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Breaking Bud Dormancy for Flame Seedless Grapevine by Using Some Economic Sources.

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ABSTRACT

This study was carried out for two successive seasons (2013&2014) in a private vineyard located at Aga – Dakahlia Governrate to evaluate the efficiency of some new alternatives on dormancy breaking of Flame Seedless grapevines. The chosen vines were 5 years old, grown in a clay loam soil, spaced at 2x2.5m , irrigated by flood irrigation system .The vines were pruned during the second week of January for the two seasons of the study to obtain bud load of 72 buds/vine (6 canes x 12 buds/cane)and sprayed on the third week of January by phosphoric acid 2%, sulphoric acid 2%, potassium nitrate 5%, potassium hydroxid 1%, zinc sulfate3%, urea10%, H2O2 1%, dormex 4% and mineral oil7%. The result show that all treatments hastened the beginning of bud burst and significantly shortened the duration of bud burst rather than the control treatment. Dormex at 4% was most effective as it gave about 95% bud burst.

Keywords: phosphoric acid, jam on the dicing system, Dormex.

INTRODUCTION

Flame Seedless grapes is an early-ripening cultivar, which ripens at the period from end of may to mid June. Earliness of Flame Seedless grapes is often accompanied by irregular and low percentage of bud break due to the insufficient chilling units. These defects required to be studied to induce full and uniform bud break. This crops is in high demand for both local consumption and export. Therefore, use of dormancy breaking compound agents is essential. Thus several of chemical compounds were used to break dormancy. Kurod *et al*.,(2002,2005) showed that the endogenous hydrogen peroxide (H2O2) content in flower bud of the pear increased gradually as the breaking of end dormancy. OKitren Glozer and Grant(2006)mentioned that treatments of zinc sulfate +urea applied in late October and early November, 2005 at 1, 5 and 8 chill portions (CP) were found to slightly advance bud opening in 2006 .Truss bud death, fruit set and fruit maturity were not significantly different among treatments, although truss bud death and fruit set were increased by the two latter treatments.

Abdalla (2007) stated that spraying" Flame seedless" grapevines with dormex at a dose of 2 to 5 % after pruning resulted in the highest percentage of bud burst and fruiting buds. Oliveira, *et al*., (2008) showed that application of mineral oil at 4, 6 and 8% anticipated bud break compared to the control and enhanced bud break percentage in both training systems, being the concentrations of 6% and 8% more effective in anticipating bud break than 4%. The percentage of bud break at the 84th day after mineral oil application did not differ between the two training systems, i.e. vase and central leader. Eshghi *et al*., (2010) indicated that dormancy breaking agents and time of application positively affected advancing bud break is amount of chilling is not sufficient. The application of dormancy breaking chemicals compound at a doses (dormex 3.5%, potassium nitrate 1-5% and volk oil 3.5%) due to overcome bud dormancy. While number of cluster with potassium nitrate 3%. Abd Elwadoud (2010) showed that Mineral oil hastened the beginning of bud burst of grapes and significantly shortened the duration of bud burst rather than the control. Zoghi Zohre *et al* .,(2011) showed that scarification with Sulphuric Acid treatment for one and half hour is the best treatment for dormancy breaking of Caspian locust.. The application of dormex and Valk oil in concentration of 7%had a great impact on yield and bush weight increasing. This study indicated the yield quality of grapevine in treated bushes with bud dormancy breaking agents was increased significantly compared to the control bushes, Talaei *et al*.,(2009).

The objectives of this investigation is to determine the efficacy of new alternative breaking bud dormancy agents for Flame Seedless grapevines.

MATERIALS AND METHODS

This investigation was conducted in a private vineyard located at Aga – Dakahlia Government on 5-year-old Flame Seedless grapevines. The study extended for two successive seasons(2013 and 2014) The vines were grown in a clay loam soil, spaced at 2x2.5 meters a part and irrigated by flood irrigation system, jam on the dicing system. Canes were pruned and supported by the jam on dicing system. The vines were pruned during the second week of January for the two seasons of the study to obtain bud load of 72 buds/vine (6 canes x 12 buds/cane) and sprayed during the third week of January. Ninety uniform vines were chosen on the basis of their growth depending on weight of prunings of the vine last year as indirect estimates for vine vigour. Each treatment consisted 3 vines replicated 3 times.

The study included the following treatments

1-Control
2-Hydrogen cyanide (Dormax)at 4%
3-Mineral oil at 7%
4-Urea at 10%
5-potassium nitrate at 5%
6-zinc sulfate at 3%
7-potassium hydroxide at %
8-phosphoric acid at 2%
9-sulphoric acid at 2%
10- H2O2 at.1%

The following parameters were measured:

1- **Bud behaviour:** Number of bud burst, number of fruitful buds and fertility coefficient calculated as the following according to Huglin (1958) and Bessis (1960).

$$Bud\ burst\% = \frac{\text{No of bursted buds per vine}}{\text{Total buds per vine}} x100$$

$$\text{Fruitful buds\%} = \frac{\text{No of fruitful buds per vine}}{\text{No of bursted buds per vine}} x100$$

$$\text{Fertility coefficient} = \frac{\text{No of clusters per vine}}{\text{no of Total buds left at winter pruning}}$$

2-Yield and physical and chemical characteristics of cluster

- Dynamics of maturity indices at various dates:-

Harvesting indices (TSS% and acidity%) were weekly monitored from veraison till maturity when TSS reached about 16-17% according to Tourk *et al*.,(1995).

-Yield/vine was determined by multiplying average number of clusters/vin by average cluster weight.

The grape were brought to the laboratory for the following determinations.

- Average cluster weight (g).
- Average cluster length (cm).
-Number of berry per cluster
- Average berry weight (g).

- Chemical characteristics of berries

a) Total soluble solids (TSS %) in berry juice using a hand refractometer.

b) Total titratable acidity (as tartaric acid %) according to the Official Analysis Methods (A.O.A.C., 1985).

c) TSS / acid ratio.

3-Morphological characteristics of vegetative growth

At growth cessation, the following morphological determinations were carried out on 4 non fruiting shoots /each treatment vine.

a- Average shoot length (cm).

b- Average number of leaves/shoot

c- Average leaf area (cm^2) of the apical 5^{th} and 6^{th} leaves using a CI-

203-Laser Area-meter made by CID, Inc.,Vancouver, USA..

4- Wood ripening :

At growth cessation, the following morphological and chemical determinations were carried out on 4 shoots/ vine :

5-Weight of prunings: was carried out at the time of winter pruning.

6-**Canes total carbohydrates content (%):**was determined according to Smith *et al*., 1956.

7- Statistical analysis :

The complete randomized block design was adopted for the experiment. The statistical analysis of the present data was carried out according to Snedecor and Cochran (1972). Average was compared using the new L.S.D. values at 5 % level.

RESULTS AND DISCUSSION

Dynamics of bud burst:-

Data illustrated in Figure (1) show that all treatments hastened the beginning of bud burst and significantly and shortened the duration of bud burst rather than the control treatment. Spraying dormex 4% gave an earliness in the beginning of bud burst by about 95% followed in a descending order by spraying H2O2 1%, (89.3). phosphoricacid 2%, sulphoricacid 2%, potassium nitrate 5%, zinc sulfate 3%, urea 10%, mineraloil 7%, and potassium hydroxide 1%. Control vines gave the last to commence of bud break after two weeks than of dormex application one week after other treatments in both seasons.

Similar effects were reported by Hurter *et al*., (1991); Nir and Lave (1993); Sourial *et al*., (1993a) and Elmogy *et al*., (2002) They found that spraying grapevines with Dormex markedly accelerated bud break and eliminated its irregularities to a large extent. The H2O2with different concentrations play the same role of Dormex. However, little is known about their function during stress conditions. Recent findings indicate that heat shock leads to a reduction in Catalase level and a significant increase in H2O2 (Dat *et al*., 1998)and Ayman A-Hegazi (2012)From the obtained results, it was noticed that flowering and harvesting time were enhanced by the treatments. Flower and vegetative bud percentages were also increased on initial and final fruit set were improved. Fruit characteristics were improved by spraying these chemicals while hydrogen cyanamide at 1, 2, 3% and zinc sulphate 10 and 15% were more effective than urea and control treatment.

Percentage of fruitful buds:

Data presented in Table (1) showed that the percentage of fruitful buds on the whole vine was calculated in relation to the number of opened buds per vine. The values ranged from (94.5% to and 89.4% in the two seasons respectively. The highest values(78.73%) were obtained from spraying with dormex4% while the lowest values were 70.8 % by control .

Coefficient of bud fertility:

It is evident from the data in table (1) that ,the effect of treatments in this respect appreciably increased budburst.These results agree with those found by Miele (1991); Sabry (1994); Tourky *et al*., (1995); Nashaat (1996); Abd El-All (1996); El Sabrout (1998); El-Shazly, (1999); El-Mogy (2002) and Abd El-Wahab *et al*., (2006). They found that Dormex spray increased budburst and bud fertility in many grape cultivars. Osman (2014) recorded that treating the vines with (dormex, thiourea, salicylic acid and H2O2) significantly enhanced percentages of bud burst and fruiting buds over the control treatment. Using chemical agents was significant superior than using natural extracts in improving the percentages of bud burst and fruiting

Table 1. The efficiency of some alternative of breaking bud dormancy for Flame Seedless grapevines on bud behavior.

Treatment	Bud burst (%)		Fruitful buds (%)		Fertility coefficient	
	2013	2014	2013	2014	2013	2014
Control	80.57	72.70	70.80	72.20	0.42	0.49
4%Drmax	94.47	96.30	78.20	78.73	0.53	0.59
7%Mineral oil	85.87	84.70	75.00	74.53	0.44	0.52
10% Urea	82.87	81.90	73.60	72.20	0.43	0.51
5%potassium nitrate	80.53	89.27	71.73	72.67	0.43	0.54
3%zinc sulfate	86.10	78.27	74.5	74.07	0.45	0.49
1%potassium hydroxide	83.10	80.10	71.27	72.67	0.41	0.51
2%phosphoric acid	80.10	85.17	72.67	73.13	0.43	0.44
2%sulphoric acid	84.70	86.57	73.13	74.07	0.47	0.52
,1%H2O2	89.37	82.37	76.40	77.33	0.50	0.56
L .S .D 5%	4.01	2.17	1.26	0.78	0.02	0.02

Yield and Cluster characteristics

Yield/vine

Data listed in table (2) showed that the yield of Flame Seedless grapevines was greatly affected by chemical compound application in 2013 and 2014 seasons. It is clear that the yield increments were more pronounced with spraying Dormex at 4% followed increased order by spraying H2O2 at ,1% followed by control vines which gave thelowest values of the yield in both seasons.

Abdalla (2003) found that spraying Dormex at 3 or 5 % one day after pruning resulted in increasing the number, weight of cluster and yield/vine in Thompson seedless and Red Roomy grapevines.

Average cluster weight

Data presented in table (2) show the effect of chemical compounds application on average cluster weight of Flame Seedless grapevines. The results showed high significant differences among all treatments in 2013&2014 seasons. It is clear that the average cluster weight increments were more pronounced with spraying dormex at 4% followed increased order by sprayingH2O2 at ,1% followed by spraying Phosphoric acid ,Sulphoric acid, Potassim nitrate , Zinc sulfate, Urea, Mineral oil and control vines gave the lowest values. Abd el-wadoud(2010)and Osman(2014) showed that using the present chemical for rest breakages was significant to increase average cluster weight with all treatments as compared to control.

Average cluster length

As shown in table (2) the results revealed significant differences among treatments in 2013 and 2014 seasons. on cluster length . This effect was more pronounced in the treatment where the vines were sprayed by dormex at 4% followed increased order by spraying , 1% H2O2 Potassium hydroxide at 1%, zinc sulfate at 3%, 10%Urea, 7% Mineral oil,followed by control vines which gave the lowest values of the average cluster length in both seasons. Abd el – wadoud (2010) sprayed by Dormex at 5% followed in a descending order by spraying Thio-urea at 3% followed by spraying natural extracts and came to similar results.

Simancas *et al*, (1987) stated that spraying 7% Dormex just after pruning gave satisfactory increase in yield and cluster length of Italia vines.

Table 2. The efficiency of some alternative of breaking bud dormancy for Flame seedless grapevine on cluster weight, cluster length and yield/vine of the two seasons (2013-2014).

Treatments	Cluster weight (g)		Cluster length (cm)		Yield/vine (kg)	
	2013	2014	2013	2014	2013	2014
Control	400.00	300.00	21.00	22.67	13.07	9.77
4%Drmax	690.00	633.33	27.00	28.00	20.00	17.73
7%Mineral oil	463.33	443.33	23.33	25.00	15.73	14.80
10% Urea	530.00	480.00	21.00	27.67	17.77	16.63
5%potassium nitrate	410.00	483.33	23.00	25.33	14.30	17.07
3%zinc sulfate	456.67	483.33	23.00	27.00	15.43	16.90
1%potassium hydroxide	503.33	483.33	25.67	24.67	15.93	19.67
2%phosphoric acid	480.00	583.33	22.00	26.33	16.33	17.47
2%sulphoric acid	533.33	483.33	23.00	26.00	17.63	15.97
,1%H2O2	516.67	466.67	26.00	27.67	20.30	17.10
L.S.D 5%	36.68	48.83	2.51	1.17	1.40	1.61

Berry physical characteristics:

Data in Table (3) demonstrated the effect of treatments on average berry diameter, average 100 berries weight (g), number of (berry per cluster) in 2013 and 2014 seasons of Flame Seedless grapes.

Average berry diameter:

Data in Table (3) found that vines sprayed with 4% Dormex had the highest values of average berry diameter, while control vines resulted in the lowest values in both seasons.

Table 3. The efficiency of some alternative of breaking bud dormancy for Flame seedless grapevine on berry diameter, 100 berries weight and No .of berries /cluster of the two seasons (2013-2014)

Treatments	Berry diameter		100 berries weight		No. of berries/cluster	
	2013	2014	2013	2014	2013	2014
Control	17.33	15.00	286.67	300.00	203.67	124.33
4%Drmax	19.50	16.67	380.00	320.00	221.67	233.33
7%Mineral oil	19.50	15.83	313.33	280.00	202.67	203.33
10% Urea	17.33	15.50	333.33	326.67	181.00	206.00
5%potassium nitrate	17.33	15.93	300.67	306.67	198.33	179.33
3%zinc sulfate	17.00	15.63	346.67	326.67	213.00	220.67
1%potassium hydroxide	17.53	15.70	320.00	320.00	193.33	208.33
2%phosphoric acid	16.00	16.47	300.00	333.33	146.67	200.67
2%sulphoric acid	16.00	16.17	306.67	313.33	193.33	198.33
,1%H2o2	18.50	14.83	320.00	313.33	225.00	226.67
L .S .D 5%	1.40	0.58	17.80	20.12	35.96	14.20

Average 100 berry weight:

Data in Table (3) value was obtained by vines spraying by Dormex at 4% followed increased order by spraying zinc sulfate 3%, Urea10%, potassium hydroxide1%, H2O2 at 1 %,Mineral oil 7%, phosphoric acid 2%,sulphoric acid2% potassium nitrate5%, while, control vines gave the lowest values of the average berry weight in both seasons. Similar notations were mentioned by El-Sabrout (1998) who pointed out that spraying grapevine with Dormex. Abd el-wadoud (2010)recorded that the value was obtained by vines sprayed by Dormex at 5% followed in a descending order by spraying Thio-urea at 3% while, control

vines gave the lowest values of the average berry weight in both seasons

Number of berries per cluster

Data in Table (3) demonstrated the effect of treatments on number of berries per cluster. The results revealed significant differences among treatments in 2013 and 2014 seasons. Spraying with concentrations specially Dormex 4% and H2O2 1% gave increased values as compared to control treatment in both season. Abd el-wadoud(2010) showed that spraying Dormex at 5% resulted in earliness find yield with high cluster quality followed in a descending order by spraying Thio-urea at 3% while, control vines gave the lowest values for these estimations in two seasons.

Chemical characteristics of berries:

Total Soluble Solids (TSS)

Data of table (4) show the effect of natural extracts and chemical compounds application on TSS% of berry juice in Flame Seedless grapes during 2013 and 2014 seasons. The highest percentage was obtained by vines sprayed by Dormex at 4% followed increased order by spraying H2O2 ,1% while, control vines gave the lowest values of the TSS% of berry juice in both seasons. Morsi and El-yazal, (2008) reported that garlic extract (20 %) and onion extract (20 %) increased fruit setting, fruit weight, yield/ tree (kg) and some chemical constituents of fruit (TSS/ acid ratio, total carbohydrates and total sugars) on the contrary decreased total acidity and total phenols in fruit of Anna apple compared to the control.

Titratable acidity

As shown in table (4), chemical compounds application significantly decreased titratable acidity of berry juice in Flame Seedless grapes during 2013 and 2014 seasons. The highest percentage was obtained by vines sprayied by dormex at 4 % and the control followed in a descending order by the other treamers. Miele *et al*. (1982) mentioned that treating" Cabernet France" grapevines with calcium cyanamide 3% immediately after pruning decreased the total acidity of berry juice and added that the chemical properties of Thompson seedless grapes were ameliorated owing to spraying 3% Dormex one month after pruning.

TSS / acid ratio

Data presented in table (4), revealed that TSS/acid ratio of Flame Seedless grape juice during 2013 and 2014 seasons was found to be significantly increased as chemical compounds application. The highest value was recorded by vines sprayed by Dormex at 4 % followed increased order by spraying H2O2 at ,1% while followed by spraying Phosphoric acid ,Sulphoric acid ,Potassim nitrate , Zinc sulfate, Urea, Mineral oil and, control vines gave the lowest values of the TSS/acid ratio in both seasons. The results in this respect are in harmony with those obtained by Abd El-All (1996); El-Shazly, (1999) and El-Mogy *et al*., (2002) working on different grape cultivars. They reported that Dormex spray improved fruit quality.

Table 4. The efficiency of some alternative of breaking bud dormancy for Flame seedless grapevine on TSS, Acidity and TSS/acid ratio of the two seasons (2013-2014)

Treatments	T.S.S		Acidity (%)		TSS/acid ratio	
	2013	2014	2013	2014	2013	2014
Control	14.17	14.17	1.73	1.73	8.30	8.53
4%Drmax	15.67	15.67	1.73	1.80	9.13	9.57
7%Mineral oil	14.33	14.33	1.70	1.87	8.47	7.00
10% Urea	15.33	15.33	1.67	1.70	9.27	8.47
5%potassium nitrate	14.50	14.50	1.53	1.50	9.47	9.17
3%zinc sulfate	15.00	15.00	1.53	1.97	9.80	7.57
1%potassium hydroxide	14.50	14.50	1.60	1.77	9.13	7.73
2%phosphoric acid	14.50	14.50	1.57	1.70	9.27	8.57
2%sulphoric acid	14.83	14.83	1.70	1.67	8.87	8.67
,1%H2o2	15.00	15.67	1.57	1.70	9.60	9.33
L .S .D 5%	0.59	0.58	0.15	0.16	0.85	0.96

Morphological characteristics of vegetative growth

The data concerning vegetative growth indicated that chemical compounds application had a significant effect on shoot length, number of leaves and leaf area of Flame Seedless grapevines during both seasons.

Average shoots length

As shown In table (5) significant differences chemical compounds application to Flame Seedless cultivar were noticed as concerns average shoots length during 2013 and 2014 seasons .The highest value was obtained by vines spraying by dormex at 4% followed increased order by spraying H2o2 at ,1% followed by spraying Urea at10%,Zinc sulfat at 3%,Potassium hydroxide at 1%,Mineral oil at 7% ,Potassium nitrate at 5% ,Sulphoric acid at 2% and Posphoric acid at 2% while, control vines gave the lowest values of average shoots length in to Daye both seasons Hassan, (2008) recorded that spraying Dormex or painting Garlic extract each at 2 to 4 % on periods ranged from the fourth week of Dec. till the second week of Jan significantly stimulated the vegetative growth characters namely main shoot length, number of leaves per shoot and leaf area compared to the check treatment of Red Roomy grapevines. Osman (2014) show that using dormex at 1 to 6% thiourea at 2 to 8% saliclylic acid at 5 to 10% and H2O2 at 10%, in descending order was significantly very effective in stimulating all growth charaeters.

Average number of leaves/shoot:

The effect of chemical compounds application on average number of laves/shoot of Flame Seedless cultivar during 2013 and 2014 are shown in table(5).

The highest value of this estimate was recorded by vines spraying by Dormex at 4% followed increased order by spraying H2O2 at 1% followed by while, control vines gave the lowest values of average number of leaves/shoot in both seasons. Abd EL-wadoud (2010) The highest value of this estimate was recorded by vines spraying by Dormex at 5% followed in a descending order by spraying Thio-urea at 3% followed by spraying natural extracts i.e. Garlic oil at 3-4% followed by Onion oil at 3-4% while, control vines gave the lowest values of average number of leaves/shoot in both seasons

Table 5. The efficiency of some alternative of breaking bud dormancy for Flame seedless grapevine on leaf area, shoot length and Number of leaves of the two seasons (2013-2014)

Treatment	Leaf area (cm)		Shoot length (cm)		Number of leaves	
	2013	2014	2013	2014	2013	2014
Control	107.53	135.10	145.00	153.00	31.67	33.67
4%Drmax	154.80	159.23	205.00	211.00	44.33	47.33
7%Mineral oil	137.93	139.10	168.33	172.67	35.00	35.67
10% Urea	139.67	147.63	178.00	181.67	36.00	36.67
5% potassium nitrate	133.70	140.03	176.33	181.00	37.67	38.00
3%zinc sulfate	136.37	144.43	165.00	167.67	34.00	35.67
1%potassium hydroxide	128.40	140.13	175.67	184.00	35.00	3533
2%phosphoric acid	138.37	124.60	164.33	173.00	36.67	37.33
2%sulphoric acid	142.53	143.57	173.33	184.67	36.33	37.67
,1%H2o2	148.30	151.90	202.00	206.33	42.00	43.33
L .S .D 5%	3.54	2.11	4.98	2.33	1.34	0.60

Average leaf area/shoot

As shown in table (5), significant differences among chemical compounds application to Flame Seedless cultivar were noticed as concerns average leaf area/shoot during 2013 and 2014 seasons. The highest value was obtained by vines spraying by dormex at 4% followed increased order by spraying H2O2 ,1%. It is obvious from the obtained data that exposing the vines to all chemical rest breakages significantly was responsible for namely leaf area followed by control vines which gave the lowest values of the average leaf area/shoot in both seasons.

The above mentioned results are in accordance with those reported, by Tourky *et al*., (1995) and El-Sabrout (1998) and El-Mogy *et al*., (2002) working on some grape cultivars, pointed out that Dormex spray increased the vegetative growth of the vines.

Wood ripening and pruning weights

Data in Table (6) show the effect of some chemical breakages on wood ripening coefficient, and prunings weight of Flame Seedless grapevines during 2013 and 2014 seasons. It is obvious from the obtained data that exposing the vines to all chemical rest breakages significantly were significantly effective on wood ripening. Using, urea at 10% , zinc sulfate at 1%, phosphoric acid at 2% , sulphoric acid at 2% dormex at 4%, H2o2 at ,1% , ,potassium hydroxide at 1% , potassium nitrate at5% and mineral oil at 7% in descending order was significantly associated with increasing concentrations of all chemical agents without significant promotion among the higher two concentrations. Mohammad Asif (2012) discussed the use of unsatisfactory calcium carbide to ripen fruits for domestic markets as well as their toxic effects on human health. The commonly used ripening agents are calcium carbide, acetylene, ethylene, propylene, ether (2-chloroethyl phosphoric acid), glycol, ethanol and some other agents. The calcium carbide is one of the most commonly used ripening agent for fruits, while other calcium salts like calcium ammonium nitrate, calcium chloride and calcium sulfate are used to delay fruit ripening agents for local fruit industries . El-Sabrout (1998) and El-Mogy *et al*., (2002) who working on some grape cultivars, pointed out that Dormex spray increased the vegetative growth and wood ripening.

Prunings weight:

Data in Table (6) show the effect of some chemical breaking low pounds on pruning weight of Flame Seedless grapevines during 2013 and 2014 seasons. It is obvious from the obtained data that exposing the vines to all chemical rest breakages significantly was responsible for namely over the control treatment. Using dormex at 4% ,H2o2 at ,1% , urea at 10% , zinc sulfate at 3% ,phosphoric acid at2% , ,potassium hydroxide at 1% , potassium nitrate at5% and mineral oil at 7% in descending order was significantly associated with increasing concentrations of all chemical agents without significant promotion among the higher two concentrations. Osman (2014) stated that using dormaex at 1 to 5% thiourea at 2 t0 8%, salicylic acid at 5 to 10% and H2O2 at 10% in descending order was significantly effective in stimulating all growth characters.

Table 6. The efficiency of some alternative of breaking bud dormancy for Flame seedless grapevine on Wood in maturity, Weight of pruning /vine and Total carbohydrates % of the two seasons (2013-2014)

Treatments	Wood in maturity		Weight of pruning/vine(g)		Total carbohydrates%	
	2013	2014	2013	2014	2013	2014
Control	0.91	0.91	1.60	2.33	23.23	21.70
4%Drmax	0.96	0.93	3.23	2.63	24.73	24.77
7%Mineral oil	0.91	0.93	2.03	2.17	23.00	23.43
10% Urea	0.97	0.97	2.90	2.00	20.77	23.40
5%potassium nitrate	0.94	0.95	2.20	2.37	22.40	22.87
3%zinc sulfate	0.96	0.96	2.70	2.17	23.57	23.23
1%potassium hydroxide	0.92	0.94	1.93	2.27	22.97	22.97
2%phosphoric acid	0.95	0.96	2.30	2.10	22.17	22.83
2%sulphoric acid	0.95	0.95	2.20	2.13	23.07	23.50
,1% H2o2	0.94	0.95	2.57	2.77	24.00	23.97
L .S .D 5%	0.02	0.01	0.30	0.24	0.44	0.34

Cane total carbohydrate content:

Data of table (6) show the effect of compost chemical compounds application on cane total carbohydrate content in Flame Seedless grapes during 2013 and 2014 seasons. The highest percentage was obtained by vines sprayed with by dormex at 4% followed in a descending order by spraying H2o2 ,1% followed by control vines gave the lowest values of cane total carbohydrate content in both seasons. Hydrogen

peroxide is produced under various abiotic and biotic stresses. It is relatively stable and diffuses through membranes (Vranova *et al.* 2002),mentioned that application of hydrogen peroxide at low concentrations stimulated and enhanced resistance to drought (He *et al*. 2009). H2O2 can serve as a second messenger in signal transduction pathways, leading to stress acclimation. Available information suggest that H2O2 directly regulates the expression of numerous genes involved in plant defense and the related pathways such as antioxidant enzymes, defense proteins and transcription factors (Hung *et al*. 2005).

Cost and net profit/Feddan for the recommended treatments; Dormex and H2O2 compared with control:

It can be shown from the data presented in Table (7) that Dormex and H2O2 gave the maximum net profit compared with the control in both seasons for flame seedless grape cultivar. The very slight raise in the cost of production/Feddan over control for this treatment is economically justified in view of the higher price of the yield obtained from this treatment.

Table 7. Cost and net profit/Feddan for the recommended treatments; Dormex and H2O2 compared with control

Per Feddan	2013, season			2014, season		
	Dormex	H2O2	control	Dormex	H2O2	control
*Dormex (L)	8		---	8		---
*H2O2 (mL)		200			200	
*Price of Dormex (L.E.)	880.0		---	920.0		---
*Price of H2O2 (L.E.)		20.0			30.0	
Labour cost (L.E.)	200.0	200.0	---	240.0	240.0	---
Cost of cultural practices (L.E.)	3000	3000	3000	3400	3400	3400
Total cost (L.E.)	4080	3220	3000	4560	3670	3400
Increase of the total cost over control (L.E.)	1080.0	220.0	---	1160.0	270.0	---
Yield (Kg)	16800.0	14893.2	10978.8	17052.0	14364.0	8206.8
Increase of the yield over control (Kg)	5821.2	3914.4	---	8845.2	6157.2	---
Kg (L.E.)	4.35	4.35	4.35	4.50	4.50	4.50
Yield (L.E.)	73080.0	64785.4	47757.8	76734.0	64638.0	36930.6
Price of increase in yield over control (L.E.)	25322.2	17027.6	---	39803.4	27707.4	---
The net profit (L.E.)	69000.0	61565.4	44757.8	72174.0	60968.0	33530.6
The net profit (L.E.) over control (L.E.)	24242.2	16807.6	---	38643.4	27437.4	---

CONCLUSION

Dormex at 4% in comparison with control improved percentage of bud burst and good yield with high bunch quality. The treatment of 4% Dormex gave the best results and gave uniform and high percentage of bud burst and resulted in the greatest yield and its components as well as the best physical properties of bunches and berries and ensured the best vegetative growth parameters.

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كسر طور السكون فى العنب الفليم سيدلس باستخدام بعض المصادر الاقتصاديه

ثريا صابر على ابو الوفا ، عائشه صالح عبد الرحمن جاسر و السيد محمد محمد عوض

معهد بحوث البساتين –مركز البحوث الزراعيه- جيزة

اجريت هذة الدراسه لمدة موسمين متتاليين(٢٠١٣-٢٠١٤) فى آجا بمحافظه الدقهليه على كرمات عنب الفليم سيدلس للتحقق من فاعليه استخدام بعض المركبات الكميائيه مثل الدورمكس الزيت المعدنى واليوريا ونترات البوتاسيوم وسلفات زنك وهيدروكسيد بوتاسيوم وحامض الفوسفوريك وحامض كبريتك مركز وفوق اكسيد الهيدروجين فى كسر سكون براعم عنب الفليم سيدلس وكانت الكرمات ناميه فى تربه طينيه تروى بنظام الرى بالغمر ،وتم تقليم الكرمات تقليما قصيبا مع ترك(٦قصبات ×١٢عين/قصبه) ومرباه بنظام التكاعيب. اشتملت التجربه على تسعه معاملات تم رشها خلال الاسبوع الثالث من يناير حيث رش المركبات السابق ذكرها. واظهرت النتائج ان جميع المعاملات اسرعت من تفتح البراعم مقارنه بالكنترول بالاضافه الى الحصول على محصول جيد ذو مواصفات وجودة عاليه وكانت افضلها الرش بالدورمكس ٤% يليه استعمال فوق اكسيد الهيدروجين بتركيز ١% مقارنه با لكنترول والمعاملات الاخرى.