv., over that of the remain bio-stimulants treated trees. Differences in fruit set percentage due to the differential investigated bio-stimulants soil application were significant as compared each other in most cases during both 2006 and 2007 seasons of study.

B- Interaction effect:

Data obtained during both 2006 and 2007 seasons and represented in Tables (17 & 18) revealed clearly that the fruit set percentage of "Canino" apricot trees followed a firm trend regarding their response to the interaction effect of the different combinations between the different variables of both investigated factors (NK level and some bio-stimulants soil applied). The highest percentage of fruit set was always in significant relationship to the (N_2K_2 x Nit x Phos x y) treated

trees, while both (N_1K_1 x Nit x Phos x y) and (N_2K_2 x Nit x y) combinations came descendingly second and third to the superior combination from the standpoint of statistic. On the contrary, the least percentage of fruit set was significantly in closed relationship to those "Canino" apricot trees subjected to both (the control) and (N_1K_1 x no bio-stimulants soil applied) treatments during the two seasons. On the other hand, other combinations of (NK x bio-stimulants) were in between the abovementioned two extents with relatively variable tendency of response. Such trend was true during both 2006 and 2007 seasons of study.

The obtained results regarding the response of the percentage of fruit set to the NK soil applied level are in harmony with those reported by **Weeks and Southwick (1952); Kulesza (1990); Hips (1992); Attala-Eman (1998); Nasef (2000); Kabeel and El-Saadany (2004) and Kabeel *et al.*, (2008),** they stated that a significant increase in fruit set percentage was increased with raising the NK soil applied levels. With respect to the influence of the bio-stimulants compounds soil applications of "Canino" apricot trees, obtained data are in a complete agreement with those findings by **Eissa-Fawzia (2003); Abou Grah-Fatma (2004); Kabeel *et al.*, (2005); Shddad *et al.*, (2005); Wahba (2007) and Kabeel *et al.*, (2007)** on apricot, persimmon and apple fruit trees.

IV-III-2- Yield "Kgs/tree":

A- Specific effect:

Considering the productivity in kgs/tree of "Canino" apricot cv., data obtained in Tables (17 & 18) during both 2006 and 2007 seasons revealed clearly that the response to specific

effect of the NK soil applied level followed a firmer trend. Hence, yield (kgs/tree) was increased significantly by increasing the NK level, whereas the the highest tree productivity (kgs fruits per tree) exhibited due to applying the higher level of NK i.e., (N_2K_2). On the contrary, the lower level of NK i.e., the (N_1K_1) applied trees were statistically the least value as their yield expressed in kg of fruits per tree was compared to that of the higher NK soil applied level. Such trend was detected during both the first and second seasons of study.

Referring the yield (kgs/tree) of "Canino" apricot trees as influenced by the specific effect of some bio-stimulants under study, data presented in the same Tables show clearly that yield "kgs/trees" followed typically the same trend during both seasons of study. However, the highest productivity in kg/tree was significantly in concomitant to the (Nit x Phos x y) treated trees which was the superior and more effective. Moreover, both (Nit x y) and (Phos x y) treatments ranked statistically second and third, respectively during the 1st and 2nd seasons of study. In addition, "Canino" apricot trees supplied with the NK and received no bio-stimulants from one hand and the control treatment from another were statistically the inferior as exhibited the least values of yield/tree, respectively during the two seasons of study. Meanwhile, either bio-stimulants treatments were intermediate the aforesaid discussed two extents.

B- Interaction effect:

Concerning the interaction effect of the different combinations between the various variables of both investigated factors on productivity of tree in kgs of "Canino" apricot cv.,

data tabulated in Tables (17 & 18) displayed clearly that the specific effect of each factor (NK level and some bio-stimulants) was directly reflected on their combinations during the two seasons of study. Hence, the combinations between the (Nit x Phos x y) bio-stimulants soil application from one hand and the NK at either the (N_2K_2) or (N_1K_1) soil applied level especially the former level exhibited statistically the highest productivity in kgs/tree of "Canino" apricot trees. However, (N_2K_2 x Nit x Phos x y) combination was relatively more effective than (N_1K_1 x Nit x Phos x y) with a significant differences between them during both seasons. Moreover, both (N_2K_2 x Nit x y) and (N_2K_2 x Phos x y) combinations ranked statistically third and fourth, but differences did not reach level of significance during both 2006 and 2007 seasons of study. On the other hand, the control trees of "Canino" apricot cv., was statistically the inferior as exhibited the least value of yield as kgs per tree during the two seasons of study. Meanwhile, other combinations came in between the abovementioned discussed two extents. Such trend was detected throughout the first and second seasons of study.

Obtained results concerning the response of yield in kgs/tree to the NK soil applied level are in harmony with those mentioned by **Niederholzer *et al.*, (1991)** on plum trees, **Kassem (1991); Kilany and Kilany (1991); Mekhael (1994) and Awasthi *et al.*, (1997)** on apple trees; **Nasef (2000) and Kabeel and El-Saadany (2004)** on pear trees; **Kabeel (2004)** on peach; **Wahba (2002) and Abou Grah-Fatma (2004)** on persimmon trees. They indicated that trees supplied with high NK levels produced higher yield than those of low NK level.

Table (17): Fruit set (%), yield (kgs/tree) and yield increment (%) as compared to control of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Fruit set (%)			Yield (kgs/tree)		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	7.44j	8.69i	**8.07G**	30.83j	33.17hi	**32.00F**
Nitrobein (Nit)	8.97hi	9.85g	**9.41E**	32.97hi	36.09f	**34.53D**
Phosphorene (Phos)	8.51i	9.47gh	**8.99F**	31.18ij	34.37gh	**33.28E**
Active dry yeast (y)	9.91g	10.90ef	**10.40D**	34.57f-h	37.87e	**36.22C**
(Nit x Phos)	10.69f	11.37de	**11.03C**	35.00fg	39.03e	**37.01C**
(Nit x y)	11.61d	12.61c	**12.11B**	42.37d	45.80c	**44.08B**
(Phos x y)	10.95ef	11.53d	**11.24C**	40.98d	45.33c	**43.15B**
(Nit x Phos x y)	13.31b	14.06a	**13.68A**	48.23b	52.17a	**50.20A**
Control	6.94j	6.94j	**6.94H**	28.77k	28.77k	**28.77G**
Mean**	**9.81B**	**10.60A**		**36.21B**	**39.18A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (18): Fruit set (%), yield (kgs/tree) and yield increment (%) as compared to control of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Fruit set (%)			Yield (kgs/tree)		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	8.41ij	8.58i	**8.50G**	32.69l	35.57j	**34.13H**
Nitrobein (Nit)	9.34h	9.62gh	**9.48EF**	35.33jk	39.09g	**34.21F**
Phosphorene (Phos)	8.85i	9.53h	**9.19F**	34.80k	36.83i	**35.81G**
Active dry yeast (y)	9.63gh	10.07fg	**9.85E**	38.00h	41.15f	**39.58E**
(Nit x Phos)	10.46ef	10.61de	**10.53D**	39.17g	43.47e	**41.32D**
(Nit x y)	11.69b	12.07b	**11.88B**	46.23d	48.97c	**47.60B**
(Phos x y)	11.04cd	11.21c	**11.13C**	43.90e	45.70d	**44.80C**
(Nit x Phos x y)	12.07b	13.56a	**12.81A**	53.66b	54.50a	**54.08A**
Control	7.97j	7.97j	**7.97H**	30.48m	30.48m	**30.48I**
Mean**	**9.98B**	**10.32A**		**39.36B**	**41.75A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Considering the influence of some bio-stimulants soil application, data obtained are in conformity with those stated by some researchers, **Eissa-Fawzia (2003); Abou Grah-Fatma (2004); Kabeel *et al.*, (2005); Shddad *et al.*, (2005); Wahba (2007) and Kabeel *et al.*, (2007)** on apricot, persimmon and apple fruit trees.

IV-III-3- Yield per tree as number of fruits:

A- Specific effect:

Data obtained during both 2006 and 2007 seasons as shown from Tables (19 & 20) declared that tree yield as number of fruits of "Canino" apricot trees did not responded specifically to the investigated levels of the NK soil applied fertilizers. However, differences between the (N_2K_2) and (N_1K_1) levels did not reach level of significance. In other words, with estimating the tree yield as number of fruits, differences were completely absent from the standpoint of statistics in the two seasons of study.

Regarding the specific effect of the investigated some bio-stimulants soil application of "Canino" apricot trees, data obtained during both 2006 and 2007 seasons of study and tabulated in the same Tables displayed obviously that the response was more pronounced as compared to that previously detected with the NK soil applied level. However, the positive relationship between all bio-stimulants soil applied treatments and tree yield as number of fruits, since all investigated bio-stimulants treatments were increased significantly tree yield as number of fruits as compared to the control during both the first and second seasons of study. In addition, it could be observed

that the highest number of fruits per trees (1270 and 1238) and (1474 and 1471) were gained from (Nit x Phos x y) and (Nit x y) in both 2006 and 2007 seasons, respectively. However, differences between the two abovementioned treatments did not reach level of significance. On the other hand, the opposite trend was detected with the control treatment, which resulted in induced significantly the least tree yield as number of fruits in the two seasons of study. Whereas, other bio-stimulants soil applied treatments recorded in between with a tendency of variability in their effectiveness as compared to the aforesaid two extents.

B- Interaction effect:

Referring the interaction effect of the different combinations between the two variables of the investigated factors i.e., NK and some bio-stimulants soil application, data in Tables (19 & 20) revealed obviously that the "Canino" apricot trees supplied with the lower level of the NK combined with the (Nit x Phos x y) bio-stimulants i.e., (N_1K_1 x Nit x Phos x y) combinations treatment exhibited statistically the highest number of fruits per tree during both 2006 and 2007 seasons of study. On the other hand, the reverse was detected with the control treatment which resulted significantly in inducing the least number of fruits per tree. In addition, other (NK x bio-stimulants) soil applied combinations came in between with a tendency of variability in their effectiveness. Such trend was true during both the first and second seasons of study.

The obtained results concerning the effect of NK levels and some bio-stimulants soil application are in accordance with

the findings of **Fathi *et al.*, (2002); Eissa-Fawzia (2003); Kabeel *et al.*, (2005) and Shddad *et al.*, (2005)** on some deciduous fruit species.

IV-III-4- Yield increment % in relation to the control:

A- Specific effect:

With regard to the increment % in yield over the control in response to the specific effect of NK soil applied level, data represented in Tables (19 & 20) indicated clearly that supplying "Canino" apricot trees with the higher level of NK i.e., (N_2K_2) resulted in the greatest increase % in yield. Such increase reached about 36.05 and 36.93 % over the control during both the first and second seasons, respectively. Furthermore, the N_1K_1 soil added level exhibited an increase over the control i.e., about 25.92 % and 28.99 % during both 2006 and 2007 seasons, respectively. In addition to that the differences between the two investigated NK soil applied pertaining their effectiveness on the yield increment % in relation to the control considered during both 2006 and 2007 seasons of study.

As for the yield increment % in relation to the control as affected by some investigated bio-stimulants, data obtained in the same Tables revealed that treated trees with bio-stimulants increased significantly the yield increment % over the control. However, differences were more pronounced as the "Canino" apricot trees were provided with the NK soil applied. On the other hand, (Nit x Phos x y) treated trees induced statistically the highest increase ^ in yield. Such increase reached about 74.42 % and 77.24 % over the control during both 2006 and 2007 seasons, respectively. Moreover, the yield increment % over the control produced by the investigated bio-stimulants soil

application could be significantly arranged into the following descending order: a) (Nit x Phos x y); b) (Nit x y); c) (Phos x y); d) (Nit x Phos); e) (y); f) (Nit); g) (Phos); h) (NK x no stimulants soil application). Such trend was true during both 2006 and 2007 of study.

B- Interaction effect:

Referring the interaction effect due to the different (NK x bio-stimulants) combinations as soil application on the yield increment % in relation to the control, data tabulated in Tables (19 & 20) displayed obviously that the response typically followed the same trend previously detected with the average yield per tree in kgs. However, the greatest statistically percentage of yield increment over the control was always in concomitant to the (N_2K_2 x Nit x Phos x y) treated trees. Whereas, the opposite trend was detected with the (N_1K_1) level supplied trees that received no stimulants soil application viz those trees subjected to the (N_1K_1 x no bio-stimulants) fertilization treatment. In addition other (NK x bio-stimulants) combination were in between the abovementioned two extents with a relative tendency of effectiveness. Such trend was true during both 2006 and 2007 seasons of study.

The present results are in an agreement with those found by **Kilany and Kilany (1991); Mekhael (1994) Kabeel *et al.*, (1998); Nasef (2000); Wahba (2002); Kabeel (2004); Abou Grah-Fatma (2004); Kabeel *et al.*, (2005) and Kabeel *et al.*, (2007)** on apple, pear, persimmon, apricot and peach fruit trees, regarding the effect of both NK soil added level and some bio-stimulants soil application. They reported that the same trend was observed approximately in this concern.

Table (19): Number of fruits/tree and yield increment (%) as compared to control of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Number of fruits/tree			Yield increment (%) as compared to control		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	1148.0d	1094.0e	**1121.0E**	7.26m	15.35k	**11.31H**
Nitrobein (Nit)	1162.0d	1148.0d	**1155.0D**	14.57k	25.44h	**20.01F**
Phosphorene (Phos)	1023.0f	1015.0f	**1019.0G**	11.82l	19.43j	**15.62G**
Active dry yeast (y)	1088.0e	1187.0cd	**1138.0DE**	20.08ij	31.52g	**25.80E**
(Nit x Phos)	1081.0e	1086.0e	**1083.0F**	21.76i	35.41f	**28.59D**
(Nit x y)	1223.0bc	1254.0b	**1238.0B**	47.51d	58.72c	**53.12B**
(Phos x y)	1238.0b	1171.0d	**1205.0C**	42.53e	57.47c	**50.00C**
(Nit x Phos x y)	1291.0a	1250.0b	**1270.0A**	67.76b	81.08a	**74.42A**
Control	1023.0f	1023.0f	**1023.0G**	0.00n	0.00n	**0.00I**
Mean**	**1142.0A**	**1136.0A**		**25.92B**	**36.05A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (20): Number of fruits/tree and yield increment (%) as compared to control of Canino" apricot trees in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Number of fruits/tree			Yield increment (%) as compared to control		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	1171.0f	1177.0f	**1174.0E**	6.35m	16.55k	**11.45H**
Nitrobein (Nit)	1271.0e	1346.0d	**1308.0C**	15.78kl	28.19h	**21.99F**
Phosphorene (Phos)	1134.0f	1137.0f	**1136.0F**	14.02l	20.76j	**17.39G**
Active dry yeast (y)	1284.0e	1351.0d	**1317.0C**	24.66i	34.99g	**29.83E**
(Nit x Phos)	1272.0e	1253.0e	**1262.0D**	28.44h	42.61f	**35.53D**
(Nit x y)	1451.0b	1491.0b	**1471.0A**	52.10d	60.69c	**56.40B**
(Phos x y)	1406.0c	1349.0d	**1378.0B**	43.70f	49.91e	**46.81C**
(Nit x Phos x y)	1586.0a	1363.0d	**1474.0A**	75.83b	78.65a	**77.24A**
Control	1069.0g	1069.0g	**1069.0G**	0.00n	0.00n	**0.00I**
Mean**	**1294.0A**	**1282.0A**		**28.99B**	**36.93A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

IV-IV- Response of some fruit characteristics:

In this regard some fruit physical characteristics (fruit weight, volume, firmness, fruit dimensions, shape index, flesh weight, seed weight and flesh/seed ratio) and some chemical properties (fruit juice TSS %, total titratable acidity, TSS/acid ratio and total sugars content were the fruit characteristics investigated in response to the specific and interaction effects of the variables of each investigated factor i.e., NK soil application level, some bio-stimulants and their combinations. Data obtained during both the first and second seasons of study are represented in Tables (21), (22), (23), (24), (25), (26), (27) and (28).

IV-IV-1- Fruit physical properties:

Fruit weight (gm.) volume (ml^3), fruit dimensions (height and diameter in mm.), firmness ($Ib/inch^2$), fruit shape index (height/diameter ratio), fruit flesh weight (gm.), seed weight (gm.) and flesh/seed ratio of "Canino" apricot fruits were the evaluated physical characteristics pertaining their response to the specific and interaction effects of different variables of the two investigated factors (NK level and some bio-stimulants soil applied). Data obtained during both 2006 and 2007 seasons are tabulated in Tables (21), (22), (23), (24), (25) and (26).

IV-IV-1-a- Fruit weight (gm.).

A- Specific effect:

Considering the average fruit weight of "Canino" apricot cv. affected by the (NK) soil applied level, data tabulated in Tables (21 & 22) displayed obviously that it specifically responded during both 2006 and 2007 seasons of study.

Whereas, the greatest value and the heaviest fruits were resulted by the highest level of (NK) level i.e., (N_2K_2) treated trees. Meanwhile the lowest value in fruit weight and lightest fruits of "Canino" apricot trees were obtained from those trees subjected to the lower level of (NK) i.e., (N_1K_1). Moreover, differences during both the first and second seasons were significant as fruit weight of peach of the abovementioned two categories was compared to each other.

Regarding the specific effect of some investigated bio-stimulants in this study i.e., (Nitrobein, Phosphorene and active dry yeast) as soil applied, data represented in the same Tables showed clearly that the positive relationships between studied bio-stimulants soil application and fruit weight of "Canino" apricot cv. However, all bio-stimulants tested treatments soil applied were increased significantly the fruit weight as compared to the control trees in the two seasons of study. In addition to, it could be observed that the heaviest fruits (39.50 & 36.88 gms.) were obtained from (Nit x Phos x y) treatment in both 2006 and 2007 seasons, respectively. On the other hand, the opposite trend was detected with the (Phosphorene) alone treated trees which induced significantly the lightest fruits throughout the two seasons of study. Moreover, other bio-stimulants treatments recorded in between values with a tendency of variability in their effectiveness as compared to the aforesaid two extents in first and second seasons of study.

B- Interaction effect:

Regarding the interaction effect of the various combinations between the two variables of investigated factors i.e., (NK) and some bio-stimulants soil application, data in

Tables (21 & 22) revealed that the specific effect of each investigated factor i.e., (NK) soil added rate and bio-stimulants was directly reflected on their interaction effect, whereas "Canino" apricot trees treated (supplied) with the higher level of NK combined with all combined studied bio-stimulants i.e., (N_2K_2 x Nit x Phos x y) treatment exhibited statistically the heaviest and the greatest weight value of fruits. Moreover, both combinations of (N_2K_2 x Nit x y) and (N_1K_1 x Nit x Phos x y) descendingly ranked second and third, respectively. Differences between the abovementioned three combinations treatments were significant during both seasons of study. On the other hand, the opposite trend was detected with both (N_1K_1) and (control) treatments, whereas they resulted in inducing the lightest fruits during the first and second seasons of study from the stand point of statistic. Furthermore, other (NK x bio-stimulants) combinations treatments were intermediate the aforesaid two extents with a variable tendency of effectiveness as their interaction effect on average fruit weight of "Canino" apricot cultivar was concerned. Such trend was true during both 2006 and 2007 seasons of study.

The obtained data are in accordance with those stated by **Kilany and Kilany (1991); Mekhael (1994); Awasthi *et al.*, (1997); Nasef (2000); Wahba (2002); Kabeel (2004) and Kabeel *et al.*, (2008)** on apple, pear, persimmon, peach fruit trees regarding the effect of the NK soil application on fruit weight, who revealed that fruit weight was increased significantly by increasing the level of NK soil added. However, the trend of response to some bio-stimulants soil applied goes in line with those reported by **Mansour (1998); Fathi *et al.*,**

(2002); Eissa-Fawzia (2003); Shddad *et al.*, (2005); Kabeel *et al.*, (2005) and Kabeel *et al.*, (2007) on grapevine, apple, peach, persimmon and apricot fruit trees.

IV-IV-1-b- Fruit volume (ml^3).

A- Specific effect:

It is quite evident from data tabulated in Tables (21 & 22) that fruit volume (ml^3) of "Canino" apricot cultivar followed typically the same two trends previously detected with fruit weight regarding the specific effect of either (NK) level or some investigated of bio-stimulants soil application. Such two trends of response were true during both 2006 and 2007 seasons of study as every investigated factor and its own trend was separately or individually taken into consideration.

B- Interaction effect:

With respect to the average of fruit volume of "Canino" apricot cultivar in response to the interaction effect of different (NK) levels and some bio-stimulants soil applied, data in Tables (21 & 22) showed clearly that the average fruit volume responded significantly to the interaction effect of the different (NK x bio-stimulants) combinations. However, "Canino" apricot trees received the higher level of (NK) soil applied i.e., (N_2K_2) associated with soil added of some bio-stimulants under study i.e., (N_2K_2 x Nit x Phos x y) treatment induced fruits had significantly the greatest volume during both the first and second seasons of study. On the other hand, the opposite trend was detected with the combination between the (N_1K_1 no stimulants added) and the control treatments which resulted in a significant depression on fruit volume of "Canino" apricot cv. Such trend

was true during both the first and second seasons of study. Furthermore, other NK x bio-stimulants combinations were in between the abovementioned two extents as their interaction effect on fruit volume of Canino apricot cultivar was concerned throughout 2006 and 2007 seasons.

IV-IV-1-c- Fruit firmness (Ib/inch^2).

A- Specific effect:

Referring the specific effect of the NK soil application level, data presented in Tables (21 & 22) displayed obviously that the fruit flesh firmness of "Canino" apricot cv. was specifically responded to the (NK) investigated levels. Hence, an obvious increase in fruit flesh firmness was generally exhibited with increasing the (NK) soil added level, whereas the (NK) soil application at the higher level i.e., (N_2K_2) induced significantly fruits having firmer flesh texture. However, the lower NK level i.e., (N_1K_1) resulted in inducing statistically the most softened fruits. Such trend was detected during both 2006 and 2007 seasons of study.

Concerning the specific effect of some investigated bio-stimulants under study, data in the same two Tables indicated clearly that both bio-stimulants treatments of the (Nit x Phos x y) and (Nit x y) soil applied decreased fruit flesh firmness of "Canino" apricot cv. as compared to the other stimulants treatments. On the other hand, the reverse was found with those trees subjected to both (Phosphorene) and (control) treatments.

Nevertheless, it is so interesting to be noticed that both fruit volume and it's flesh firmness of "Canino" apricot cultivar were in a negative relationship. Since, the smallest fruits in their

Table (21): Average fruit weight (gms), volume (ml3) and fruit firmness (lb/inch2) of Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Fruit weight (gm.)			Fruit volume (ml^3)			Fruit firmness ($lb/inch^2$)		
	2006 season			2006 season			2006 season		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	26.83k	30.30i	**28.57G**	30.23h	32.33g	**31.26F**	12.47de	14.27b	**13.37A**
Nitrobein (Nit)	31.43h	33.83ef	**32.63D**	34.30ef	35.47de	**34.87D**	11.07g	11.27g	**11.17D**
Phosphorene (Phos)	28.37j	31.40h	**29.89F**	32.10g	33.47fg	**32.74E**	11.67e-g	15.20a	**13.43A**
Active dry yeast (y)	31.73h	31.87h	**31.80E**	35.10de	36.80d	**35.93C**	11.33fg	13.67bc	**12.50B**
(Nit x Phos)	32.37gh	35.90d	**34.13C**	36.07d	36.70d	**36.38C**	9.87h	12.67de	**11.27CD**
(Nit x y)	34.63e	38.70b	**36.67B**	36.60d	40.63b	**38.61B**	9.27h	12.33d-f	**10.80D**
(Phos x y)	33.07fg	36.43cd	**34.75C**	36.47d	38.67c	**37.57B**	11.07g	13.27cd	**12.17B**
(Nit x Phos x y)	37.33c	41.67a	**39.50A**	40.03bc	45.17a	**42.60A**	9.33h	12.60de	**10.97D**
Control	28.10j	28.10j	**28.10G**	30.27h	30.27h	**30.27F**	11.87e-g	11.87e-g	**11.87BC**
Mean**	**31.54B**	**34.24A**		**34.57B**	**36.61A**		**10.88B**	**13.01A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (22): Average fruit weight (gms), volume (ml3) and fruit firmness (lb/inch2) of Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Fruit weight (gm.)			Fruit volume (ml^3)			Fruit firmness ($lb/inch^2$)		
	2007 season			2007 season			2007 season		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	27.77l	29.03jk	**28.40G**	31.60k	33.23h-j	**32.41E**	12.27b-d	12.60a	**12.43A**
Nitrobein (Nit)	30.67gh	30.50gh	**30.57E**	32.47jk	34.13gh	**33.30D**	11.13h	11.87ef	**11.50C**
Phosphorene (Phos)	27.90l	30.20h	**29.03F**	32.23jk	33.10h-j	**32.67E**	12.33bc	12.47ab	**12.40A**
Active dry yeast (y)	31.20fg	32.37de	**31.77D**	32.37jk	34.67fg	**33.51D**	12.27b-d	12.47ab	**12.37A**
(Nit x Phos)	30.77gh	33.80c	**32.28C**	33.93g-i	35.30ef	**34.60C**	11.93ef	12.20cd	**12.07B**
(Nit x y)	31.87ef	34.70b	**33.30B**	36.17de	41.20b	**38.67B**	10.07l	11.60g	**10.83D**
(Phos x y)	29.60ij	32.90d	**31.50D**	32.90ij	36.57d	**34.73C**	12.07de	12.40a-c	**12.23AB**
(Nit x Phos x y)	33.90bc	39.97a	**36.93A**	38.40c	44.07a	**41.23A**	10.93h	11.80fg	**11.37C**
Control	28.53kl	28.53kl	**28.53G**	32.40jk	32.40jk	**32.40E**	12.07de	12.07de	**12.07B**
Mean**	**30.19B**	**32.44A**		**33.61B**	**36.07A**		**11.67B**	**12.16A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

volume had the firmest flesh texture from one hand and were always in concomitant to both the control and (N_2K_2 x Ph) treatments from the other. Whereas, the opposite trend was true with the biggest fruits which had the most softened texture from one hand and closely coupled to (N_1K_1) combined with of (Nit x Phos x y), (Nit x y) and (Nit x Phos) soil applied from the other.

B- Interaction effect:

Concerning the interaction effect of the different NK x bio-stimulants combinations on flesh firmness of "Canino" apricot fruits, data tabulated in Tables (21 & 22) displayed obviously that the combinations between (N_2K_2) from one hand and (Phos) from another i.e., (N_2K_2 x Phos) as well as the control treatment induced fruits had significantly the firmest flesh texture, respectively. Such trend was true during both 2006 and 2007 seasons of study. On the other hand, the opposite trend applied level associated with bio-stimulants soil application treatments of (Nit x Phos x y) and (Nit x y) in the two seasons, whereas resulted statistically in increase flesh softened of "Canino" apricot fruits as compared to any other investigated combinations treatments during both the first and second seasons of study. In addition to that, other combinations of (NK x bio-stimulants) treatments were intermediate the aforesaid two extents.

IV-IV-1-d- Fruit height (mm.).

A- Specific effect:

With respect to the fruit height of "Canino" apricot cv. as influenced by the specific effect of NK soil application level. Data presented in Tables (23 & 24) revealed obviously that the

response was complete absent from standpoint of statistic. In other words, the fruit height of "Canino" apricot trees treated with either (N_1K_1) or (N_2K_2) level were statistically the same. Whereas, the differences were significant as fruit height of trees received any of the (N_1K_1) and (N_2K_2) treatments were compared each other. Such trend was detected during both 2006 and 2007.

As for the specific effect of some investigated bio-stimulants under study (Nitrobein, Phosphorene and active dry yeast) soil application, data in the same Tables displayed clearly that the height of "Canino" apricot fruit was significantly responded to bio-stimulants soil application as compared to the control treatments during both 2006 and 2007 seasons of study. Moreover, the response was relatively more pronounced as compared to that detected with NK added levels. However, both (Nit x Phos x y) and (Nit x y) soil applied increased significantly the fruit height over that any bio-stimulant treatments especially in the first season (2006) whereas, differences did not reach level of significance between most treatments in the second season (2007).

B- Interaction effect:

With respect to the interaction effect of the different combinations between the differential variables of both investigated factors on fruit height of "Canino" apricot cv., data presented in Tables (23 & 24) showed clearly that the higher level of NK i.e., (N_2K_2) soil application level was combined with either both statistically the greatest fruit height value. Contrary to that, combinations between (N_1K_1) and no bio-stimulants soil

applied from one hand and the control treatment from the other resulted in a significant depression on fruit height of "Canino" apricot cv., whereas in the second one it could be noticed that both combinations treatments of (N_2K_2 x Nit x Phos) and (N_1K_1 x Nit x Phos x y) were statistically the superior. The opposite trend was true with both combinations of (N_1K_1) and (N_2K_2) with no bio-stimulant soil application. Moreover, the other (NK x bio-stimulants) combinations treatments were in between with various tendency of response. It could be added that, the superiority of both (N_2K_2 x Nit x Phos x y) and (N_1K_1 x Nit x Phos x y) combinations treatments from one side and the inferiority of both (N_1K_1) - (N_2K_2) with no bio-stimulants soil applied from the other one could be logically explained on the base of the more pronounced effectiveness of bio-stimulants soil applied rather than the (NK) level soil application.

The present results regarding the response of fruit height to the different level of (NK) were supported by the findings of several investigators, **Raese (1990), Kilany and Kilany (1991); Nasef (2000); Wahba (2002) and Kabeel (2004)** on apple, pear, persimmon and peach fruits, who stated that fruit height significantly increased by increasing the rate of (NK) fertilization. Meanwhile, the influence of bio-stimulants soil application was concerned, the obtained data are in line with the findings of **Eissa-Fawzia (2003); Kabeel *et al.*, (2005) and Shddad *et al.*, (2005)** on "Canino" apricot fruits; **Kabeel *et al.*, (2007)** on "Anna" apple fruits and **Kabeel *et al.*, (2008)** on "Le-Conte" pear fruits.

IV-IV-1-e- Fruit diameter (mm.).

A- Specific effect:

Regarding the specific effect of NK soil application level on fruit diameter of Canino" apricot cv., data tabulated in Tables (23 & 24) displayed obviously that the previously detected trend with fruit height was also found for the other fruit dimension "fruit diameter" in the first seasons (2006) only. Whereas, differences in fruit diameter due to the differential investigated NK soil application levels were insignificant as compared each one (2007), the higher level of NK i.e., (N_2K_2) soil applied results significantly in the greatest value and induced the widest fruit diameter than those of the (N_1K_1) treated trees. Differences in diameter of "Canino" apricot fruits due to two different levels of NK fertilization were significant in the second (2007) as fruits of each level were compared to those of the other level.

With respect to the specific effect of the different treatments of various bio-stimulants soil application, diameter of "Canino" apricot fruits responded significantly to all the investigated bio-stimulants treatments as compared to the control treatment. On the other hand, the highest values of fruit diameter were significantly produced by the (Nit x Phos x y) then both (Nit x y) and (Phos x y) treated trees, respectively. Contrary to that, the control trees induced significantly the least value of fruit diameter. Meanwhile, the average fruit diameter of the other bio-stimulants treated trees were significantly intermediate as compared to those of both 2006 and 2007 seasons of study.

B- Interaction effect:

Considering the interaction effect of the different combinations between the differential variables of both investigated factors on fruit diameter of "Canino" apricot cv., data in Tables (23 & 24) revealed obviously that the response followed approximately the same trend previously found with the former fruit dimension (fruit height). Whereas, the (N_2K_2 x Nit x Phos x y) and (N_1K_1 x Nit x Phos x y) combinations treatments were statistically the superior during the two seasons of study respectively. Moreover, the opposite trend was true with both treatments of (control) and (N_1K_1 x bio-stimulants) combinations treatments were in between with various tendency of response.

The obtained concerning the response of fruit diameter to the different level of NK were supported by the findings of several investigators **Raese (1990); Kilany and Kilany (1991), Nasef (2000), Wahba (2002) and Kabeel (2004)** on apple, pear, persimmon and peach trees, they reported that fruit diameter was positively affected by the different treatments of NK fertilization. While, with regard to the influence of some bio-stimulants as soil applied was concerned the present results are in accordance with the findings of **Kabeel *et al.*, (2005) and Shddad *et al.*, (2005)** on "Canino" apricot trees; **Abou Grah-Fatma (2004) and Wahba (2007)** on persimmon trees and **Kabeel *et al.*, (2007)** on apple trees.

IV-IV-1-f- Fruit shape index.

A- Specific effect:

With regard to the fruit shape index (fruit height/fruit diameter ratio) of "Canino" apricot cv., as influenced by the two investigated levels of NK soil applied, data tabulated in Tables (23 & 24) displayed clearly that the trend was so firm to be the same during both the first and second seasons of study. On the other hand the differences between the two NK levels i.e., (N_1K_1) and (N_2K_2) soil application levels was completely absent during both 2006 and 2007 seasons as their influence in fruit shape index of "Canino" apricot cv., was concerned.

As for the specific effect of all investigated bio-stimulant soil applied on fruit shape index of "Canino" apricot cv., data in the same two Tables revealed that the response was completely absent from the standpoint of statistic in most cases during both 2006 and 2007 seasons of study. Moreover, bio-stimulants treatments of active dry yeast (y) in the first season and both (Nit x y) and (NK x no stimulants in the second one were statistically the inferior as showed significantly the least values of fruit shape index. Meanwhile, all other remain bio-stimulants treatments tended to be elongated as compared to the aforesaid treatments but differences between all investigated bio-stimulants treatments did not reach level of significance in all cases such trend was true during both the first and second seasons of study.

B- Interaction effect:

Referring the interaction effect of the different NK x bio-stimulants combinations treatments on the leaf shape index of "Canino" apricot cv., data tabulated in Tables (23 & 24) declared

Table (23): Average fruit height (mm), diameter (mm.) and fruit shape index of "Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Fruit height (mm.)			Fruit diameter (mm)			Fruit shape index		
	2006 season			2006 season			2006 season		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	35.30gh	36.0g	**35.70E**	37.0ef	38.3b-e	**37.65F**	0.947a	0.932a	**0.939AB**
Nitrobein (Nit)	36.7fg	38.0bc	**37.35B**	37.7d-f	39.3bc	**38.5D**	0.928a	0.983a	**0.956AB**
Phosphorene (Phos)	35.7i	36.7fg	**36.20D**	37.3ef	38.3b-e	**37.8E**	0.965a	0.949a	**0.957AB**
Active dry yeast (y)	36.7fg	37.7cd	**37.20C**	38.0c-e	39.0b-d	**38.5D**	0.932a	0.924a	**0.928B**
(Nit x Phos)	37.3de	38.0bc	**37.65B**	38.0c-e	39.0b-d	**38.5D**	0.949a	0.965a	**0.957AB**
(Nit x y)	38.0bc	38.3b	**38.15A**	39.7b	39.7b	**39.7B**	0.949a	0.974a	**0.961AB**
(Phos x y)	37.0ef	37.3de	**37.15C**	39.0b-d	39.3bc	**39.15C**	0.923a	0.940a	**0.932AB**
(Nit x Phos x y)	38.0bc	39.0a	**38.50A**	41.3a	41.3a	**41.3A**	0.961a	0.951a	**0.956AB**
Control	35.0j	35.0j	**35.0F**	36.3f	36.3f	**36.3G**	0.973a	0.973a	**0.973A**
Mean**	**36.74A**	**37.36A**		**38.25A**	**38.94A**		**0.947A**	**0.954A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (24): Average fruit height (mm), diameter (mm.) and fruit shape index of "Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Fruit height (mm.)			Fruit diameter (mm)			Fruit shape index		
	2007 season			2007 season			2007 season		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	35.00ef	36..3d-f	**35.7C**	37.3ij	38.0gh	**37.7E**	0.930a	0.921a	**0.925B**
Nitrobein (Nit)	36.3b-f	37.7b	**37.0B**	38.0gh	39.0de	**38.5BC**	0.955a	0.967a	**0.961A**
Phosphorene (Phos)	35.7c-f	36.3b-f	**36.0C**	37.7hi	38.0gh	**37.9C-E**	0.947a	0.955a	**0.951A**
Active dry yeast (y)	36.3b-f	37.0b-d	**36.7BC**	38.0gh	39.3cd	**38.6BC**	0.955a	0.941a	**0.948A**
(Nit x Phos)	36.7b-e	37.3bc	**37.0B**	38.3fg	38.7ef	**38.5BC**	0.941a	0.949a	**0.945A**
(Nit x y)	37.0b-d	37.7b	**37.3B**	39.7c	41.0b	**40.3A**	0.932a	0.920a	**0.926B**
(Phos x y)	36.7b-e	36.7b-e	**36.7BC**	39.0de	39.3cd	**39.1B**	0.958a	0.941a	**0.953A**
(Nit x Phos x y)	39.3a	39.7a	**39.5A**	39.7c	42.0a	**40.8A**	0.989a	0.945a	**0.967A**
Control	34.7f	34.7f	**34.9D**	37.0ij	37.0ij	**37.0F**	0.981a	0.981a	**0.981A**
Mean**	**36.55A**	**37.07A**		**38.3B**	**39.1A**		**0.943A**	**0.947A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

that the response was completely absent from the standpoint of statistic. In other words, the leaf shape index (fruit height/fruit diameter ratio) of "Canino" apricot trees treated with (NK x bio-stimulants) combinations treatments under study were statistically the same. Such trend was true during both the first and second seasons of study.

The obtained results concerning the response of fruit shape index of "Canino" apricot cv., to both the NK soil application level and some bio-stimulants soil applied are confirmed with the findings of **Nasef (2000), Wahba (2002); Kabeel (2004); Wahba (2007)**; **Kabeel *et al.*, (2007) and Kabeel (2008)** on some deciduous fruit trees.

IV-IV-1-g- Flesh weight (gm.).

A- Specific effect:

Considering the average flesh fruit weight of "Canino" apricot cv. As influenced by the NK soil applied level, data represented in Tables (25 & 26) displayed obviously that it responded specifically, whereas the heaviest flesh weight of fruits were produced by the N_2K_2 treated trees. On the other hand, the lightest flesh weight of fruits were those of the "Canino" apricot trees subjected to the lowest NK rate i.e., (N_1K_1). In addition to that, differences during both 2006 and 2007 seasons were significant as flesh weight of fruits of each of the abovementioned two categories was compared to each other.

Regarding the specific effect of the bio-stimulants, data obtained in the same Tables during both seasons revealed clearly the positive relationships between the all investigated bio-stimulants treatments and flesh weight of fruits of "Canino"

apricot cv. However, the heaviest fresh weight of fruits were significantly exhibited by both (Nit x Phos x y) and (Nit x y) in the first season while with (Nit x Phos x y) and both (Nit x y) and (Nit x Phos) in the second one. On the contrary, the untreated trees (control treatment) induced significantly the lightest flesh weight of fruits. Meanwhile, the average flesh weight of fruits for other bio-stimulants treatments were significantly intermediate as compared to those of both abovementioned two extents. Such trend was true during 2006 and 2007 seasons of study.

B- Interaction effect:

Referring the flesh weight of fruits as influenced by the interaction effect of different NK x bio-stimulants, data tabulated in Tables (25 & 26) declared that the specific effect of each investigated factor i.e., NK soil applied level and the bio-stimulants was directly reflected on the interaction effect of the various NK x bio-stimulants combinations on Canino apricot flesh weight of fruits. On the other hand, "Canino" apricot trees received the higher level of NK soil applied "N_2K_2" associated with soil application the bio-stimulants (Nit x Phos x y) induced fruits had statistically the heaviest flesh weight during the two seasons of study. Moreover, two other combinations of the (N_2K_2 x Nit x y) and (N_1K_1 x Nit x Phos x y) descendingly ranked second for both 2006 and 2007 seasons, respectively. Differences between the abovementioned three combinations were significant as their effect on flesh weight of fruits of "Canino" apricot cv. Was taken into considerations. On the contrary, the control treatment and (N_1K_1 x no bio-stimulants)

were the inferior, whereas they resulted in inducing the lightest flesh weight of fruits during the two seasons of study from the standpoint of statistic. In addition to that, other (NK x bio-stimulants) were in between the aforesaid two extents as their interaction effect on flesh weight of "Canino" apricot fruits was concerned during both 2006 and 2007 seasons.

The obtained results regarding the response of flesh weight of fruits to NK and bio-stimulants soil applied are in accordance with findings of **Kabeel *et al.*, (2005) and Shddad *et al.*, (2005)** on "Canino" apricot trees; **Kabeel *et al.*, (2007)** on "Anna" apple fruits and **Kabeel *et al.*, (2008)** on "Le-Conte" pear fruits.

IV-IV-1-h- Seed weight (cm.).

A- Specific effect:

Data in Tables (25 & 26) indicated clearly that seed weight of "Canino" apricot fruit followed typically the same trend previously detected with flesh weight of fruit regarding the specific effect of the NK soil applied level. Such trend of response was true during both 2006 and 2007 seasons of study.

As for the specific effect of some bio-stimulants compounds under study as soil application, data tabulated in the same Tables revealed obviously that all investigated bio-stimulants soil applied increased seed weight of "Canino" apricot fruits as compared to either the control or no bio-stimulants soil added treatments which were statistically the inferior. However, the heaviest significantly seed weight were resulted from both the (Nit x Phos x y) and (Nit x y) bio-stimulants soil application treatments, but the difference did not reach level of significance

between the two latter treatments during both 2006 and 2007 seasons of study. In addition, other bio-stimulants treatments were in between the abovementioned two extents as their specific effect on seed weight of "Canino" apricot fruits was concerned during both 2006 and 2007 seasons.

B- Interaction effect:

Regarding the seed weight of "Canino" apricot fruits in response to the interaction effect of the different (NK x bio-stimulants) soil applied combinations, data obtained in Tables (25 & 26) displayed that the specific effect of each investigated factor was directly reflected on their combinations, whereas as the higher level of NK i.e., (N_2K_2) soil application combined with either (Nit x Phos x y) or (Nit x y) bio-stimulants exhibited statistically the heaviest seed weight of "Canino" apricot fruits. The superiority of the abovementioned two combinations over the other investigated combinations was clearly observed during the two seasons of study. Contrary to that, trees subjected to both the control treatment from one hand the combinations between (N_1K_1 and no bio-stimulants soil added) from the other resulted in a significant the least values of seed weight of fruits. Such trend was true during both 2006 and 2007 seasons of study. Since the superiority of both (N_2K_2 x Nit x Phos x y) and (N_2K_2 x Nit x y) combinations from one side and the inferiority of both (control) and (N_1K_1 x no bio-stimulants) combination from the other one could be logically explained on the base of the more pronounced effectiveness of bio-stimulants soil application rather than the (NK) level soil applied. In addition, other combinations treatments were in between the aforesaid two extents with a relative tendency of effectiveness.

IV-IV-1-i- Flesh / seed weight ratio.

A- Specific effect:

Regarding the specific effect of the NK soil applied level on the flesh weight/seed weight ratio in "Canino" apricot fruits, data in Tables (25 & 26) pointed out the negligible variation, whereas differences were so little to reach level of significance. On the other hand, the absent of significance in the response of flesh weight/seed ratio to the investigated NK level as soil application was also detected during the first and second seasons of study.

Referring the response to the specific effect of some bio-stimulants soil application, it is quite evident from data in the same Tables that treated "Canino" apricot trees with (Nit x Phos x y) and (Nit x y) in the first seasons and both (Nit x y) and (Nit x Phos x y) in the second one had significantly the highest values of flesh weight/seed ratio of apricot fruits, respectively. On the other hand, the lowest flesh weight/ seed ratio was statistically exhibited and always in concomitant to those "Canino" apricot trees received the NK x without bio-stimulants soil applied and the control treatments. Moreover, other bio-stimulants treatments came intermediate the abovementioned two extents. However, differences were completely absent from the standpoint of statistic in most cases in the two seasons of study.

B- Interaction effect:

With respect to the interaction effect of the different combinations between the various variables of both investigated factors (NK and some bio-stimulants) soil applied on flesh weight/seed ratio of "Canino" fruits, tabulated data in Tables (25

Table (25): Average flesh weight (gm), seed weight (gm.) and flesh/seed of "Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	Flesh weight (gm.)			Seed weight (gm.)			Flesh/seed		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	25.10ij	28.57h	**26.83H**	1.70k	1.70jk	**1.71F**	14.77d	16.81b	**15.70C**
Nitrobein (Nit)	29.47gh	32.43c-e	**30.95E**	1.93h	2.10ef	**2.01C**	15.27c	15.44c	**15.40C**
Phosphorene (Phos)	26.33i	29.80gh	**27.92G**	1.80i	2.07fg	**1.93D**	14.74d	15.40c	**14.47D**
Active dry yeast (y)	29.67gh	30.33f-h	**30.00F**	2.03g	2.03fg	**2.05C**	14.62d	14.63d	**14.64D**
(Nit x Phos)	30.80e-g	33.60cd	**32.20D**	2.13de	2.30a	**2.21A**	14.46d	14.61d	**14.58D**
(Nit x y)	32.93cd	36.57b	**34.75B**	1.83i	2.23b	**2.03C**	17.99a	16.40b	**17.12A**
(Phos x y)	31.90d-f	34.33c	**33.11C**	2.03g	2.20bc	**2.11B**	15.72c	15.61c	**15.70C**
(Nit x Phos x y)	34.33c	39.50a	**36.92A**	2.17cd	2.33a	**2.25A**	15.83c	16.96ab	**16.41B**
Control	26.02i	26.02i	**26.02H**	1.78ij	1.78ij	**1.78E**	14.62d	14.62d	**14.62D**
Mean**	**29.63B**	**32.35A**		**1.93B**	**2.09A**		**15.33A**	**15.51A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (26): Average flesh weight (gm), seed weight (gm.) and flesh/seed of "Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	Flesh weight (gm.)			Seed weight (gm.)			Flesh/seed		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	25.87g	26.87f	**26.39D**	1.77d	2.17a-c	**1.97D**	14.62d	12.11i	**14.40E**
Nitrobein (Nit)	28.37e	28.70de	**28.53C**	1.87d	2.13bc	**2.00CD**	15.18c	13.48g	**14.27C**
Phosphorene (Phos)	24.96h	29.00de	**26.98D**	1.87d	2.20a-c	**2.03C**	13.35g	13.19h	**13.40E**
Active dry yeast (y)	28.83de	30.40c	**29.61C**	2.07c	2.13bc	**2.10B**	13.93f	14.28e	**14.10C**
(Nit x Phos)	29.37d	30.96c	**30.16B**	1.83d	2.20a-c	**2.01C**	16.05b	14.08e	**15.01B**
(Nit x y)	30.53c	31.60b	**31.06B**	2.17a-c	2.27ab	**2.22A**	14.07e	13.92f	**13.99D**
(Phos x y)	27.53f	30.77c	**29.15C**	2.07c	2.20a-c	**2.13B**	13.30g	13.99f	**13.69D**
(Nit x Phos x y)	31.53b	37.73a	**34.63A**	2.20a-c	2.30a	**2.25A**	14.34e	16.41a	**15.40A**
Control	25.90g	25.90g	**25.90D**	1.86d	1.86d	**1.86E**	13.93f	13.93f	**13.93D**
Mean**	**28.10B**	**30.21A**		**1.97B**	**2.16A**		**14.28A**	**13.98A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

& 26) revealed clearly that trees subjected to the higher level of NK i.e., (N_2K_2) and treated with at either (Nit x Phos x y) or (Nit x y) bio-stimulants resulted in increasing flesh weight/seed ratio over than the other (NK x bio-stimulants) combinations. Whereas, the control and many other combinations were statistically the inferior. In addition, other combinations were in between with a slight tendency of variability in their effectiveness. Such trend was detected during both 2006 and 2007 seasons of study.

IV-IV-2- Fruit chemical characteristics:

Fruit juice total soluble solids percentage (TSS %), total teteratabe acidity percentage as malic acid (acidity %) and the TSS/acid ratio as well as total sugars content in fruit were the four fruit chemical characteristics of "Canino" apricot cv. investigated regarding their response to both specific and interaction effects of the two factors under study viz NK level and some bio-stimulants treatments soil application.

IV-IV-2-a- Fruit juice total soluble solids percentage (TSS %).

A- Specific effect:

Concerning the influence of the NK soil application, data represented in Tables (27 & 28) displayed clearly that the positive relationship between the fruit juice TSS (%) of Canino apricot cv. and the NK soil applied level during both 2006 and 2007 seasons. Whereas, providing Canino apricot trees with the highest level of NK i.e., 20 kgs from each the NK fertilizers per the individual trees (N_2K_2) resulted in fruits had trees (N_1K_1) which ranked last in this concern. It could be noticed that

differences in fruit juice TSS (%) due to variable levels of NK soil application were significant with comparing (N_2K_2) to (N_1K_1). Such trend was detected during both 2006 and 2007 seasons of study. Moreover, the beneficial effect of raising the NK level on fruit juice TSS (%) as shown from the obtained results may be principally discussed on that fact depending on the real function of K on some physiological processes. However, K plays a great role in translocation of above from the produced organs (leaves) towards the accumulative organs such as fruits and other permanent plant organs viz trunk, limbs, roots .. etc

With respect to the specific effect of some investigated bio-stimulants treatments under study i.e., Nitrobein (Nit), Phosphorene (Phos) and active dry yeast (Y), it is quite evident from data in the same Table that the control trees produced fruits with the lowest value of TSS % during both the first and second seasons of study. On the other hand, the opposite trend was true with such trees subjected to (Nit x Phos x y) bio- stimulants treatment, whereas the highest value of fruit juice TSS percentage was obtained and the increase was significant during both seasons of study as compared another bio-stimulants treatments. In addition to that, fruit juice TSS % of the other bio-stimulant treatments were in between the abovementioned to extents however differences were significant as compared to each other in most cases during both 2006 and 2007 seasons of study.

B- Interaction effect:

Considering the interaction effect of the different NK levels combined with the different bio-stimulants soil applied

treatments, data tabulated in Tables (27 & 28) revealed that the "Canino" apricot trees received the NK soil application at the higher level (N_2K_2) i.e., 2.0 kgs from each element source per tree associated with soil applying of (Nit x Phos x y) treatment during the two seasons of study as well as (N_2K_2 x Nit x y) treatments induced fruits with the highest value of fruit juice TSS % that surpassed statistically the analogous ones of the other (NK x bio-stimulants) combinations. On the contrary, "Canino" apricot trees subjected to both the control treatment and the (N_1K_1 x no stimulants applied) induced the poorest fruits in their juice TSS content. Moreover, the (N_2K_2 x no stimulants soil application) treatment had to great a comparable effectiveness as compared to the inferior combinations of (control) and (N_1K_1 x no stimulants applied) treatments in this concern. On the other hand, of combinations treatments were in between with a noticeable tendency proved that both (N_2K_2 x Nit x Phos x y) and (N_2K_2 x Nit x y) as well as (N_1K_1 x Nit x Phos x y) were more effective than the other combinations of such category. Such trend was detected during both the first (2006) and second (2007) seasons of study.

The obtained results regarding the response of fruit juice total soluble solids percentage (TSS %) to the different levels of (NK) were supported by **Meheriuk and Lau (1979), Abou Aziz *et al.*, (1987), Kilany and Kilany (1991), Mekhael (1994); Awasthi *et al.*, (1997) Nasef (2000), Wahba (2002), Kabeel (2004) and Kabeel and El-Saadaney (2004)** on apple, pear, persimmon and peach trees, they reported that fruit juice TSS % increased significantly by increasing the level of NK

fertilization. Meanwhile as for the influence of some bio-stimulants compounds soil application, the observed trend from the present study goes in line with the finding of **Fathi *et al.*, (2002), Eissa-Fawzia (2003), Kabeel *et al.*, (2005), Shddad *et al.*, (2005), Wahba (2007), Kabeel *et al.*, (2007)** on some deciduous fruit trees.

IV-IV-2-b- Fruit juice total acidity (%).

A- Specific effect:

Referring the fruit juice acidity percentage as influenced by the specific effect of NK soil application level, data tabulated in Tables (27 & 28) displayed clearly that the highest total acidity percentage was always in concomitant to such fruits produced by trees treated with the lowest NK level i.e., (N_1K_1) treatment, however this treatment resulted significantly in the greatest value of fruit juice total acidity %. Meanwhile, "Canino" apricot trees treated with the higher level of NK i.e., (N_2K_2) treatment exhibited the poorest fruits in their content of total acidity and produced fruits with the lowest (least) value in this respect. Such trend was true during both the first and second seasons of study.

Considering the fruit juice total acidity % as affected by the specific effect of some bio-stimulants treatments under study, data presented in the same two Tables show obviously that fruit juice total acidity percentage was responded significantly to the different used bio- stimulants treatments as compared to both control and no-bio-stimulants soil applied treatments in the two seasons of study. Moreover, all bio-stimulants treatments succeeded in decreasing the percentage of total acidity in

"Canino" fruit juice as compared to the control. Furthermore, (Nit x Phos x y) treatment induced statistically the lowest fruit juice total acidity % followed by (Phos x y) treatment whereas differences did not reach level of significance between them. On the other hand, the other investigated bio-stimulants treatments were in between the aforesaid two extents. Such trend was detected during both 2006 and 2007 seasons of study.

B- Interaction effect:

Regarding the interaction effect of different combinations between the variables of each investigated factor i.e., (NK and some bio-stimulants) soil applications, data in Tables (27 & 28) revealed obviously that the specific effect of each investigated factor was refected on interaction effect of its combinations. Hence, the "Canino" apricot trees subjected to the (N_2K_2 x Nit x Phos x y) and (N_2K_2 x Phos x y) combinations treatments induced fruits with the lowest total acidity percentage. Meanwhile, the combinations between the soil applied of N_1K_1 level and the two abovementioned bio-stimulants treatments i.e., (N_1K_1 x Nit x Phos x y) and (N_1K_1 x Phos x y) ranked second to aforesaid inferior. Moreover, both the control treatment and (N_1K_1 x no bio-stimulants) soil applied were statistically the superior as both showed significantly the highest percentage of fruit juice total acidity, respectively. In addition with a slight tendency of variability in their effectiveness. Such trend was true during both 2006 and 2007 seasons of study.

The obtained results regarding the response of fruit juice total acidity percentage to NK and some bio-stimulants soil application are in agreement with those reported by many

investigators, **Barden and Thompson (1962); Meheriuk and Lau (1979); Abou Aziz (1987); Awasthi *et al.*, (1997); Nasef (2000); Wahba (2002); Abou Grah-Fatma (2004); Kabeel (2004); Kabeel *et al.*, (2007); Wahba (2007) and Kabeel *et al.*, (2008)** on many deciduous species.

IV-IV-2-c- Rate of fruit juice total soluble solids percentage/ total acidity percentage (TSS/acid ratio).

A- Specific effect:

Considering the specific effect of the NK level and some bio-stimulants soil applications on the TSS/acid ratio in "Canino" apricot fruit juice, data obtained during both 2006 and 2007 seasons of study as shown from Tables (27 & 28) revealed obviously that the TSS/acid ratio of "Canino" apricot fruit juice followed typically the same trends previously discussed with the TSS % regarding the response of specific effect of each investigated factor i.e., NK soil applied level and some bio-stimulants soil applications. Such trends were true during both the first and second seasons.

Whereas, providing "Canino" apricot trees with either the higher level of NK i.e., (N_2K_2) soil applied from one hand or the added of some bio-stimulants under study (Nit x Phos x y) as soil application from the other induced statistically the highest values of TSS/acid ratio in apricot fruits for the first and second seasons of study. Contrary to that, the lowest values of TSS/acid ratio in fruits were inclose relationship to the lower level of NK i.e., (N_1K_1) and both the control and no bio-stimulants soil applied. Such trend was true during both 2006 and 2007 seasons of study.

B- Interaction effect:

Concerning the interaction effect of the different (NK x bio-stimulants compounds) combinations on the ratio of fruit TSS/acidity of the "Canino" apricot cv., data represented in Tables (27 & 28) show obviously that the "Canino" apricot trees subjected to the (N_2K_2 x Nit x Phos x y) combination exhibited generally the highest value of TSS/acid ratio in fruits followed by the (N_2K_2 x Nit x y), (N_2K_2 x Phos x y) and (N_1K_1 x Nit x Phos x y) during both 2006 and 2007 seasons of study. The superiority of the abovementioned four combinations treatments over the other investigated ones was clearly observed during the two seasons of study. On the other hand, combination between the (N_1K_1) and no bio-stimulants soil application from one hand and the control treatment from the other resulted statistically in the lowest value of TSS/acid ratio during both the first and second seasons. In addition, other (NK x bio-stimulants) combinations came in between with a slight tendency of variability in their effectiveness.

The abovementioned obtained results are in accordance with the findings of **Abou Aziz (1987), Kilany and Kilany (1991); Mekhael (1994), Awasthi *et al.*, (1997), Nasef (2000), Kabeel (2004)** on pear, apple and peach trees ad for the influence of NK soil applied level. Meanwhile, a similar observation was achieved by **Abou Grah-Fatma (2004) Kabeel *et al.*, (2007); Wahba (2007) and Kabeel *et al.*, (2008)** on persimmon, apple and pear trees with respect to the effect of some bio-stimulants soil application on the ratio of TSS/acid in fruits.

IV-IV-2-d- Total sugars.

A- Specific effect:

Referring the fruit sugars content as influenced by the specific effect, data tabulated in Tables (27 & 28) indicates obviously that total sugars percentage of "Canino" apricot fruits followed typically the same trends previously discussed with the TSS % regarding the response of specific effect of each investigated factors i.e., NK and stimulants compounds soil application. Such trends were true during both 2006 and 2007 seasons. Whereas, the total sugars percentage was in a positive relationship with either the NK level from one hand or some bio-stimulants compounds soil application under study from the other. In other words, the highest value of fruit sugars content was the highest NK soil applied level i.e., (N_2K_2) and the treatment of bio-stimulants (Nit x Phos x y) soil applied.

B- Interaction effect:

Regarding the interaction effect of different combinations between variables of both investigated factors, data in the same Tables displayed clearly that the "Canino" apricot trees subjected to any the (N_2K_2 x Nit x Phos x y) and (N_2K_2 x Ni x y) as well as both the (N_1K_1 x Nit x Phos x y) and (N_2K_2 x Nit x Phos) during both 2006 and 2007 seasons induced fruits contained statistically the highest value of total sugars content. On the contrary, the opposite trend was detected with the both combinations treatments of (control) and (N_1K_1 x no bio-stimulants) soil application, since they resulted in the lowest value o total sugars content in Canino apricot fruits from the stand point of statistic during both 2006 and 2007 seasons of study. In addition to that,

the other investigated (NK x bio-stimulants) combinations treatments were in between the abovementioned two extents. Such trend was true during the first and second seasons of study.

The present results regarding the response of total sugars content to the investigated bio-stimulants treatments under study are in conformity with those previously mentioned by **Fathi *et al.*, (2002);** on apple and peach; **Abou Grah-Fatma (2004)** on persimmon; **Eissa-Fawzia (2003), Kabeel *et al.*, (2005) and Shddad *et al.*, (2005)** on "Canino" apricot fruits. They mentioned that fruit sugar content was increased by using some bio-stimulants as soil applied. However, the obtained results concerning the influence of the (NK) soil application are accordance with the findings of **Kabeel and El-Saadaney (2004)** and **Kabeel *et al.*, (2007)** on pear and apple trees.

Table (27): TSS (%), Acidity (%), TSS/acid ratio and Total sugar of "Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2006 season.

Treatments	TSS %			Acidity %			TSS/acidity			Total sugars %		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	8.87hi	9.33gh	**9.07F**	0.690b	0.677b	**0.683B**	12.86j	13.79i	**13.33E**	16.27i	18.13h	**17.17G**
Nitrobein (Nit)	9.53fg	10.67d	**10.10D**	0.660bc	0.640cd	**0.650C**	14.44h	16.68f	**15.56D**	18.89g	20.98e	**19.93E**
Phosphorene (Phos)	9.33gh	10.13e	**9.70E**	0.653c	0.583ef	**0.617D**	14.29h	17.38e	**15.84D**	18.13h	20.06f	**19.07F**
Active dry yeast (y)	9.47g	11.00cd	**10.23CD**	0.613e	0.597e	**0.603E**	15.45g	18.43d	**16.94C**	19.40g	20.97e	**20.17E**
(Nit x Phos)	9.53fg	11.43bc	**10.47C**	0.583ef	0.553f	**0.567F**	16.35f	20.47c	**18.60C**	18.97g	22.55c	**20.73D**
(Nit x y)	9.90ef	12.10a	**11.00B**	0.557f	0.547f	**0.550G**	17.78e	22.13b	**19.96B**	21.03e	23.74b	**22.37B**
(Phos x y)	9.57fg	11.10b-d	**10.33C**	0.520g	0.500h	**0.570H**	18.41d	22.20b	**20.31B**	20.97e	21.76d	**21.33C**
(Nit x Phos x y)	11.50b	12.43a	**11.93A**	0.513gh	0.490h	**0.500H**	22.42b	25.37a	**23.90A**	23.10c	24.92a	**24.00A**
Control	8.57i	8.57i	**8.57G**	0.713a	0.713a	**0.713A**	12.02k	12.02k	**12.02F**	16.02i	16.02i	**19.02H**
Mean**	**9.58B**	**10.75A**		**0.610A**	**0.587B**		**16.01B**	**18.74A**		**19.17B**	**21.01A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast

Table (28): TSS (%), Acidity (%), TSS/acid ratio and Total sugar of "Canino" apricot fruits in response to specific effect of (NK) and some bio-stimulants soil application treatments as well as their possible combinations during 2007 season.

Treatments	TSS %			Acidity %			TSS/acidity			Total sugars %		
	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*	N_1K_1	N_2K_2	Mean*
Without bio-stimulants	8.57k	8.83	**8.70F**	0.783b	0.667c	**0.687B**	10.95h	13.24g	**12.10G**	18.03h	18.21h	**18.10G**
Nitrobein (Nit)	0.937h	10.20e	**9.77D**	0.637d	0.613e	**0.623C**	14.71f	16.64e	**15.68F**	18.53gh	22.60de	**20.53F**
Phosphorene (Phos)	9.00i	10.10e	**9.53E**	0.637d	0.533g	**0.583D**	14.13fg	18.95c	**16.54E**	19.36fg	21.89e	**20.60F**
Active dry yeast (y)	9.00i	10.23e	**9.57E**	0.613e	0.613e	**0.613C**	14.69f	16.69de	**15.69F**	19.80f	23.14d	**21.47E**
(Nit x Phos)	9.60g	10.70c	**10.13C**	0.607e	0.533g	**0.567E**	15.82e	20.08c	**17.95D**	19.99f	24.34c	**22.13D**
(Nit x y)	9.87f	11.63a	**10.73B**	0.577f	0.517h	**0.547F**	17.11d	22.50b	**19.05C**	21.98e	25.97ab	**23.97B**
(Phos x y)	9.73fg	11.40d	**10.53B**	0.503i	0.477j	**0.490G**	19.35c	23.90ab	**21.63B**	22.40de	22.76de	**22.75E**
(Nit x Phos x y)	11.23b	11.73a	**11.47A**	0.503i	0.483j	**0.493G**	22.33b	24.29a	**23.31A**	25.13bc	26.23a	**25.67A**
Control	8.17l	8.17l	**8.17G**	0.743a	0.743a	**0.743A**	11.00h	11.00h	**11.00H**	17.85h	17.85h	**17.85G**
Mean**	**9.39B**	**10.32A**		**0.614A**	**0.575B**		**15.57B**	**18.55A**		**20.34B**	**22.55A**	

* and ** means refer to specific effect of some bio-stimulants soil applied and (NK), respectively. Values within the same column or row for any of two investigated factors followed by the same letter/s were not significantly at 5 % level where capital letter/s, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

NK: Nitrogen and potassium mineral fertilizers.

Nit: Nitrobein Phos: Phosphorene Y: active dry yeast