IMPROVEMENT OF BUD BURST, YIELD AND BERRY QUALITY OF KING'S RUBY GRAPEVINES UNDER WARM CLIMATES BY USING DORMEX AND AMMONIUM NITRATE SPRAYING

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Abstract: The beneficial effects of spraying Dormex (2%) and ammonium nitrate (4%) single or in combination (1% & 2%) on bud burst, vegetative growth, yield and berry quality of King's Ruby grapevines grown in Assiut Governorate, Egypt, were investigated during 2000 and 2001 seasons. Each treatment was applied once at Jan., 15 or Feb. 1 (60 and 45 days before normal bud burst, respectively). The results of this investigation could be summarized as follow:

- Dormex and ammonium nitrate sprayed either singly or in combination at Jan. 15 were significant increases in bud burst percentage as well as advanced the first and 50% bud burst about one to two weeks earlier comparing to unsprayed ones. Dormex singly or combined was most effective treatments.
- Dormex and ammonium nitrate spraying either singly or combination at Jan. 15, significant decreases the fruiting bud and fertility coefficient percentages. There is a negative correlation between the bursted and latent bud percentages.
- Dormex and ammonium nitrate spraying at Jan. 15 improved the growth of vines, i.e., main shoot, leaf area and pruning wood weight. Ammonium nitrate was most effective in these traits.
- Berry set, yield and berry quality were improved as used Dormex alone or accompanied with ammonium nitrate spraying at Jan. 15.

It could be concluded that using Dormex 2% alone or it combined (1%) with ammonium nitrate (2%) spray at Jan. 15 is beneficial for maximizing yield and improving quality of King's Ruby vines under warm region, i.e. Assiut Governorate.

Introduction

Grape is considered as one of most popular and favourite fruit crops in the world. In Egypt it ranks second, while citrus being the first. King's Ruby is a variety which has

increased in popularity very rapidly in the last decade. It was developed from a cross between Emperor and Pirovan 75 (Olmo *et al* , 1981). it is a red seedless, medium berry size, large and filled clusters and amid to late season maturity (Jensen *et al*., 1991, and Abdel-Fattah & Kasstor, 1993).

In many worm areas, many grapevines fail to grow because of insufficient winter chilling. Under these conditions, lack of winter chilling may result in uneven and irregular bud burst as well as increment of dormant bnds, reduction of flower buds, extended flowering and delayed fruit maturity (Lavee *et al*., 1985, George & Nissen, 1990 and Ahmed, 1993). Under such condition, the need for artificial means to compensate for the lack of natural chilling becomes a dominant factor for maintaining economic production of dessert grapes (Erez, 1987, Poni *et al* , 1990 and Or *et al*., 2000).

Materials that have been used to induce bud break include bydrogen cyanamide, thiourea, potassium nitrate, oil plus dinitrophenols, gibberelliness and cytokinns. Among these compounds hydrogen cyanamide was more effective than available dormancy breaking compounds (Shulman *et al*., 1986, Daiz *et al* , 1987, Poni *et al*., 1990, Nir and Lavec, 1993 and Dokoozlian *et al*., 1995).

Several investigations were carried out by research workers concerned with possible benefits of using Dormex (hydrogen cyanamide and the relating compounds containing cyanamide on terminating bud dormancy, hastening, improving and uniforming bud burst as well as increasing yield and improving berry quality in different grapevine cultivars (Cheema *et al* , 1991; Sourial *et al*., 1993a,b; Safwat and Abdel-Fattah, 1993, Abdel-Aal, 1996; El-Sabrout, 1998; El-Kassas *et al*., 1998; El-Shazly, 1999; Hegazi *et al*., 1999 and Omran, 2000)

To obtain optimum results from use of a rest breaking agent, the correct concentration and time of application must be determined for each cultivar (Erez, 1987; Ayaad-Hamdia, 1992; Ahmed, 1993, Abdel-Aal, 1996 and El-Shazly, 1999).

So, this study aimed to compare the rest breaking affect of Dormex with ammonium nitrate and its application date ou the behaviour of buds, growth fruiting and berry quality of King's Ruby grows under Assiut conditions.

Materials and Methods

The investigation was conducting during 2000 and 2001 seasons on 7-year old King's Ruby grapevines

grown in the vine-yard at Faculty of Agriculture, Assiut University, Egypt, where the soil is clay and well drained.

Twenty one vines trained to the head system were chosen according to their similarity in growth, vigour and uniform as possible and devoted for achieving this experiments. The experimental vines were planted 2x2.5 m apart and pruned in mid January leaving 13 fruiting spurs x 3 buds plus 5 replacement spurs x 2 buds per vine. The chosen vines were sprayed with 2% Dormex, 4% ammonium nitrate and their combinations (1% Dormex & 2% ammonium nitrate) Each treatment was applied once at either January, 15 or February 1 (60 or 45 days before expected normal bud burst, respectively) In addition, the experiment included control treatment (water spraying vines). The complete randomized bloek design was applied with three replicates, one vine per each. Thus, the trearments were as follows:

1-Dormex at 2% applied January, 15.

2 - Ammonium nitrate 4% applied January, 15

3 - Dorm 1% & Amn nit 2% applied January, 15

4-Dormex at 2% applied February, 1.

5 - Ammonium nitrate 4% applied February, 1.

6 - Dorm. 1% & Amn nit 2% applied February, 1.

7 - Control (water spraying).

Top water used for dilution and Triton B was applied at 1% to all spray solutions as wetting agent Foliar spray was carried out using a hand sprayer until drip point to dormant buds. The coutrol vines were sprayed with water containing Triton B. All vines includiug the check ones, received the ordinary inauagement practices usually applied in the vineyard.

Generally, the following measurements were determined.

1 - Bud behaviour:

Bud burst rates calculated as percentage from total number (per vine) from March, 5 till April, 17 at weekly interval. The number of dorment, vegetative and fruirful buds were counted. The percentage of bursted, vegetative and fruitful buds and fertility coeffieient were ealculated according to the following equations.

Bursted bud % = number of bursted buds x 100/total number of buds.

Fertility bud % = number of fruiting buds x 100/total number of buds

Vegetative hud % = bursted bud % - fertility bud %.

Fertility coefficient % = number of elusters x 100/total number of bnds.

2-Some vegetative growth characters:

Five current season's shoot per vine were labelled for growth measurements at growth cessation of each season. The average length of shoots (in cm), leaf numbers/shoot and leaf area were carried out annually at the end of June. Leaf area (cm^2) was calculated by picking and weighing ten leaves opposite to the basal clusters on the labelled shoots and weighing 40 sections of 1 cm^2 (4 sections of 1 cm from each leaf) and then the average leaf area was calculated according to the following equation.

Leaf area (cm^2) = weight of leaves (g) x 4/weight of sections (g).

Weight of wood pruning was calculated immediately after pruning (January, 15) and was expressed as gms/vine.

3-Measurements of yield components and berry quality:

Berry set percentage was estimated by caging five flower clusters on each vine in perforated paper bags before bloom and after berry set bags were removed and the percentage was calculated as follows:

Berry set % = No. of berries/cluster x 100/total is of flowers/cluster

Table (1): Monthly weather, highest, lowest and mean of temperature and relative humidity of 1999/2000 and 2000/2001 seasons

Year	1999/2000				2000/2001			
	Temperature (°C)			R.	Temperature (°C			R
Month	Max.	Min.	Mean	humidity	Max	Min.	Mean	humidity
Sept	37.24	19.89	28.57	50.86	36.40	19.00	27.70	53.90
Oct.	33.68	17.27	25.48	50.79	31.50	14.70	23.10	51.20
Nov.	29.11	11.27	20.19	53.91	27.90	10.90	19.40	51.50
Dec	23.42	6.90	15.16	62.83	22.10	7.30	14.90	56.00
Jan.	20.04	4.90	12.47	64.35	21.50	4.90	13.20	54.70
Feb.	21.43	4.83	13.13	65.82	22.20	4.90	13.60	52.00
Mar.	25.47	6.82	16.15	59.98	30.50	10.3	20.40	51.00
Apr	33.17	13.29	23.23	44.18	32.20	13.60	22.90	45.70

After: Assiut weather station.

At the harvesting date (at least TSS reached 18%) the yield per vine was recorded in terms of weight (kg) and number of elusters per vine. Cluster and 25 berry weights were recorded. Berry quality in terms of juice %, TSS, total acidity (expressed as gm tartaric acid per 100 ml jnice) and reducing sugar percentage were determined as outlined in A O.A.C. (1985).

Statistical analysis of the obtained data was carried out according to Snedecor and Cochran (1980) using L.S D test % define the significancy of the differences between various treatment means

Data of monthly air temperatures and relative humidity as average during the two years of this study are presented in Table (1) In this regard Weaver (1976) reported that grapes usually require a winter resr period of about 2 months. with an average daily mean temperature below 50°F (10°C), which mean insufficient cold according to the data in previously table Artificial means to compensate the lack of natural chilling becomes a dominant tool to produce economic grape yield in warm winter regions (Poi *et al.*, 1990).

Results And Discussion

1 - Bud behaviour:

1.1- Percentage and development rate of bud burst:

The effects of Dormex and ammonium nitrate spraying on timing of bud burst and their percentages are show in Table (2) and Figure (1). As a general view it can noticed that all treatments significantly increased the perecntage and effectively advanced bud burst compared with nntreated vines (control) this result was achieved specially when Dormex and ammonium nitrate sprayed at January, 15. Moreover, tbe most effective treatment was found to be Dormex singly or combined with ammonium nitrate sprayed at January. 15

Regarding to progressive bud burst date on corresponding bud burst percentage, the data in aforementioned table and figure indicated that such percentage gradually increased from early estimated date towards to bud bnrst end Results further indicate that Dormex and ammonium nitrate sprayed at January, 15 advanced the first and 50% bud burst compared either sprayed at February, 1 or unsprayed ones. This means that using Dormex or ammonium mtrate effectively caused a regular and uniform bud burst.

The advance and regularity occurred in bud burst due to Dormex and ammonium nitrate may be attributed to one or more of the following possibilities.

a) Enhancement the formation of amino acids through the break-down of cyanamide to urea which converts to ammonium that is taken up by the plants and afterwards it is incorporated into proteins as well as breaking paradormancy through eradicating or removing bud scales (Stino, 1992).

b) It increases the synthesis of plant growth promoters as GA, IAA and cytokinins as well as dissolving unknown inhibitor substances on bud scale or in buds (El-Sabrout, 1998 and Hegazi *et al.*, 1999).

c) Metabolism enhancement of buds through promoting the enzymes activity and encouragement of the transformation of inhibitor substances to promoter ones (Nir and Lavee, 1993).

Conclusively, control vines were the last to commence bud burst, highest and earliest bud burst belonged to the earliest Dormex and ammonium singly or combined spraying date (January, 15).

Similar results were obtained by Pont *et al.* (1990), Ahmed (1993), Nir and Lavee (1993), Sourial *et al.* (1993a), Abdel-Aal (1996), El-Sabrout (1998), El-Kassas *et al.* (1998), El-Shazly (1999) and Omran (2000). They found that spraying grapevines with Dormex markedly accelerated bud burst and improved its irregularities.

1.2- Floral, vegetative and latent buds:

It is clear from the data in Table (3) that Dormex and ammonium nitrate either singly or incombination spraying succeeded in increasing the percentages of fruiting buds and fertility coefficient and in decreasing the percentages of latent and vegetative buds compared with the untreated vines Dormex singly or combined with ammonium nitrate were most effective than the control or ammonium nitrate alone. The best results were obtained when treatments were applied at January, 15.

It could be concluded that the detected treatments on the percentage of fruiting buds was a direct results for the effect of these treatments on bud burst. In other words, the effect of the treatments in increasing the number of burst buds was responsible for the resulting decrease in the number of latent buds and increase in the number of fruiting buds. Such results could be attributed to the effect of Dormex in stimulating the production of cytokinins in the bud.

In general, it could be concluded that there is a negative correlation between the percentage of burst and latent buds. On the other hand, this correlation between the percentage of burst and fruiting buds was positive. These findings might be attributed to

Table (2): Effect of spraying Dormex and ammonium nitrate on the progressive succession of bud burst percentage on King's Ruby grapevines during 2000 and 2001 seasons

2000 season

Date / Treat	5/3	12/3	19/3	26/3	3/4	10/4	17/4	Mean
Dorm. 2% at Jan, 15	23.53	52.10	62.36	72.25	83.13	84.36	85.30	66.15
Amm. nit. 4% at Jan, 15	8.29	19.50	51.13	62.08	71.38	79.10	81.80	53.32
Dorm (1%) & Amn. (2%) at Jan, 15	13.30	40.67	58.00	69.13	76.82	80.12	83.00	60.15
Dorm. 2% at Feb, 15	0.00	20.00	36.00	53.67	64.33	70.30	78.89	45.74
Amm. nit. 4% at Feb, 15	0.00	3.00	20.33	35.20	53.00	65.67	73.20	35.76
Dorm. (1%) & Amn. (2%) at Feb, 15	0.00	11.33	28.25	46.67	56.33	68.33	76.84	41.10
Control	0.00	0.00	10.66	31.33	49.50	60.13	65.68	31.65
Mean	6.45	20.94	38.25	52.90	64.50	72.60	77.87	

L.S.D	A (Date)	B (Treat.)	AB (date x treat.)
0.5	3.14	2.63	6.16
0.1	4.32	3.71	8.43

2001 season

Date / Treat	5/3	12/3	19/3	26/3	3/4	10/4	17/4	Mean
Dorm. 2% at Jan, 15	18.67	37.33	63.67	74.33	83.30	85.33	84.67	63.90
Amm. nit. 4% at Jan, 15	0.00	15.33	46.38	62.67	75.25	80.33	81.30	51.61
Dorm (1%) & Amn (2%) at Jan, 15	12.00	28.25	53.30	67.13	76.20	81.82	83.20	55.70
Dorm. 2% at Feb, 15	0.00	14.77	48.22	68.20	73.33	76.30	77.60	51.20
Amm. nit. 4% at Feb, 15	0.00	12.22	38.76	60.33	68.50	72.33	74.67	46.68
Dorm. (1%) & Amn (2%) at Feb, 15	0.00	14.30	47.41	64.6	70.76	75.16	76.50	49.88
Control	0.00	0.00	6.65	25.33	50.20	63.67	68.29	30.60
Mean	4.38	17.46	43.5	60.36	71.08	76.56	78.03	

L.S.D.	A (Date)	B (Treat.)	AB (date x treat.)
0.5	4.09	3.29	8.21
0.1	5.61	4.53	11.25

Fig.(1) Effect of Dormex and ammonium nitrate spraying on the progressive succession of bud burst percentage on King's Ruby grapevines during 2000 and 2001 seasons.

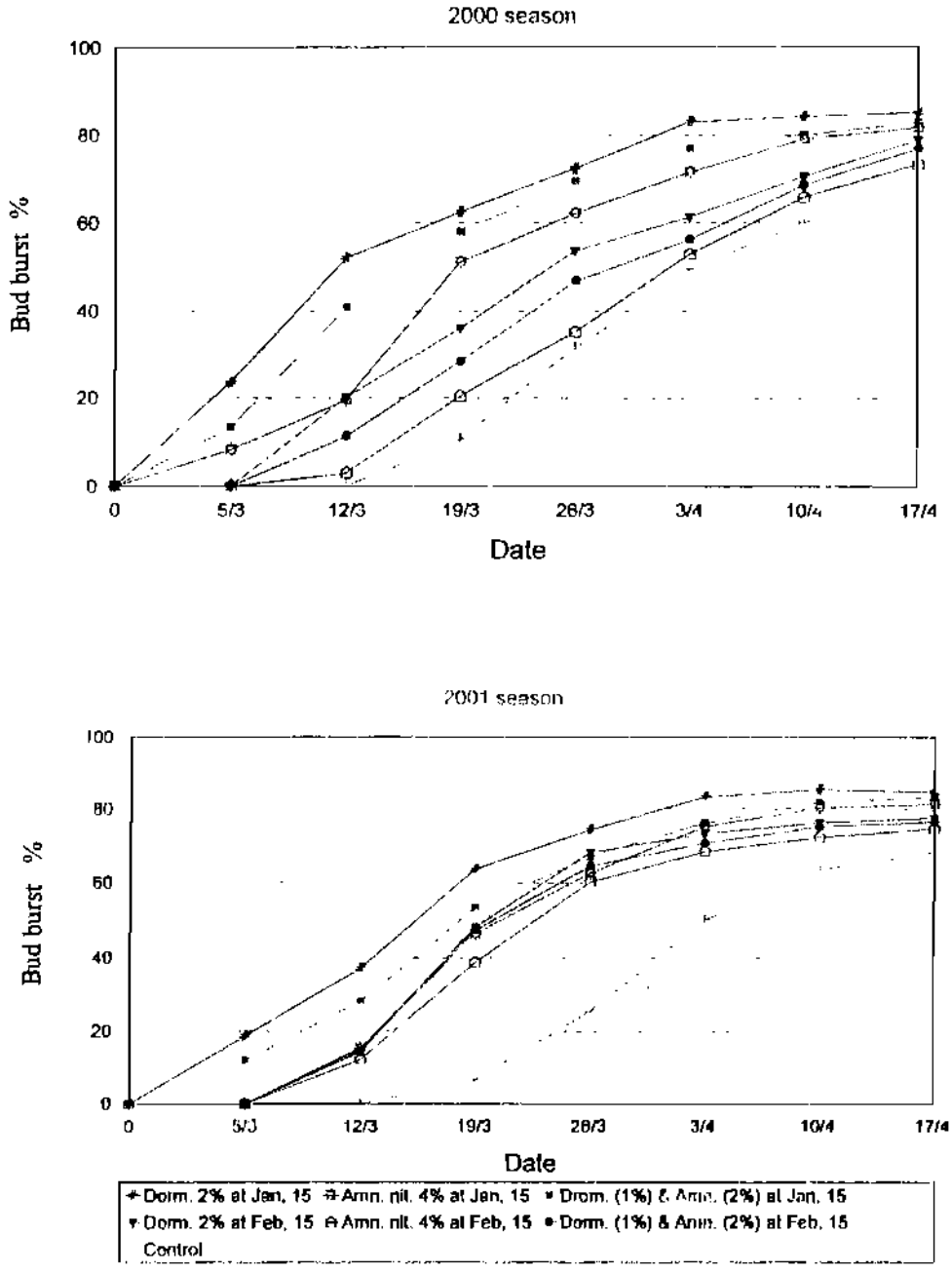

Table (3): Effect of spraying Dormex and ammonium nitrate on the percentage of latent, vegetative, fruitful buds and fertility coefficient of King's Ruby grapevines during 2000 and 2001 seasons

Charact.	Latent bud %		Vegetative bud %		Fruitful bud %		Fertility coefficient %	
Treat	2000	2001	2000	2001	2000	2001	2000	2001
Dorm. 2% at Jan . 15	14 71	15 33	24.80	23 11	60 49	61 56	84 60	85 63
Amn nit. 4% at Jan., 15	18 20	18 71	30 00	28.20	51 80	53 09	73 33	76 00
Dorm (1%) & Amn. (2%) at Jan., 15	17.00	16.80	25.70	26 57	57 30	57.12	79.67	81.36
Dorm 2% at Feb., 1	21.11	22.33	26.67	29.00	52 22	48.67	75 30	76 80
Amn nit 4% at Feb., 1	26.80	25.30	30.75	32 46	42 45	45.74	65 67	70.11
Dorm (1%) & Amn. (2%) at Feb . 1	23.00	22.80	27.50	28 11	49.50	49 09	64.80	73.79
Control	34 31	31.70	31.50	33 68	34 19	34.62	53 33	59 67
L S D 0 5	5.06	4.19	4.53	4 62	4 73	3.35	2.67	2.23
0 1	6 96	5 68	6.22	6.34	6.48	4 61	3 66	3 06

the increase in bud burst number and improvement of the vine vigour growth.

The obtained results are in general agreement with those found by George and Nissen (1990), Sourial *et al.* (1993a), Abdel-Aal (1996), Nashaat (1996), El-Sabrout (1998), El-Kassas *et al.* (1998), El-Shazly (1999) and Omran (2000) They all agreed that Dormex spray increased bud burst and bud fertility as well as fertility coefficient in many grape cultivars grown in warm regions of the world

2- Vegetative growth:

It is clear from the data presented in Table (4) that growth aspects such as shoot length, number of leaves per shoot, leaf area and pruning wood weight were increased as Dormex and ammonium nitrate singly or incombination sprayed. Results further indicate that date and material of spraying were very effective in this respect. Spray at January, 15 and ammonium nitrate resulted in the greatest values of the studied growth parameters. The improvement occurred in growth of

vine might be due to the enhance effect of Dormex on synthesis of both carbohydrates and proteins as well as the role of ammonium nitrate as nitrogen source in producing new cells and tissues.

These results are in line with those reported by Ahmed (1993), Abdel-Aal (1996), El-Sabrout (1998), El-Shazly (1999) and Omran (2000). They pointed out that Dormex spray increased vegetative growth of these grapevines.

Table (4): Effect of spraying Dormex and ammonium nitrate on some vegetative growth of King's Ruby grapevines during 2000 and 2001 seasons

Charact. / Treat	Shoot length (cm)		Leaves/shoot (no.)		Leaf area (cm^2)		Pruning weight (gm)	
	2000	2001	2000	2001	2000	2001	2000	2001
Dorm. 2% at Jan., 15	59.18	59.80	16.60	16.37	184.60	191.80	730.00	763.00
Ammo. nit. 4% at Jan., 15	73.25	76.00	19.35	17.90	176.70	186.30	783.00	800.00
Dorm. (1%) & Amm. (2%) at Jan., 15	60.86	66.35	18.40	17.37	181.30	192.00	751.00	765.00
Dorm. 2% at Feb., 1	54.35	56.71	16.00	15.67	181.70	183.25	710.20	745.00
Amm. nit. 4% at Feb., 1	68.37	63.53	18.20	17.60	180.00	173.33	730.25	791.00
Dorm. (1%) & Amm. (2%) at Feb., 1	61.70	60.70	17.37	16.35	177.35	178.67	710.00	765.00
Control	51.43	54.10	15.67	14.93	159.10	153.50	663.50	703.00
L.S.D. 0.5	4.33	5.26	1.23	1.61	8.63	11.21	49.83	54.16
0.1	5.96	7.23	1.68	2.21	11.92	15.36	68.29	74.21

3- Berry set and yield:

Table (5) clearly show that Dormex and ammonium nitrate singly or in combination improved berry set and yield as well as number and weight of clusters compared with the unsprayed ones (control) in both the two studied seasons. Such improvement was associated with date of spraying. Dormex and ammonium nitrate sprayed at January, 15 significant increasing the previously studied parameters. However, using Dormex and ammonium nitrate at February, slightly increased but not significant the berry set, yield as well as number and weight of clusters as comparable to unsprayed ones. Dormex either singly or accompanied with ammonium nitrate were most

effective compared to either ammonium nitrate singly or unsprayed ones

Such results may be due to the effect of treatments in increasing the percentage of fruiting buds and fertility coefficient. The increase in fruitful buds (Table 3) surely reflected in increasing the number of clusters per treated vine. In addition, the increase in berry set was attributed to the improving in vegetative growth and balancing the nutritional status of the vines. This reflected on increasing the cluster weight. All the aforementioned points explain the improving effect of Dormex and ammonium nitrate on the yield. Such results are in general agreement with George and Nissen (1990), Ahmed (1993), Sonrial *et al.* (1993b), Abdel-Aal (1996), Nashaat (1996), El-Shazly (1999) and Omran (2000). They all stated that Dormex application caused a clear increase in yield of some grape cultivars.

4- Berry quality:

Data concerning the effect of Dormex and ammonium nitrate on some physiochemical properties of the berries are presented in Table (6). The present results indicated that spraying Dormex in the two date of applications as well as Dormex accompanied with ammonium nitrate at the early application had a significant effect in increasing berry weight and consequently increased juice volume per 100 gm of berries as compared with the untreated ones (control). However, ammonium nitrate sprayed either singly or accompanied with Dormex at the late application were slightly and unsignificantly effected. Dormex spraying on January, 15 was more pronounced in increasing all studied physical characteristics of berries than either treatments or untreated ones (control). These results could be due to the effect of Dormex on activating the synthesis of total carbohydrates and proteins which surely reflected on enhancing cell division and enlargement which will lead to increasing berry weight.

As for chemical properties, Table (5) shows that Dormex either sprayed alone or combined with ammonium nitrate significantly increased the total soluble solids and reducing sugars and reduced total acidity (as tartaric acid). On the other hand, ammonium nitrate spray had unsignificant effect on chemical constituent of berries as compared with untreated ones. The effect of Dormex on improving berry chemical quality could be mainly due to its effect on advancing bud burst and consequently all subsequent stages of the early growth cycle and advancing maturity.

Table (5): Effect of spraying Dormex and ammonium nitrate on major yield parameters of King's Ruby grapevines during 2000 and 2001 seasons.

Charact.	Berry set %		Cluster/vine (No.)		Cluster weight (gm)		Yield/vine (kg)	
Treat	2000	2001	2000	2001	2000	2001	2000	2001
Dorm 2% at Jan., 15	18.60	19.47	30.31	30.86	324.50	348.30	9.56	10.81
Amn nit. 4% at Jan., 15	15.80	17.06	26.61	27.46	318.80	336.60	8.20	9.13
Dorm (1%) & Amn. (2%) at Jan., 15	17.33	18.18	28.67	29.31	323.60	343.67	9.10	10.09
Dorm 2% at Feb., 1	16.80	16.23	27.18	27.65	315.30	323.00	8.60	9.15
Amn nit. 4% at Feb., 1	15.20	15.71	23.76	25.24	311.11	320.11	7.52	7.91
Dorm (1%) & Amn. (2%) at Feb., 1	15.33	16.01	23.38	26.53	309.15	322.80	7.26	8.65
Control	14.67	15.12	21.14	22.56	301.40	313.00	6.43	7.12
L.S.D. 0.5	0.63	0.76	3.41	3.67	11.52	12.60	1.38	1.81
0.1	0.86	1.05	4.68	5.04	15.78	17.27	1.89	2.48

Table (6): Effect of spraying Dormex and ammonium nitrate spraying on some physical and chemical properties of King's Ruby grapevines during 2000 and 2001 seasons.

Charact.	25 berry weight (gm)		Juice (cm^3/100 gm)		TSS (%)		Reducing sugars (%)		Acidity (%)	
Treat.	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
Dorm 2% at Jan., 15	65.53	68.11	66.30	66.80	19.05	20.00	14.80	14.65	0.480	0.480
Amn nit. 4% at Jan., 15	61.36	61.65	63.11	64.00	18.20	19.00	13.08	13.24	0.513	0.503
Dorm (1%) & Amn (2%) at Jan., 15	63.52	64.50	64.81	65.31	18.80	19.60	14.36	14.05	0.492	0.483
Dorm 2% at Feb., 1	63.50	65.60	64.50	65.31	18.80	19.30	14.31	14.42	0.492	0.475
Amn. nit. 4% at Feb., 1	60.35	60.80	62.38	63.81	18.50	19.10	13.35	13.36	0.498	0.501
Dorm (1%) & Amn (2%) at Feb., 1	60.83	61.34	62.85	64.11	18.60	19.10	14.03	14.12	0.483	0.485
Control	59.65	60.11	61.50	61.53	18.30	18.80	13.65	13.84	0.528	0.515
L.S.D. 0.5	1.13	1.33	1.38	2.03	0.38	0.40	0.63	0.46	0.013	0.020
0.1	1.55	1.82	1.89	2.78	0.53	0.55	0.86	0.63	0.017	0.027

In agreement with the aforementioned results are those obtained by George and Nissen (1990), Ahmed (1993), Sourial *et al.* (1993b), Abdel-Aal (1996), Nashaat (1996), El-Sabrout (1998), El-Kassas *et al.* (1998), El-Shazly (1999) and Omran (2000) They reported that Dormex spray improved berry quality

On the light of the previous results, it can be stated that spraying Dormex 2% alone or combined (1%) with ammonium nitrate (2%) at January 15 is beneficial for maximizing yield and improving quality of King's Ruby vines under warm region, i.e. Assiut Governorate

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استخدام رش الدورميكس ونترات الأمونيوم لتحسين تفتح البراعم والمحصول وجودة ثمار العنب كنج روبى تحت ظروف المناطق الدافئة

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أجريت هذه الدراسة بمزرعة كلية الزراعة – جامعة أسيوط خلال موسمى ٢٠٠٠ ، ٢٠٠١ بهدف دراسة تأثير رش الدورميكس (٢%) ونترات الأمونيوم (٤%) أو خليطهما بنصف التركيزات المستخدمة فرديا (١% و ٢%) وذلك فى ١٥ يناير أو ١ فبراير (قبل التفتح العادى للبراعم بـ ٦٠ و ٤٥ يوم على التوالى) على تفتح البراعم والنمو الخضرى وانتاجية العنب الكنج روبى .

وتوضح نتائج هذه الدراسة :

- ادى رش الدورميكس ونترات الأمونيوم أو مخلوطهما الى تبكير بداية تفتح البراعم و ٥٠% من التفتح من ٢-١ أسبوع للرش فى الموعد الأول والثانى على التوالى .

- ادت جميع المعاملات الى زيادة فى نسبة تفتح البراعم والبراعم الزهرية ومعامل الخصوبة وبالتالى نقصت نسبة البراعم الساكنة والبراعم الخضرية .

سبب الرش بالدورميكس ونترات الأمونيوم فرديا أو فى مخلوطها الى زيادة طول الافرع ومساحة الورقة ووزن خشب التعليم وكذلك نسبة عقد الحبات ووزن العنقود وعدد العناقيد والمحصول (كجم) لكل كرمة .

- ادت جميع المعاملات الى زيادة وزن الحبات وحجم عصيرها – كذلك زيادة نسبة المواد الصلبة الذائبة والسكريات المختزلة ونقص نسبة الحموضة الكلية .

- اظهرت النتائج أن التأثير يكون أكثر فاعلية عند الرش فى ١٥ يناير بينما الرش فى ١ فبراير يكون ذو تأثير أقل فاعلية .

تحت ظروف هذه التجربة والظروف المشابهة يتضح أهمية رش العنب كنج روبى بالدورميكس ٢% أو مخلوطه (١%) مع نترات الامونيوم (٢%) فى ١٥ يناير . حيث يؤدى ذلك الى تبكير تفتح البراعم وتحسين النمو الخضرى وزيادة المحصول وجودة الحبات .