Table (31): TSS/acid ratio and total sugars (%) of "Flame seedless" grapevines as affected by bud load/ vine, fruiting unit length (no. of buds/spur) and their combinations during 2005 and 2006 season.

Spur length (No. of buds/spur) / No. of buds/vine	TSS/acid ratio			Mean*	Total sugars (%)			Mean*
	2	4	6		2	4	6	
1st season								
24	29.04c	30.33b	31.47a	**30.28A**	16.83b	17.17a	17.30a	**17.10A**
36	27.87d	26.95e	26.03f	**26.95B**	16.10d	16.32c	16.47c	**16.30B**
48	25.39g	24.58h	23.90i	**24.62C**	15.48f	15.58f	15.80e	**15.62C**
60	22.30k	22.71k	23.27j	**22.76D**	14.82h	14.85gh	15.05g	**14.91D**
Mean**	**26.15A**	**26.14A**	**26.17A**		**16.32C**	**17.06B**	**17.32A**	
2nd season								
24	29.52c	30.41b	31.57a	**30.50A**	17.03b	17.20ab	17.38a	**17.21A**
36	28.26d	27.16e	26.21f	**27.21B**	16.27de	16.43cd	16.68c	**16.46B**
48	25.73f	24.83g	24.18h	**24.91C**	15.73f	15.95f	16.02ef	**15.90C**
60	22.52j	22.88j	23.60i	**23.00D**	15.05h	15.08gh	15.37g	**15.17D**
Mean**	**26.51A**	**26.32A**	**26.39A**		**16.02C**	**16.17B**	**16.36A**	

* and ** means refer to specific effect of bud load/vine and fruiting unit length, 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 letters, were used for distinguishing specific effect value of each investigated factor but small letters for interaction of their combination.

Table (32): TSS/acid ratio and Total sugars (%) of "Crimson seedless" grapevines as affected by bud load/vine, fruiting unit length (no. of buds/cane) and their combinations during 2005 and 2006 season.

Cane length (No. of buds/cane) / No. of buds/vine	TSS/acid ratio			Mean*	Total sugars (%)			Mean*
	9 ± 1	12 ± 1	15 ± 1		9 ± 1	12 ± 1	15 ± 1	
1st season								
48	32.71c	33.82b	34.97a	**33.83A**	18.27a	18.45ab	18.72a	**18.49A**
60	31.41d	30.48e	29.35f	**30.41B**	18.02c	17.60d	17.83cd	**17.82B**
72	28.43g	27.33h	26.61h	**27.46C**	17.17e	16.50g	16.92f	**16.86C**
84	24.21j	24.83j	25.59i	**24.88D**	13.39i	15.55h	16.03h	**15.10D**
Mean**	**29.19A**	**29.12A**	**29.13A**		**16.71C**	**17.03B**	**17.38A**	
2nd season								
48	33.30c	34.50b	35.60a	**34.47A**	17.65c	17.92b	18.13a	**17.90A**
60	32.51d	31.12e	29.94f	**31.19B**	16.98e	17.28d	17.47cd	**17.24B**
72	29.10g	28.43h	27.69i	**28.41C**	16.43gh	16.60fg	16.70f	**16.58C**
84	25.27l	26.15k	26.98j	**26.13D**	15.88j	16.12i	16.27hi	**16.09D**
Mean**	**30.05A**	**30.05A**	**30.05A**		**16.74C**	**16.98B**	**17.14A**	

* and ** means refer to specific effect of bud load/vine and fruiting unit length, 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 letters, were used for distinguishing specific effect value of each investigated factor but small letters for interaction of their combination.

bearing unit length (4 or 6 buds/bearing unit for "Flame seedless" and 12 ±1 or 15 ±1 buds/bearing unit for "Crimson seedless" are not recommended.

B- Interaction effect:

As for the interaction effect between bud load/vine and bearing unit length (no. of buds/bearing unit) on total sugars % in berries juice of both grapevine cultivar under study, data obtained in Tables (31 and 32) declared that the specific effect of each investigated factors was directly reflected on their combinations (interaction effect). Herein, the highest value of sugars content in berry juice was inclosed relationship to treatments of 24 buds/vine x bearing unit length (4 or 6 buds/bearing unit) and 48 buds/vine x bearing unit length (12 ±1 or 15 ±1 buds/bearing unit) were statistically the richest in both "Flame seedless" and "Crimson seedless", respectively. On the contrary, the 60 buds/vine combined with bearing unit length at (2 or 4 buds/bearing unit) in "Flame seedless" and 84 buds/vine x bearing unit length at 9 ±1 buds/bearing unit in "Crimson seedless" had statistically the lowest value of total sugars % in berries juice during the two seasons of study. In addition, other combinations were in between the abovementioned two extremes.

IV.3.3-2-5- Total anthocyanin content:

A- Specific effect:

Concerning the specific effect of the different two factors involved in this study i.e., bud load/vine and bearing unit length (no. of buds/bearing unit) on total anthocyanin as milligram per gram dry skin, data in Tables (33 and 34) display that bud

load/vine (24, 36, 48 and 60 buds/vine) and (48, 60, 72 and 84 buds/vine) in both "Flame seedless" and "Crimson seedless", respectively resulted a gradual decrease in the values of total anthocyanin content were significantly exhibited as bud load/vine increased during the two seasons of study. The highest value was recorded in skin have 24 buds/vine and 48 buds/vine treatments in both "Flame seedless" and "Crimson seedless", respectively followed in descending order by (36 buds/vine and 60 buds/vine) in both cultivar, respectively. The 48 buds/vine and 72 buds/vine treatments came in the third class in both "Flame seedless" and "Crimson seedless", respectively. Meanwhile, the 60 buds/vine and 84 buds/vine treatments appeared to be less effective than the abovementioned ones in both Flame seedless and Crimson seedless during the two seasons of study. The statistical analysis of these data proved significant results.

In this connection, **Ali *et al.*, (2000)** indicated that King's Ruby vines pruned to 40, 50 (control) or 60 buds/vine were recorded the highest values of total anthocyanin content compared by 20 buds/vine. Whereas, vines adopted to 80 buds/vine the lowest accumulation of anthocyanin content. **El-Baz *et al.*, (2002)** mentioned that "Crimson seedless" vines pruned to 8 or 10 bearing units with 12 nodes resulted in a higher values of anthocyanin content than with 14 or 16 nodes in the skin of the berries. On the other hand, vines with 8 or 10 bearing units with 16 nodes showed a lower anthocyanin content.

Regarding the specific effect of bearing unit length (no. of buds/bearing unit) on anthocyanin content in the berries of both

Flame seedless and Crimson seedless, data in Tables (33 and 34) showed clearly that bearing unit length at 6 buds/bearing unit in Flame seedless and 15 ±1 buds/bearing unit in Crimson seedless resulted in higher values of anthocyanin than (4 buds/vine or 12 ±1 buds/vine) in the skin of the berries of Flame seedless and Crimson seedless, respectively resulted significantly in decreasing values of anthocyanin content.

In this respect; the values of anthocyanin produced from treatments of 2 buds/vine and 9 ±1 buds/vine were significantly the least values of anthocyanin content in both "Flame seedless" and "Crimson seedless", respectively during the study.

B- Interaction effect:

Referring the interaction effect of the two investigated factors i.e., number of buds/vine (bud load) and bearing unit length (no. of buds/bearing unit) on the values of anthocyanin content in skin berries, data obtained in Tables (33 and 34) showed obviously the variable response during 2005 and 2006 seasons. The highest value in anthocyanin content were resulted to the combinations between 24 buds/vine x bearing unit length at 4 or 6 buds/bearing unit treatment and 48 buds/vine 15 ±1 buds/bearing unit length in both Flame seedless and Crimson seedless, respectively during the two seasons of study. In addition, the lowest value of total anthocyanin content was detected by bud load to 60 buds/vine x bearing unit length at 2, 4 or 6 buds/bearing unit treatment in Flame seedless and 84 buds/vine x bearing unit length at 9 ±1 buds/bearing unit treatment in Crimson seedless, during the two seasons of study. Moreover, other combinations were in between in this concern.

Table (33): Total anthocyanin as milligram/gram dry skin of "Flame seedless" grapevines as affected by bud load/vine, fruiting unit length (no. of buds/spur) and their combinations during 2005 and 2006season.

Spur length (No. of buds/spur) / No. of buds/vine	Total anthocyanin (mg/g. D.Wt.)			Mean*
	2	4	6	
1st season				
24	0.957bc	0.973ab	1.027a	**0.986A**
36	0.878de	0.915cd	0.933c	**0.909B**
48	0.767gh	0.812fg	0.827ef	**0.802C**
60	0.707i	0.725hi	0.743hi	**0.725D**
Mean**	**0.827C**	**0.856B**	**0.883A**	
2nd season				
24	0.975b	1.048a	1.097a	**1.040A**
36	0.887cd	0.907c	0.933bc	**0.909B**
48	0.787ef	0.813e	0.842de	**0.814C**
60	0.708g	0.727g	0.755fg	**0.730D**
Mean**	**0.839C**	**0.874B**	**0.907A**	

* and ** means refer to specific effect of bud load/vine and fruiting unit length, 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.

Table (34): Total anthocyanin as milligram/gram dry skin of "Crimson seedless" grapevines as affected by bud load/vine, fruiting unit length (no. of buds/cane) and their combinations during 2005 and 2006season.

Cane length (No. of buds/cane) / No. of buds/vine	Total anthocyanin (mg/g. D.Wt.)			Mean*
	9 ± 1	12 ± 1	15 ± 1	
1st season				
48	0.597c	0.610b	0.625a	**0.611A**
60	0.560e	0.577d	0.588c	**0.575B**
72	0.510h	0.527g	0.542f	**0.526C**
84	0.460k	0.482j	0.497i	**0.479D**
Mean**	**0.532C**	**0.549B**	**0.563A**	
2nd season				
48	0.617b	0.625b	0.640a	**0.627A**
60	0.573e	0.587d	0.600c	**0.587B**
72	0.508h	0.530g	0.552f	**0.530C**
84	0.453k	0.470j	0.490i	**0.471D**
Mean**	**0.538C**	**0.553B**	**0.570A**	

* and ** means refer to specific effect of bud load/vine and fruiting unit length, 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 letters, were used for distinguishing specfic effect value of each investigated factor but small letters for interaction of their combination.

SUMMARY AND CONCLUSION