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## **THE RELATION BETWEEN SPRAYING THE STIMULANT HEADLAND VERTEX HI N-34 AND FRUITING OF SUPERIOR GRAPEVINES**

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### **ABSTRACT**

Superior grapevines treated during 2011 and 2012 seasons once at first bloom, just after berry setting or at two weeks later with the stimulant Headland Vertex HI N-34 at 0.0, 1.0, 3.0 and 5.0 %. Growth, berry setting %, shot berries %, yield as well as some physical and chemical characteristics of the grapes in response to the present treatments were investigated.

Results showed that advancing dates of application as well as increasing concentrations of Headland Vertex HI N-34 was accompanied with a gradual promotion on growth characters, berry setting % as well as cluster weight and dimensions. Shot berries % was declined and quality of the berries was improved with delaying dates of application and increasing concentrations of such compound. Meaningless effect was recorded among the higher two concentrations (3.0 and 5.0 %). No measurable effect on growth characters and berry setting % was observed when the vines were sprayed once just after berry setting or at two weeks later. Varying dates of spraying had an obvious differences on yield as well as physical and chemical characteristics of the grape.

One spray at first bloom of the stimulant Headland Vertex HI N-34 at 3.0 % gave the best results with regard to shot berries reduction as well as yield and quality promotion of Superior grapevines.

### **INTRODUCTION**

The decline of berry setting as well as the problem of shot berries % in Superior grapevines cv. is suggested to be the major problems that were responsible for lowering yield and marketing of such cv. Malnutrition is considered the main reason for poor cropping. Using balanced nutritional compounds especially Headland Vertex HI N-3 $\epsilon$  is accompanied with solving the problems of poor yield and shot berries % in different grapevine cv. (Superior, Early Superior, Red Roomy and Ruby seedless grapevines).

Nutrients (macro and micro) are responsible for enhancing the biosynthesis of plant pigments, carbohydrates, proteins, fats, enzymes, natural hormones, vitamins, antioxidants, cell division and water uptake (Adriano, 1980 and Yagodin, 1990).

Previous studies showed that micronutrients application resulted in great promotion on growth and fruiting of different grapevine cvs (Abd El- Hameed and Youssef, 2000; Abd El- Hafeez, 2006; Ahmed *et al.*, 2007; Amin, 2007; Mohamed- Ebtessam, 2012 and Abdelaal, 2012).

The previous studies carries out by Ahmed and Abd El- Hameed (2003); Abd El- Hameed and Abo El- Ez (2004); Abd El- Gaber-Nermean, 2009; El- Sawy, 2009; Abd El- Wahab (2010); Ahmed *et al.*, (2011) and El- Kady- Hanaa (2011) emphasized the beneficial effects of using macronutrients on growth and productivity of different grapevine cvs.

The main objective of this study was examining the effect of the stimulant Headland Vertex HI N-3 $\epsilon$  on solving the problems of yield decline and the occurrence of shot berries in the clusters of Superior grapevines grown under Souhag conditions.

### **MATERIALS AND METHODS**

This study was carried out during 2011 and 2012 seasons on 72 uniform in vigour 10- years old cane trained Superior grapevines. The experimental vines were grown in the vineyard located at New Farm Fac. of Agric. Souhag Univ., El- Kawthar region, Souhag district, Souhag Governorate. All the selected vines are planted at 1.70  $\times$  2.0

## The relation between spraying the stimulant headland vertex hi n-۳۴

meters apart. Winter pruning during both seasons was conducted on the middle of January by using cane pruning system ۷۲ eyes (six fruiting canes × ten eyes plus six renewal spurs × two eyes) with the assistance of T shape supporting system. Surface irrigation system was followed. Soil texture is sandy and the data was measured according to Chapman and Pratt (۱۹۶۵)

**Table ۱: Analysis of the tested soil:**

Constituents	Values
Sand %	: ۷۸.۷۰
Silt %	: ۱۰.۲۸
Clay %	: ۱۱.۰۲
Texture	: Sandy
pH (۱:۲.۵ extract)	: ۷.۵
EC (۱: ۲.۵ extract) (dS m <sup>-۱</sup> ) ۱cm/ ۲۵° C	: ۳.۳۹
O.M. %	: ۰.۶۴
CaCO <sub>۳</sub> %	: ۱۲.۰
Total N %	: ۰.۹۵
Available K (ammonium acetate, ppm)	: ۲۳۲
Available P (Olsen, ppm)	: ۱۳.۰

Usual horticultural practices were carried out as usual except those dealing with the application of any compounds contain N, Mg, Mn and Cu nutrients.

This study included ۱۲ treatments from two factors (A & B). The first factor (A) involved three dates of application of the stimulant compound Headland Vertex HI N-۳۴ (۳۴ % N, ۲ % Mg, ۰.۸ % Mn, ۰.۴۵ % Cu and ۳.۷ – ۴.۵ pH) namely a<sub>۱</sub>). The first spray was applied at first bloom (۱<sup>st</sup> week of Mar.), a<sub>۲</sub>). The second one just after berry setting (۳<sup>rd</sup> week of April) and a<sub>۳</sub>). while the third one was achieved at two weeks after berry setting (۲<sup>nd</sup> week of May). The second factor (B) comprised from four concentrations of the studied compound namely b<sub>۱</sub>) ۰.۰ %, b<sub>۲</sub>) ۱.۵ %, b<sub>۳</sub>) ۳.۰ % and b<sub>۴</sub>) ۴.۵ %. Each treatment was replicated three times, two vines per each. Triton B as a wetting agent was applied at ۰.۰۵ % to all spraying solutions. Control vines were sprayed with water containing Triton B. Spraying was done till runoff (۲ L/ vine). Randomized complete block design in split plot arrangement was followed. The three dates of application and the four

## M. R. G. El- Kareem and M. A. Hussein

concentrations of Headland vertex HIN- ٣٤ occupied the main and subplots, respectively.

Vegetative growth characters of the vines were evaluated in terms of main shoot length (cm.), number of leaves per shoot and leaf area (cm<sup>2</sup>) in twenty mature leaves opposite to the basal clusters (Balo *et al.*, ١٩٨٨) according to the equation of Ahmed and Morsy, (١٩٩٩).

Berry setting % was calculated in the ten perforated white paper bags/ vine by dividing the number of attached berries/ cluster by total number of flowers (attached fruitlets + dropped flowers + dropped fruitlets in the bags) and multiplying the product by ١٠٠.

Harvesting was done when T.S.S/ acid parameter indices in the untreated berries reached ٢٥: ١ (the ٢<sup>nd</sup> weeks of Jan. during both seasons) (according to Weaver, ١٩٧٦). Yield expressed in weight (kg.) and number of clusters/ vine was recorded. Ten clusters from each vine were harvested for determining the following physical and chemical characteristics:-

- ١- Average cluster weight (g.) and dimensions (length and width, cm.).
- ٢- Berry weight (g.).
- ٣- Shot berries % by dividing number of small berries by total number of berries per cluster and multiplying the product by ١٠٠.
- ٤- Percentage of total soluble solids % in the juice using handy refractometer.
- ٥- Percentage of total sugars % in the juice (according to Lane and Eynon, volumetric method (١٩٦٥) (A.O.A.C., ١٩٩٥).
- ٦- Percentage of total acidity in the juice by titration against ٠.١ N sodium hydroxide using phenolphthalein as indicator (as g tartaric acid/ ١٠٠ ml juice).

Data were statistically analyzed using standard methods according to Mead *et al.*, (١٩٩٣) and new L.S.D test was used for comparing between treatment means.

## The relation between spraying the stimulant headland vertex hi n-٣٤

### RESULTS AND DISCUSSION

#### ١- Growth characters:-

It is clear from the data in Table (٧) that spraying the stimulant Headland Vertex HI N-٣٤ once at first bloom significantly stimulated the three growth traits namely main shoot length, number of leaves/shoot and leaf area in relative to spraying at the two last sprays (just after berry setting or two weeks later). No significant differences were observed on such growth characters among the two last sprays namely just after berry setting or at two weeks later. Conducting one spray of Headland Vertex HI N-٣٤ at first bloom gave the maximum values. These results were similar during both seasons.

Spraying Headland Vertex HI N-٣٤ at ١.٥ to ٤.٥ % significantly was responsible for enhancing these growth characters in comparison to the check treatment. The promotion was associated with increasing concentrations. Increasing concentrations from ٣.٠ to ٤.٥ % failed significantly to enhance such growth characters. Treating the vines once at first bloom with Headland Vertex HI N-٣٤ at ٤.٥ % gave the maximum values.

The beneficial effect of N, Mg, Mn and Cu components of Headland vertex HI N-٣٤ stimulant on enhancing cell division, different enzymes and building of all organic foods positively reflected on enhancing growth characters (Adriano, ١٩٨٥ and Yagodin, ١٩٩٩).

These results are in agreement with those obtained by El- Sawy (٢٠٠٩); El- Kady- Hanaa (٢٠١٢) and Abdelaal (٢٠١٢).

#### ٢- Berry setting %, yield and cluster characters:-

Data in Tables (٧ & ٣ & ٤) clearly show that berry setting % was significantly improved with using Headland Vertex HI N-٣٤ once at first bloom comparing to later time. Number of cluster per vine did not alter significantly with varying dates of spraying in the first season of study. There was a gradual promotion on yield as well as cluster weight and dimensions with advancing dates of spraying, since the greatest values were recorded with carrying out the spray once at first bloom, just after berry setting or two weeks later, in descending order.

M. R. G. El- Kareem and M. A. Hussein

Table ٧: Effect of different dates and concentrations of the stimulant Headland Vertex HI N-٣٤ on some growth characters and berry setting % of Superior grapevines during ٢٠١١ and ٢٠١٢ seasons.

Conc. (B)	Dates of application (A)							
	Mean shoot length (cm.)							
	٢٠١١ season				٢٠١٢ season			
	a, once before first bloom	a, once just after berry setting	a, once two weeks after berry setting	Mean (B)	a, once before first bloom	a, once just after berry setting	a, once two weeks after berry setting	Mean (B)
b <sub>1</sub> ٠.٠ %	١٠٠.٥	٩٩.٠	٩٨.٠	٩٩.٢	١٠٣.٠	١٠٢.٨	١٠٢.٣	١٠٢.٧
b <sub>r</sub> ١.٥ %	١٠٥.٠	١٠١.٥	١٠١.٠	١٠٢.٥	١٠٧.٨	١٠٢.٨	١٠٣.٥	١٠٥.٠
b <sub>r</sub> ٣.٠ %	١١٤.٠	١٠٧.٥	١٠٧.٠	١٠٩.٥	١١٧.٠	١١٠.٠	١٠٩.٧	١١٢.٢
b <sub>ε</sub> ٤.٥ %	١١٤.٧	١٠٧.٨	١٠٧.٦	١١٠.٠	١١٧.٤	١١٠.٤	١١٠.٠	١١٢.٦
Mean (A)	١٠٨.٦	١٠٤.٠	١٠٣.٤		١١١.٣	١٠٦.٨	١٠٦.٤	
	A		B		AB		AB	
New L.S.D at ٠.٠٥	١.١		١.٣		٢.٢		١.٠	
character	Number of leaves/shoot							
b <sub>1</sub> ٠.٠ %	٣٠.٨	٣٠.٧	٣٠.٠	٣٠.٥	٣٠.٠	٣٠.٠	٢٩.٠	٢٩.٧
b <sub>r</sub> ١.٥ %	٣٦.٠	٣٠.٨	٣٠.٠	٣٢.٣	٣٤.٠	٣٠.٧	٣٠.٠	٣١.٦
b <sub>r</sub> ٣.٠ %	٤٠.٠	٣١.٧	٣١.٠	٣٤.٢	٤١.٠	٣٢.٠	٣١.٠	٣٤.٧
b <sub>ε</sub> ٤.٥ %	٤٠.٧	٣٢.٠	٣١.٧	٣٤.٨	٤١.٧	٣٢.٧	٣١.٣	٣٥.٢
Mean (A)	٣٦.٩	٣١.٣	٣٠.٧		٣٦.٧	٣١.٤	٣٠.٣	
	A		B		AB		AB	
New L.S.D at ٠.٠٥	١.٦		١.٧		٢.٩		١.٧	
character	Leaf area (cm)							
b <sub>1</sub> ٠.٠ %	١٠١.٩	١٠١.٠	١٠٠.٥	١٠١.١	١٠٧.٢	١٠٦.٠	١٠٥.٥	١٠٦.٢
b <sub>r</sub> ١.٥ %	١١٨.٠	١٠١.٦	١٠١.٠	١٠٦.٩	١٢٥.٠	١٠٦.٩	١٠٦.٠	١١٢.٦
b <sub>r</sub> ٣.٠ %	١٢٩.٩	١٠٢.٩	١٠٢.٠	١١١.٦	١٣٩.٠	١٠٨.٠	١٠٧.٠	١١٨.٠
b <sub>ε</sub> ٤.٥ %	١٣٠.٣	١٠٣.٠	١٠٢.٣	١١٢.٠	١٣٩.٨	١٠٨.٠	١٠٧.٧	١١٨.٥
Mean (A)	١٢٠.٠	١٠٢.١	١٠١.٥		١٢٧.٨	١٠٧.٢	١٠٦.٦	
	A		B		AB		AB	
New L.S.D at ٠.٠٥	١.٠		١.١		١.٩		١.١	
character	Berry setting %							
b <sub>1</sub> ٠.٠ %	١١.٠	١١.٠	١١.٠	١١.٠	١٢.٥	١٢.٤	١٢.٣	١٢.٤
b <sub>r</sub> ١.٥ %	١٦.٠	١١.٣	١١.٢	١٢.٨	١٧.٣	١٢.٦	١٢.٥	١٤.١
b <sub>r</sub> ٣.٠ %	١٨.٥	١١.٦	١١.٤	١٣.٨	٢٠.٠	١٢.٨	١٢.٥	١٥.١
b <sub>ε</sub> ٤.٥ %	١٨.٨	١٢.٠	١١.٥	١٤.١	٢٠.٥	١٣.٠	١٢.٦	١٥.٤
Mean (A)	١٦.١	١١.٥	١١.٣		١٧.٦	١٢.٧	١٢.٥	
	A		B		AB		AB	
New L.S.D at ٠.٠٥	٠.٩		١.٠		١.٧		١.٠	

The relation between spraying the stimulant headland vertex hi n-<sup>۳</sup>ε

Table ۳: Effect of different dates and concentrations of the stimulant Headland Vertex HI N-<sup>۳</sup>ε on the yield as well as weight and length of cluster of Superior grapevines during ۲۰۱۱ and ۲۰۱۲ seasons.

Conc. (B)	Dates of application (A)							
	Number of clusters/ vine							
	۲۰۱۱ season				۲۰۱۲ season			
	a <sub>۱</sub> once before first bloom	a <sub>۲</sub> once just after berry setting	a <sub>۳</sub> once two weeks after berry setting	Mean (B)	a <sub>۱</sub> once before first bloom	a <sub>۲</sub> once just after berry setting	a <sub>۳</sub> once two weeks after berry setting	Mean (B)
b <sub>۱</sub> ۰.۰ %	۲۷.۰	۲۷.۰	۲۷.۰	۲۷.۰	۲۷.۰	۲۷.۰	۲۷.۰	۲۷.۰
b <sub>۲</sub> ۱.۰ %	۲۸.۰	۲۸.۰	۲۸.۰	۲۸.۰	۳۱.۰	۲۸.۰	۲۷.۰	۲۸.۷
b <sub>۳</sub> ۳.۰ %	۲۸.۰	۲۸.۰	۲۸.۰	۲۸.۰	۳۰.۰	۲۹.۰	۲۹.۰	۳۱.۰
b <sub>۴</sub> ۴.۰ %	۲۸.۰	۲۸.۰	۲۸.۰	۲۸.۰	۳۰.۰	۲۹.۹	۲۹.۰	۳۱.۳
Mean (A)	۲۷.۸	۲۷.۸	۲۷.۸		۳۲.۰	۲۸.۰	۲۸.۰	
New L.S.D at ۰.۰۵	A		B		AB		AB	
	NS		NS		NS		۳.۰	
character	Yield/ vine							
	b <sub>۱</sub> ۰.۰ %	۶.۸	۶.۸	۶.۸	۶.۸	۷.۰	۷.۰	۷.۰
b <sub>۲</sub> ۱.۰ %	۹.۰	۸.۷	۷.۹	۸.۷	۱۰.۹	۸.۹	۷.۸	۹.۲
b <sub>۳</sub> ۳.۰ %	۱۰.۶	۹.۸	۸.۷	۹.۷	۱۳.۷	۱۰.۴	۹.۳	۱۱.۱
b <sub>۴</sub> ۴.۰ %	۱۰.۷	۹.۸	۸.۷	۹.۷	۱۳.۷	۱۰.۸	۹.۳	۱۱.۳
Mean (A)	۹.۴	۸.۸	۸.۰		۱۱.۳	۹.۳	۸.۴	
New L.S.D at ۰.۰۵	A		B		AB		AB	
	۰.۶		۰.۸		۱.۴		۱.۰	
character	Average cluster weight (g.)							
	b <sub>۱</sub> ۰.۰ %	۲۰۲.۰	۲۰۱.۰	۲۰۱.۰	۲۰۱.۳	۲۶۱.۰	۲۶۰.۰	۲۰۸.۰
b <sub>۲</sub> ۱.۰ %	۳۴۰.۰	۳۰۹.۰	۲۸۱.۰	۳۱۰.۰	۳۰۰.۰	۳۱۸.۰	۲۸۸.۰	۳۱۸.۷
b <sub>۳</sub> ۳.۰ %	۳۸۰.۰	۳۰۰.۰	۳۱۰.۰	۳۴۶.۷	۳۹۱.۰	۳۶۰.۰	۳۲۰.۰	۳۰۴.۴
b <sub>۴</sub> ۴.۰ %	۳۸۲.۰	۳۰۱.۰	۳۱۱.۰	۳۴۸.۰	۳۹۲.۰	۳۶۱.۰	۳۲۱.۰	۳۰۰.۰
Mean (A)	۳۳۸.۰	۳۱۰.۳	۲۸۸.۳		۳۴۸.۰	۳۲۴.۸	۲۷۶.۸	
New L.S.D at ۰.۰۵	A		B		AB		AB	
	۲۰.۰		۲۱.۰		۳۶.۳		۲۱.۰	
character	Cluster length (cm.)							
	b <sub>۱</sub> ۰.۰ %	۱۸.۴	۱۷.۶	۱۷.۰	۱۷.۷	۱۸.۴	۱۷.۷	۱۸.۱
b <sub>۲</sub> ۱.۰ %	۲۲.۹	۱۹.۰	۱۸.۰	۲۰.۰	۲۳.۶	۱۹.۸	۱۸.۷	۲۰.۷
b <sub>۳</sub> ۳.۰ %	۲۴.۹	۲۱.۰	۱۹.۰	۲۲.۰	۲۰.۶	۲۲.۲	۲۰.۲	۲۲.۷
b <sub>۴</sub> ۴.۰ %	۲۰.۰	۲۱.۶	۱۹.۶	۲۲.۱	۲۰.۷	۲۲.۳	۲۰.۳	۲۲.۸
Mean (A)	۲۲.۸	۱۹.۹	۱۸.۰		۲۳.۳	۲۰.۷	۱۹.۲	
New L.S.D at ۰.۰۵	A		B		AB		AB	
	۰.۴		۰.۸		۱.۴		۰.۹	

M. R. G. El- Kareem and M. A. Hussein

Table 4: Effect of different dates and concentrations of the stimulant Headland Vertex HI N-34 on cluster width, shot berries % as well as weight and longitudinal of berry of Superior grapevines during 2011 and 2012 seasons.

Conc. (B)	Dates of application (A)							
	Cluster width (cm.)							
	2011 season				2012 season			
	a <sub>1</sub> once before first bloom	a <sub>2</sub> once just after berry setting	a <sub>3</sub> once two weeks after berry setting	Mean (B)	a <sub>1</sub> once before first bloom	a <sub>2</sub> once just after berry setting	a <sub>3</sub> once two weeks after berry setting	Mean (B)
b <sub>1</sub> 0.0 %	10.7	10.4	10.0	10.9	11.1	10.9	10.0	10.8
b <sub>2</sub> 1.0 %	11.9	11.2	10.7	11.3	12.7	11.7	11.2	11.8
b <sub>3</sub> 3.0 %	13.8	12.2	11.4	12.0	14.3	12.7	11.9	13.0
b <sub>4</sub> 4.0 %	14.0	12.3	11.0	12.6	14.4	12.8	12.0	13.1
Mean (A)	12.7	11.0	10.9		13.1	12.0	11.4	
New L.S.D at 0.05	A		B		AB		AB	
character	0.4		0.6		1.0		0.4	
	Shot berries %							
b <sub>1</sub> 0.0 %	10.0	10.0	10.1	10.0	10.7	10.7	10.7	10.7
b <sub>2</sub> 1.0 %	12.0	9.0	7.0	9.3	12.7	9.0	7.4	9.8
b <sub>3</sub> 3.0 %	10.0	7.0	0.0	7.3	10.3	7.3	0.0	7.0
b <sub>4</sub> 4.0 %	9.9	7.9	4.9	7.2	10.2	7.2	4.9	7.4
Mean (A)	11.7	9.0	8.0		12.2	9.9	8.2	
New L.S.D at 0.05	A		B		AB		AB	
character	0.7		1.1		1.9		1.2	
	Average berry weight (g.)							
b <sub>1</sub> 0.0 %	3.00	3.00	3.00	3.00	3.07	3.08	3.09	3.08
b <sub>2</sub> 1.0 %	3.30	3.00	3.70	3.00	3.37	3.60	3.82	3.60
b <sub>3</sub> 3.0 %	3.90	4.00	4.20	4.00	3.98	4.18	4.33	4.16
b <sub>4</sub> 4.0 %	3.92	4.06	4.22	4.07	4.00	4.19	4.34	4.18
Mean (A)	3.03	3.60	3.78		3.61	3.76	3.90	
New L.S.D at 0.05	A		B		AB		AB	
character	0.08		0.10		0.17		0.09	
	Average berry longitudinal (cm.)							
b <sub>1</sub> 0.0 %	1.03	1.04	1.04	1.04	1.00	1.01	1.01	1.01
b <sub>2</sub> 1.0 %	1.33	1.70	1.80	1.73	1.60	1.72	1.78	1.70
b <sub>3</sub> 3.0 %	1.74	1.80	1.92	1.84	1.71	1.82	1.90	1.81
b <sub>4</sub> 4.0 %	1.70	1.86	1.93	1.80	1.72	1.83	1.91	1.82
Mean (A)	1.66	1.70	1.80		1.63	1.72	1.78	
New L.S.D at 0.05	A		B		AB		AB	
character	0.04		0.00		0.09		0.00	



## **The relation between spraying the stimulant headland vertex hi n-٣٤**

The maximum and minimum values were recorded when such compound was sprayed once at first bloom and two weeks after berry setting, respectively. Similar trend was noticed during both seasons.

Increasing concentrations of Headland Vertex HI N-٣٤ stimulant from ٠.٠ to ٤.٥ % was accompanied with a progressive promotion on berry setting %, yield as well as cluster weight and dimensions. Significant differences on these parameters were observed among all concentrations except among the higher two concentrations namely ٣.٠ and ٤.٥ %. The maximum yield (١٠.٦ and ١٣.٧ kg/ vine) was presented in the vines that received Headland Vertex HI N-٣٤ at ٣.٠ % once at first bloom (since no significant promotion was observed on yield among using ٣.٠ and ٤.٥ %) during both seasons. The untreated vines produced the lowest values (٦.٨ and ٧.٠ kg/ vine) during both seasons, respectively. Varying concentrations and the studied interaction had no significant effect on number of clusters in the first season of study. These results were similar during both seasons.

The beneficial effect of using Headland Vertex HI N-٣٤ on growth characters and the biosynthesis of organic foods due to its higher content from nutrients (Adriano, ١٩٨٥ and Yagodin, ١٩٩٠) could result in enhancing berry setting % and yield. Also, the promoting effect of such compound on berry setting %, number of clusters/ vine and cluster weight could gave another explanation.

These results are in concordance with those obtained by Amin (٢٠٠٧); Abd El- Gaber- Nermean (٢٠٠٩); Abd El- Wahab (٢٠١٠) and Abdelaal (٢٠١٢).

### **٣- Shot berries %:-**

As shown in Table (٤) the percentage of shot berries in the clusters of Superior grapevines was significantly declined with delaying dates of spraying Headland Vertex HI N-٣٤. Significant differences on shoot berries were observed with varying dates of spraying. The minimum values were recorded with spraying the studied compound once at two weeks after berry setting. The maximum values were recorded when such compound was sprayed once early on the first bloom.

## M. R. G. El- Kareem and M. A. Hussein

There was a gradual reduction on such undesirable character with increasing concentrations of Headland Vertex HI N- $\text{N}_2\text{O}$  from 0.0 to 4.0 %. Raising concentrations from 3.0 to 4.0 % had no significant reduction on shot berries %. The maximum values were recorded on the untreated vines. Treating the vines once at two weeks after berry setting with Headland Vertex HI N- $\text{N}_2\text{O}$  at 4 % concentration gave the lowest values. For controlling shot berries in Superior grapevines, it is advised to use the stimulant Headland vertex HI N- $\text{N}_2\text{O}$  at 3.0 %. Similar trend was observed during both seasons.

The positive action of Headland Vertex HI N- $\text{N}_2\text{O}$  compound on amending the vines with their requirements from N, Mg, Mn and Cu (Yagodin, 1990).

These results are in coincidence with those obtained by Abd El-Hameed and Youssef (2000); Abd El- Hafeez (2006); Abd El- Gaber-Nermean (2009) and Abd El- Wahab (2010).

### 4- Some physical and chemical characteristics of the berries:-

Data in Table (4 & 5) obviously reveal that varying dates of application of Headland Vertex HI N- $\text{N}_2\text{O}$  had significant effect on all quality parameters namely berry weight and dimensions (longitudinal & equatorial), T.S.S %, total sugars % and total acidity %. The positive action on quality of the berries was significantly depended on spraying Headland vertex HI N- $\text{N}_2\text{O}$  once at first bloom, just after berry setting or two weeks after berry setting, in ascending order. The best date in this respect was two weeks after berry setting. Advancing date of spraying had negative effects in quality of the berries.

Using Headland Vertex HI N- $\text{N}_2\text{O}$  compound at 1.0 to 4.0 % significantly resulted in great promotion on quality of the berries in terms of increasing berries weight and dimensions, T.S.S % and total sugars % and reducing total acidity % in comparison to the check treatment. The promotion was associated with increasing concentrations. No significant differences on fruit quality were observed among the higher two concentrations. The best results with regard to quality of the berries were obtained with spraying Headland Vertex HI N- $\text{N}_2\text{O}$  once at two weeks after berry setting at 3.0 % (since no measurable influence was detected on fruit quality among the

## The relation between spraying the stimulant headland vertex hi n-<sup>۳</sup>ε

higher two concentrations). Unfavourable effects on fruit quality were detected on untreated vines. These results were similar during both seasons.

**Table ۵: Effect of different dates and concentrations of the stimulant Headland Vertex HI N-<sup>۳</sup>ε on berries equatorial and some chemical characteristics of the berries of Superior grapevines during ۲۰۱۱ and ۲۰۱۲ seasons .**

Conc. (B)	Dates of application (A)							
	Berry equatorial (cm.)							
	۲۰۱۱ season				۲۰۱۲ season			
	a, once before first bloom	a, once just after berry setting	a, once two weeks after berry setting	Mean (B)	a, once before first bloom	a, once just after berry setting	a, once two weeks after berry setting	Mean (B)
b <sub>1</sub> ۰.۰ %	۱.۴۶	۱.۴۷	۱.۴۷	۱.۴۷	۱.۴۳	۱.۴۳	۱.۴۳	۱.۴۳
b <sub>۲</sub> ۱.۰ %	۱.۰۷	۱.۶۸	۱.۷۳	۱.۶۶	۱.۰۳	۱.۷۱	۱.۷۳	۱.۶۶
b <sub>۳</sub> ۳.۰ %	۱.۶۷	۱.۷۸	۱.۸۰	۱.۷۷	۱.۶۴	۱.۷۰	۱.۸۲	۱.۷۴
b <sub>۴</sub> ۴.۰ %	۱.۶۸	۱.۷۹	۱.۸۶	۱.۷۸	۱.۶۰	۱.۷۶	۱.۸۳	۱.۷۰
Mean (A)	۱.۶۰	۱.۶۸	۱.۷۳		۱.۰۶	۱.۶۶	۱.۷۰	
New L.S.D at ۰.۰۰	A	B	AB	A	B	AB		
character	۰.۰۰	۰.۰۶	۰.۱۰	۰.۰۴	۰.۰۷	۰.۱۲		
	T.S.S %							
b <sub>1</sub> ۰.۰ %	۱۸.۰	۱۸.۰	۱۸.۰	۱۸.۰	۱۸.۳	۱۸.۴	۱۸.۴	۱۸.۴
b <sub>۲</sub> ۱.۰ %	۱۸.۰	۱۸.۹	۱۹.۳	۱۸.۹	۱۸.۸	۱۹.۴	۱۹.۰	۱۹.۲
b <sub>۳</sub> ۳.۰ %	۱۸.۹	۱۹.۴	۱۹.۸	۱۹.۴	۱۹.۴	۱۹.۸	۲۰.۲	۱۹.۸
b <sub>۴</sub> ۴.۰ %	۱۹.۰	۱۹.۰	۱۹.۹	۱۹.۰	۱۹.۰	۱۹.۹	۲۰.۳	۱۹.۹
Mean (A)	۱۸.۶	۱۹.۰	۱۹.۳		۱۹.۰	۱۹.۴	۱۹.۶	
New L.S.D at ۰.۰۰	A	B	AB	A	B	AB		
character	۰.۳	۰.۰	۰.۹	۰.۲	۰.۳	۰.۰		
	Total acidity %							
b <sub>1</sub> ۰.۰ %	۰.۷۱۸	۰.۷۱۹	۰.۷۱۸	۰.۷۱۸	۰.۷۳۱	۰.۷۳۰	۰.۷۳۰	۰.۷۳۰
b <sub>۲</sub> ۱.۰ %	۰.۶۹۲	۰.۶۷۰	۰.۶۴۷	۰.۶۷۰	۰.۷۰۰	۰.۶۸۰	۰.۶۰۰	۰.۶۷۸
b <sub>۳</sub> ۳.۰ %	۰.۶۶۰	۰.۶۴۰	۰.۶۰۲	۰.۶۳۱	۰.۶۷۰	۰.۶۴۰	۰.۶۰۱	۰.۶۳۷
b <sub>۴</sub> ۴.۰ %	۰.۶۰۰	۰.۶۲۹	۰.۶۰۱	۰.۶۲۸	۰.۶۶۶	۰.۶۳۸	۰.۶۰۰	۰.۶۳۰
Mean (A)	۰.۶۸۱	۰.۶۶۲	۰.۶۴۲		۰.۶۹۳	۰.۶۷۲	۰.۶۴۰	
New L.S.D at ۰.۰۰	A	B	AB	A	B	AB		
character	۰.۰۱۸	۰.۰۲۱	۰.۰۳۶	۰.۰۱۸	۰.۰۲۳	۰.۰۴۰		
	Total sugars %							
b <sub>1</sub> ۰.۰ %	۱۶.۳	۱۶.۴	۱۶.۴	۱۶.۴	۱۶.۰	۱۶.۶	۱۶.۶	۱۶.۶
b <sub>۲</sub> ۱.۰ %	۱۷.۰	۱۷.۰	۱۸.۰	۱۷.۰	۱۷.۲	۱۷.۷	۱۸.۰	۱۷.۶
b <sub>۳</sub> ۳.۰ %	۱۷.۶	۱۸.۲	۱۹.۰	۱۸.۳	۱۷.۸	۱۸.۰	۱۸.۹	۱۸.۴
b <sub>۴</sub> ۴.۰ %	۱۷.۷	۱۸.۳	۱۹.۲	۱۸.۴	۱۷.۹	۱۸.۶	۱۹.۰	۱۸.۰
Mean (A)	۱۷.۲	۱۷.۶	۱۸.۲		۱۷.۴	۱۷.۹	۱۸.۱	
New L.S.D at ۰.۰۰	A	B	AB	A	B	AB		
character	۰.۳	۰.۰	۰.۷	۰.۲	۰.۰	۰.۹		

### **M. R. G. El- Kareem and M. A. Hussein**

These results might be attributed to the beneficial effects of the tested compound in enhancing the biosynthesis and transportation of carbohydrates (Yagodin, 1990).

These results are in coincidence with those obtained by Abd El-Hameed and Youssef (2000); Abd El- Hafeez (2006); Abd El- Gaber-Nermean (2009) and Abd El- Wahab (2010).

As a conclusion, treating Superior grapevines once at first blooming stage with Headland Vertex HI N-34 at 3.0 % was responsible for improving yield quantitatively and qualitatively and at the same time contributed in reducing shot berries in the clusters.

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## The relation between spraying the stimulant headland vertex hi n-٣٤

العلاقة بين رش المنشط الهيدلاندي فيرتكس ٣٤ والإثمار  
في كرمات العنب السوبيريور

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تم معاملة كرمات العنب السوبيريور خلال موسمي ٢٠١١ ، ٢٠١٢ مرة واحدة في بداية الإزهار أو بعد عقد الحبات مباشرة أو بعد عقد الحبات بأسبوعين بالمركب المنشط المعروف باسم الهيدلاندي فيرتكس ٣٤ بتركيز صفر ، ١.٥ ، ٣ ، ٤.٥ % . ولقد تم دراسة درجة تأثير النمو والنسبة المئوية لعقد الحبات والحبات الصغيرة وكمية المحصول وكذلك بعض الخصائص الطبيعية والكيميائية للحبات لهذه المعاملات.

أشارت نتائج الدراسة إلى أن التبكير في موعد الرش مع زيادة التركيز المستخدم من المنشط الهيدلاندي فيرتكس ٣٤ يكون مصحوبا بتحسين تدريجي في صفات النمو الخضري ، النسبة المئوية لعقد الحبات وكذلك وزن وأبعاد العقنود وكانت النسبة المئوية للحبات الصغيرة تميل إلى الانخفاض وخصائص الجودة للحبات تميل إلى التحسن مع التأخير في موعد رش المركب وزيادة التركيز المستخدم منه وكانت الفروق طفيفة بين التركيزين الأعلى من هذه المادة (٣ ، ٤.٥ %). كذلك كانت الفروق ضئيلة على خصائص النمو والنسبة المئوية لعقد الحبات عند رش الكرمات مرة واحدة بعد العقد مباشرة أو بعد العقد بأسبوعين. وكانت هناك فروق واضحة لاختلاف مواعيد الرش على كمية المحصول وكذلك الخصائص الطبيعية والكيميائية للحبات.

أعطت المعاملة التي تضمنت الرش مرة واحدة في بداية الإزهار بالمركب المنشط هيدلاندي فيرتكس ٣٤ بتركيز ٣ % أفضل النتائج بخصوص تقليل النسبة المئوية للحبات الصغيرة وتحسين كمية المحصول وخصائص الجودة لكرمات العنب السوبيريور.