J. Agric. Sci. Mansoura Univ., 32 (12): 10755 - 10767, 2007

A COMPARATIVE STUDY OF TWO AMENDMENTS IN THE NEWLY RECLAIMED SANDY SOILS FOR GRAPEVINES MANAGEMENT

Ahmed, M.M.M* and E. Basma M. Seleem**
*** Soils, Water and Environment Res. Inst., Agric. Center.**
**** Horticulture Res. Inst., Agric. Center, Giza, Egypt.**

ABSTRACT

Three grapevine fields with the same varieties were selected on sandy soils in Assiut Governorate. All grapevines were 5 years old. The study started in the growing season 2004 and conducted in the growing seasons 2005 and 2006 to evaluate some soil amendments which are used as a seedbed for grapevines orchards in Assiut desert and their effect on vineyard productivity, quality and the soil water relations.

The selected grapevines fields were in sandy calcareous soils; drip irrigated with underground water but differ in their seedbed amendments. One of the studied sites was amended with clay sediment and the second was amended with farmyard manure. The third site was selected to be without any amendment.

Growth parameters, yield and quality of vine varieties were significantly affected by soil amendments compared to that without it. Ruby seedless has the superiority in yield and quality in the presence of clay sediment followed by FYM as a seedbed amendment. Red Romy variety had the highest acidity value under clay sediment amendment, while Ruby seedless had the highest values of TSS. Some physical and chemical properties of the seedbed samples under study were improved.

Clay sediments were found to be more capable to retain more water compared with FYM seedbed amendment. Soils containing more content of clay seemed to have more salt accumulation compared to the soil containing FYM.

Keywords: Seedbed amendment, grapevines, Clay sediments, farmyard manure, Salt distribution, moisture distribution.

INTRODUCTION

Studies on sandy soils include means to raise their water holding capacity and fertility and to improve soil structure concentrated on the application of the amendments and fertilizers. Growers in most newly reclaimed sandy soils are used to add either clay sediments or organic materials in the seedlings holes before its transplantation. Type or rates of application depends on its value, near-adequate quantities and its cost. Seedbed preparation is one of the aspects that affects physically, chemically and biologically the soil structure (Aylmore and Sills 1982). Soil structure affects soil- water relations (Hamblin 1985) and aeration (Gupta and Larson 1982) which are determining suitability of soil for viticulture.

Ahmed (2001) reported that seedbed materials made from sugar cane industries were applied at 6 or 9 kg/hole in a sandy soil. Ragab and Mohamed (1999) amended flame seedless grapevines grown in sandy soil with filter mud or sludge or FYM.

The present study was carried out to compare two amendments (clay sediment and farmyard manure) in the newly reclaimed sandy soils in Assiut governorate for grapevine

MATERIALS AND METHODS.

Three grapevine fields were selected on the desert soils of Assiut Governorate to study the comparison of two soil amendments in this region which used as a seedbed for grapevine orchards and their effect on grapevines productivity, quality and some soil water relations. The study started in the growing season 2004; data for growing seasons 2006 and 2007 were recorded. One site lies 20 km west of Assiut city. This farm was amended with clay (Clay Sediment). The second site represents desert area in Wadi El-Assuti which is lies 20 km east of Assiut city. Farmyard Manure (FYM) was the main amendment. The third site was chosen in Assiut Experimental Research Station, Arab El-Awammer, Abnob, Assiut governorate, which established without amendment. The agricultural practices including pruning process, irrigation, fertigation and plant protection were followed in the studied sites. Fertilizer practices were applied to boost the supply of available soil nutrients to the levels required for optimum growth and fruit production. Table (1) includes some physical and chemical properties of grapevine orchard soils.

All experimental sites were irrigated using drip irrigation system. The vines were 5 years old, grown at 1.5 x 3 square meters. Two drippers per tree with 4 L / h discharge were used. The grapevine sites were irrigated using underground water. The chemical analysis of the irrigation water is presented in Table (2).

Table (1) Some physical and chemical characteristics of grapevine orchard soils.

Properties	Soil depths (cm)					
	Site 3 (S1) Unamended		Site 2 (S2) (Amended with FYM)		Site 1 (S3) (Amended with clay)	
	0-30	30-60	0-30	30-60	0-30	30-60
Texture analysis						
Clay %	5.43	6.97	3.77	2.24	1.91	2.47
Silt %	6.36	6.25	9.37	8.66	7.48	8.73
Sand %	88.21	86.78	86.86	81.10	90.61	88.80
Soil texture grade	Sandy	Sandy	Sandy	Sandy	Sandy	Sandy
pH (1:1 suspension)	8.22	8.17	8.23	8.54	8.55	8.41
EC (1:1 extract) (dSm^{-1})	2.54	3.11	3.44	4.33	1.26	1.49
$CaCO_3$ %	27.54	22.14	17.35	18.15	16.27	15.42
Available K (meq/100g soil)	0.51	0.43	0.48	0.50	0.58	0.60
$NaHCO_3$ extractable P (ppm)	7.22	6.58	7.12	5.69	4.88	6.25
Total N (%)	0.041	0.032	0.013	0.006	0.013	0.006

Table (2) Chemical analysis of irrigation water used in vineyard sites

Site	pH	EC (1:1)		Soluble Cations Meq/L				Soluble anions Meq/L		
		dSm^{-1}	ppm	K^+	Na^+	Ca^{++}	Mg^{++}	CO^{3-}	HCO^{3-}	Cl^-
S1	7.43	1.25	800	0.22	5.21	3.11	2.15	0.52	3.21	87.5
S2	7.12	1.86	1190.	0.15	8.38	4.31	3.42	0.88	3.04	13.5
S3	8.13	1.91	1222	0.20	10.6	3.84	3.36	1.04	2.86	13.0

Table (3) Some physical and chemical properties of the used seedbed amendments

Type of treatments	pH (1:2.5)	EC (1:2.5) dSm^{-1}	Total Macronutrient %			Available Macronutrient ppm			OM
			N	P	K	N	P	K	
Clay Sediment (CS)	7.89	7.13	0.02	0.03	0.12	53	12	45	0.48
Farmyard Manure (FYM)	5.20	6.34	0.65	0.51	0.10	201	130	311	14.0

Composite soil samples for each replicate (0-60 cm) in both seasons were collected to determinate the total-nitrogen, available phosphorous and exchangeable-potassium. The collected data for nutrients status in the different depths was statistically analyzed using MSTAT computer program as described by Freed et al (1987).

On summer season 2006, soil samples were collected. It was taken vertically at 20 cm depth up 60 cm and horizontally at 20 cm intervals apart from the dripper lateral line to a distance of 80 cm. This 20 x 20 cm grid were appropriately prepared and analyzed. Electric conductivity (EC 1:1) and moister % were measured. The means of the obtained results of the studied three sites were presented as counter lines using a computer program (Golden Software, 2000).

Methods of analysis:

Soil pH in 1:1 (soil: water) suspension, total soluble salts, soluble cations, soluble anions, mechanical analysis and Cation Exchange Capacity (CEC) were determined according to (Jackson, 1958). Total nitrogen was determined using the macro Kjeldahl method (Black, 1965). Available phosphorus was extracted using the Olsen method and Exchangeable potassium were determined according to the methods described by Jackson (1958).

Yield and quality measurements were undertaken on the grapevine at harvest in summer season 2005 and 2006. These measurements included: Yield per tree; cluster number and weight / vine and the weight of 50 berries from each replicate and barrey diameter were determined at harvest time. Acidity and total soluble solids (TSS) as percentage, was determined by a hand refract meter using 50 berries from each replicate. Total Soluble Solids (TSS %) using hand reflectometer and Acidity (%) in Juice were determined as outlined in A.O.A.C (1995)

All measurements were statistically analyzed in a split split plot design with five replications. Treatment means were compared using LSD at 5% level.

RESULTS AND DISCUSIONS

1- Effect of seedbed amendments and vine varieties on growth parameters, yield and quality.

Table (4) illustrated that Cluster No., Cluster weight (g) / vine, and vine yield (Ton/fed.) of grapevine varieties in both summer seasons were significantly affected by seedbed amendments. Utilization of both FYM and clay sediment as seedbed amendment significantly affected all parameters under study compared to the treatment without amendments. The increase of vine yield in season 2005 due to amending with FYM and clay sediment compared to the unamended was 27.1 and 24.6 %, respectively. Meanwhile the increase in the second recorded season 2006 was 40.4 and 31.2 respectively. This is explained on the basis that these amendments affect physical, chemical and biological properties of the soil. These results are in agreement with what have been reported by (Aylmore and Sills 1982; Gupta and Larson 1982; Hamblin 1985; and Ahmed, 2001).

Concerning the main effect of vine varieties, Data shows that Ruby seedless was superior in all parameters under study in comparison to the other varieties.

Table (4) Main effect of seedbed amendment and grapevines varieties on Yield and some growth parameters of vine.

Treatments	Cluster No./ vine		Cluster weight (g)		Grapevines Yield Ton/fed.	
	Season					
	2005	2006	2005	2006	2005	2006
Seedbed amendment						
Unamended	21.2	24.7	243.3	268.60	4.68	5.82
FYM	24.3	28.4	279.1	320.47	5.95	8.17
Clay	23.8	27.8	269.3	305.27	5.83	7.67
F.value	**	**	**	**	**	**
$LSD_{0.05}$	1.61	1.62	21.08	16.84	0.48	0.46
Varieties						
Ruby Seedless	24.6	28.1	307.8	337.7	6.91	8.39
Flam Seedless	21.6	25.7	242.3	278.4	4.61	6.47
Red Romy	22.8	27.1	241.5	278.3	4.95	6.30
F.value	**	*	**	**	**	**
$LSD_{0.05}$	1.61	1.62	21.08	16.84	0.480	0.46

Regarding the main effect of treatments on grapevine quality, results in Table (5) show that 25-barries weight (g) and barry diameter (mm) in both seasons were highly significantly affected by using the seedbed amendments. This result might be attributed to the beneficial effect of these amendments which have positive residual effect after several years of application as reported by Ahmed (2001).

In the same time, vine Juice Acidity % was negatively affect by amendments, whereas Total Soluble Solids (TSS %) was not significantly affected.

Table (5) Main effect of seedbed amendment and grapevines varieties on grapevine quality

Treatment	25-barries weight (g)		Barry diameter (mm)		Acidity %		TSS %	
	Season							
	2005	2006	2005	2006	2005	2006	2005	2006
Seedbed amendment								
Unamended	58.1	59.0	15.8	17.4	1.39	1.35	17.9	18.3
FYM	73.2	86.3	19.1	19.7	0.97	1.00	18.1	18.3
Clay	77.1	90.3	18.9	18.9	0.93	0.94	18.1	18.3
F.value	**	**	**	**	**	**	n.s	n.s
$LSD_{0.05}$	5.19	5.40	1.11	0.89	0.14	0.14	-	-
Varieties								
Ruby Seedless	44.4	53.0	17.9	18.3	0.80	0.81	19.6	19.6
Flam Seedless	41.7	53.6	18.3	19.2	0.83	0.84	16.8	17.2
Red Romy	122.3	128.9	17.6	18.5	1.66	1.64	17.6	18.1
F.value	**	**	n.s	n.s	**	**	**	**
$LSD_{0.05}$	5.19	5.40	-	-	0.14	0.14	0.96	1.06

2-The interaction effects between seedbed amendments and varieties on grapevine growth, yield and quality.

Table (6) show that the Interaction affects between seedbed amendments and grapevine varieties in seasons 2005 and 2006. Applying soil amendments significantly increased growth and yield parameters under study in both two seasons except cluster weight in the second season compared to the untreated.

The obtained data reveal that Ruby seedless variety gave the maximum value of all parameters under study especially in the presence of clay sediment as seedbed amendment.

The data further show that the seedbed amendments could be arranged based upon their effect on increasing growth and yield of Ruby seedless variety in the following descending order: clay sediment followed by farmyard manure. These results could possibly be due to increasing the available nutrients and soil ability to store nutrients increasing the soil cation exchange capacity (CEC). The disadvantages of a low CEC obviously include the limited availability of mineral nutrients to the plant and the soil's inefficient ability to hold applied nutrients. Similar results were reported by Zimmer (2006) who noted that the more clay and humus a soil has, the greater its ability to store nutrients

Table (6) Interaction effect of Seedbed amendment and Varieties on Yield and some growth parameters of vine.

Treatments	Cluster No./ vine		Cluster weight (g)		Yield Ton/fed	
	Season					
	2005	2006	2005	2006	2005	2006
W X V1	22.2	25.20	295.0	315.0	5.91	6.70
W X V2	19.4	22.80	224.0	247.2	4.00	5.07
W X V3	22.0	26.00	210.8	243.6	4.15	5.69
FYM X V1	24.6	28.40	301.4	345.6	6.69	8.80
FYM X V2	22.8	27.40	280.0	312.0	5.34	7.68
FYM X V3	25.4	29.40	255.8	303.8	5.83	8.04
Clay X V1	27.6	30.60	327.0	352.4	8.13	9.67
Clay X V2	22.6	26.80	222.8	276.0	4.50	6.66
Clay X V3	21.2	26.00	258.0	287.4	4.87	6.67
F.value	**	*	*	n.s	**	**
$LSD_{0.05}$	2.79	2.81	36.52	-	0.83	0.80

W = without amendment
V1 = Ruby Seedless **V 2 = Flam Seedless** **V3 = Red Romy**
FYM = Farmyard manure **Clay = Clay sediment**

Table (7) Interaction effect of seedbed amendment and Grapevines varieties on grapevines quality.

Treatments	25-barries weight (g)		Barry diameter (mm)		Acidity		TSS %y %	
	Season							
	2005	2006	2005	2006	2005	2006	2005	2006
W X V1	41.8	41.6	15.8	17.0	0.84	0.81	18.8	18.6
W X V2	41.2	93.4	16.4	18.0	0.92	0.90	16.4	17.4
W X V3	91.2	57.0	15.4	17.2	2.40	2.34	18.6	19.0
FYM X V1	45.4	57.8	19.4	19.2	0.82	0.87	19.6	19.8
FYM X V2	39.2	144.0	19.2	20.4	0.88	0.92	17.0	16.8
FYM X V3	135.0	60.0	18.6	19.6	1.22	1.22	17.6	18.2
Clay X V1	46.0	61.4	18.6	18.6	0.74	0.76	20.4	20.4
Clay X V2	44.8	149.4	19.2	19.2	0.70	0.71	17.2	17.4
Clay X V3	140.6	41.6	18.8	18.8	1.36	1.36	16.6	17.0
F.value	**	**	n.s	n.s	**	**	*	n.s
$LSD_{0.05}$	9.00	9.35	-	-	0.25	0.24	1.66	-

3-Some soil physical and chemical properties of seedbed profile as affected by seedbed amendments.

Data presented in table (8) show pH values, OM (%), $CaCO_3$ (%). Cation Exchange Capacity (CEC), total N, available P and exchangeable

K in the seedbed samples in two seasons as affected by the different types of seedbed amendments.

Table (8) Some physical and chemical properties of seedbed samples as affected by seedbed amendments.

Soil amendments	pH		OM %		$CaCO_3$ %		Cation Exchange Capacity CEC (meq/100g soil)		Total-N %		Available- P ppm		Exchangeable- K meq/100g soil	
	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006
Unamended	8.11	8.05	0.10	0.09	16.4	15.8	4.50	3.9	0.036	0.031	10.6	8.8	0.257	0.373
FYM	7.84	7.79	0.31	0.20	6.4	6.8	10.61	10.5	0.062	0.053	16.3	12.1	0.333	0.556
Clay	7.73	7.66	0.30	0.20	6.4	6.7	8.25	8.27	0.072	0.067	17.2	12.6	0.360	0.695
F.value	*	*	*	*	*	*	*	*	*	*	*	*	*	*
$LSD_{0.05}$	0.08	0.07	0.01	0.007	0.5	0.5	0.05	0.03	0.005	0.006	1.3	1.5	0.04	0.05

Each value represents the mean of 9 replicates.

Analysis of the seedbed samples shows great deference between the amended seedbeds and the unamended treatment. In the amended seedbed samples, values of soil pH were lower and the organic matter was slightly higher than that in the unamended seedbed. The most important results of these analyses were that obtained for $CaCO_3$, Cation Exchange Capacity (CEC) and available P. The unamended seedbed was found to have 15.8 to 16.4 % $CaCO_3$, CEC of 3.9-4.5 meq/100g and 8.8 to 10.6 ppm available P. In the amended seedbed samples the $CaCO_3$ content was 6.4 to 6.8 % (Farmyard manure) and 6.4 to 6.7 % (Clay sediment), while the Cation Exchange Capacity was 10.50 to 10.61 and 8.25 to 8.27 meq/100g respectively. Available P was 12.1 to 16.3 ppm in the amended seedbed samples treated by farmyard manure and 12.6 to 17.2 ppm in that treated by the clay sediment.

The low content of $CaCO_3$ in the seedbed beside the high values of CEC should be important in grape production. The observed levels of P in the studied seedbed samples in relative to that unamended treatment show the importance of amended application to the sandy calcareous soils cultivated with grapevine. A value of 20 to 50 ppm available P is generally considered adequate for grape vine production.

Results of the interaction effect of the applied amendments and grapevine varieties on quality are presented in Table (7). Data given show that 25-barries weight (g), acidity, and total solids percentage (TSS %) in grape juice were significantly affected by the kind of seedbed amendments. In the contrary of that barry diameter (mm) was not affected with soil amendments. Red Ruby variety gave maximum TSS value in the 1st season.

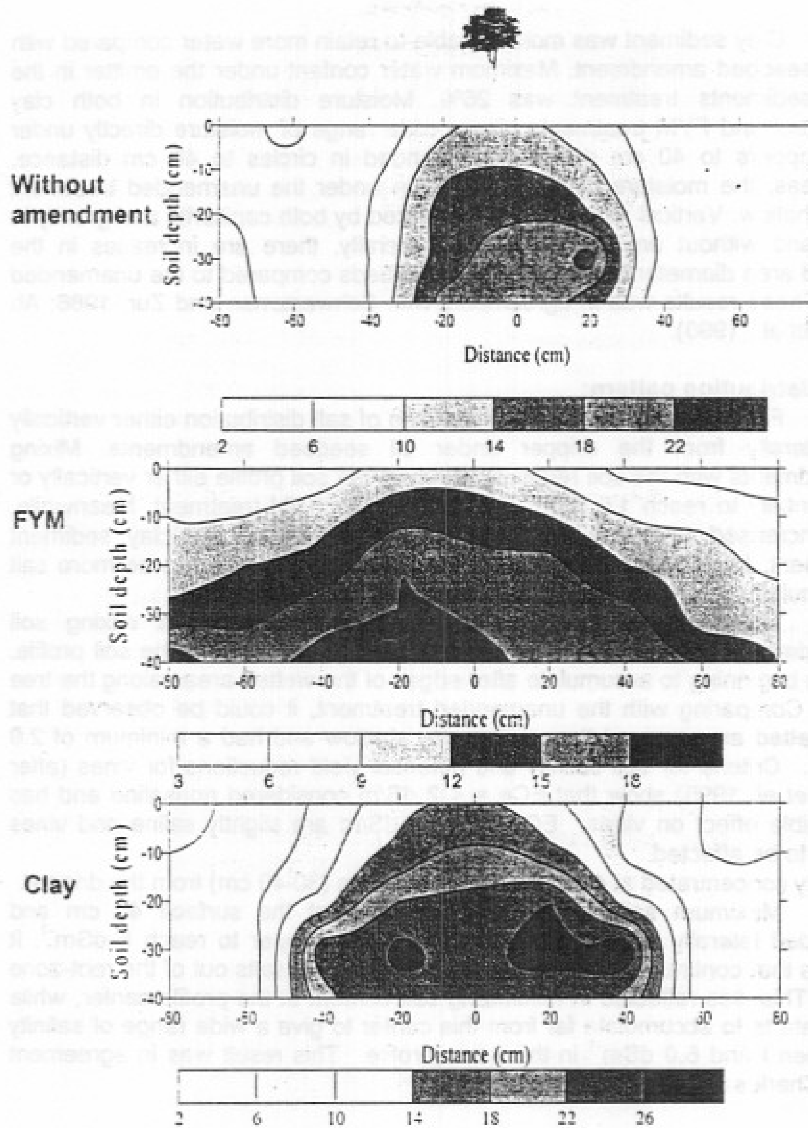
In summery, it may be stated that Ruby seedless variety has the superiority in yield and quality in the presence of clay sediment followed by FYM as seedbed amendments.

Moisture distribution pattern:

The effect of soil water storage and availability on vine performance is a topic that receives a great of attention in the viticultural industry and in literature. One obvious soil constraint to vine performance in the newly reclaimed sandy soils is the lack of stored soil water. The utilization of soil amendments can be increase the stored water. Distribution of water in the soil has a strong influence on root distribution. Water availability affects yield, fruit and grape quality both directly and indirectly as reported by McCarthy et al. (1988).

Moisture distribution in the soil profile underneath the drippers was followed up either vertically or horizontally. This was found to be necessary in order to rationalize the use of irrigation water in the dessert areas with the best utilization efficiency (Bresler *et al*., 1982).

Fig (1) illustrates the patterns of water distribution either laterally or vertically as affected by seedbed materials. Examination of these data revealed that moisture was forming a saturated zone directly under the drippers and extended in circles in all directions. This pattern was occurred regardless the type of seedbed materials, but with some changes in the magnitude and the values of soil water contents.



Soil moisture color scale

Fig (1): Soil moisture distribution pattern under drip irrigation system as affected by the investigated amendments.

Clay sediment was more capable to retain more water compared with FYM seedbed amendment. Maximum water content under the emitter in the clay sediments treatment was 26%. Moisture distribution in both clay sediment and FYM treatments give a wide range of moisture directly under the drippers to 40 cm depth and extended in circles to 40 cm distance. Whereas, the moisture distribution pattern under the unamended treatment was shallow. Vertical movement is influenced by both capillarity and gravity in the sand without any amendments. Generally, there are increases in the wetted area diameter of the amended seedbeds compared to the unamended one. These results was in agreements with Schwartzman and Zur, 1986; Ah Koon *et al.*, 1990).

Salt distribution pattern:

Figure (2) indicates tne contour line of salt distribution either vertically or laterally from the dripper under all seedbed amendments. Mixing amendments with the soil reduces salinity in the soil profile either vertically or horizontally to reach 1.0 dSm^{-1} at 40 cm under FYM treatment. Meanwhile, salt increased to reach 2.0 dSm^{-1} at 60 cm under the clay sediment treatment. In addition, the soil containing more clay seemed to be more salt accumulation compared to the soil containing FYM.

This could be explained in view of the fact that mixing soil amendments distributes its capacity in retaining water allover the soil profile. Salt is beginning to accumulate after edges of the wetted areas along the tree rows. Comparing with the unamended treatment, it could be observed that the wetted area arcund the emitter was shallow and had a minimum of 2.0 dSm^{-1}. Criteria for soil salinity and potential yield reductions for vines (after Cass *et al.* 1995) show that ECe = < 2 dS/m considered nonsaline and has negligible effect on vines. ECe = 2 – 4 dS/m are slightly saline and vines begin to be affected.

Salinity concentrated at 40 cm in the deep layers (30-40 cm) from the dripper.

Maximum salinity reached 5.0 dSm^{-1} at the surface 40 cm and extended laterally up to 60 cm away from the dripper to reach 6 dSm^{-1}. It seems that continuous irrigation helps in moving the salts out of the root-zone area. This was reflected in minimizing salt content at the profile center, while salts starts to accumulate far from this center to give a wide range of salinity between I and 6.0 dSm^{-1} in the same profile. This result was in agreement with Charles and Isbell (2003)

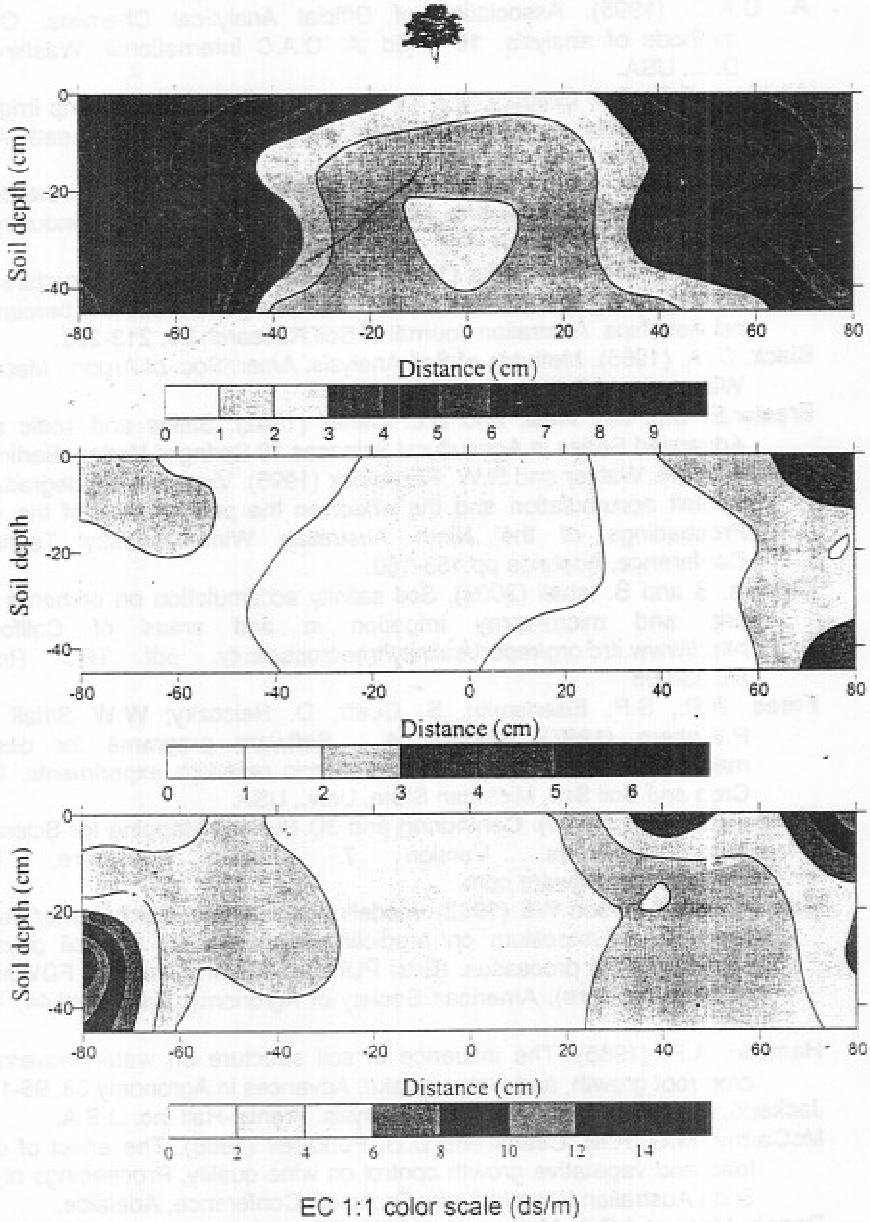


Fig (2): Salt distribution pattern under drip irrigation system as affected by the investigated amendments.

REFERENCES

A. O.A.C. (1995). Association of Official Analytical Chemists. Official methods of analysis, 16 th Ed .A. O.A.C International, Washington, D.C., USA.

Ah Koon, P.D., P.J. Gregory, and J.P. Bell. (1990). Influence of drip irrigation emission rate on distribution and drainage of water beneath Agric. Water Manage. 17: 267–282.

Ahmed, M. M. M. (2001). Response of some fruit trees grown on the desert soils of Wadi El-Assiuti to fertilization using certain sugar industry by-products. Ph.D. Thesis, Fac. Agric. Assiut Univ., Egypt.

Aylmore, L.A.G. and I.D. Sills (1982). Characterization of soil structure and stability using modulus of rupture - exchangeable sodium percentage relationships. Australian Journal of Soil Research 20, 213-222.

Black, C. A. (1965). Methods of Soil Analysis. Amer. Soc. of Argon., Madison, Wisconsin, U.S.A.

Bresler,E. B.L. Mc. Neal, and D.L. Carter (1982). Saline and sodic soils. Advanced Series in Agricultural Sciences 10 Springer-Verlag, Berlin.

Cass, A., R.R. Walker and R.W. Fitzpatrick (1995). Vineyard soil degradation by salt accumulation and the effect on the performance of the vine. Proceedings of the Ninth Australian Wine Industry Technical Conference, Adelaide pp.153-160.

Charles, B and B. Isbell (2003). Soil salinity accumulation on orchards with drip and micro-spray irrigation in arid areas of California. http://www.itrc.org/report/salinity/treecropsalinity. pdf TRC Report No.03-005

Freed, R.P.,. S.P. Eisensmith, S. Goelz, D. Reicozky; W.W Smail and P.Woberg (1987). MSTAT. A. Software programe for design, management and analysis of agronomic research experiments, Dep. Crop and Soil Sci., Michigan State, Univ., USA.

Golden Software, (2000). Contouring and 3D Surface Mapping for Scientists and Engineers. Version 7. Golden Software, Inc., www.goldensoftware.com.

Gupta SC and Larson WE (1982). Modeling soil mechanical behavior during tillage, In: Symposium on predicting tillage effects on soil physical properties and processes. (Eds: PUnger, DMVan Doren Jr, FDWhisler and ELSkidmore), American Society of Agronomy, Spec.Publ.44, 151-178

Hamblin, A.P. (1985). The influence of soil structure on water movement, crop root growth, and water uptake. Advances in Agronomy 38, 95-158.

Jackson, M.L. (1958). Soil Chemical Analysis. Prentic-Hall Inc. U.S.A.

McCarthy, M.G, R.M. Cirami and D.G. Furkaliev (1988). The effect of crop load and vegetative growth control on wine quality. Proceedings of the Sixth Australian Wine Industry Technical Conference, Adelaide,

Ragab, M..A. and G.A. Mohamed, (1999). Effect of some organic and mineral nitrogen fertilization treatments on flame seedless grapevines. Minia Agric. Res. & Dev. Vol. (19): 27-43

Zimmer, Gary. (2006). Soil Basics: How It Works. Acres U.S.A. www.answers.com/topic/CNO-cycle

دراسه لمقارنه نوعان من محسنات التربه عند استخدامهما كمهد لشتلات العنب في الاراضي الرمليه حديثة الاستصلاح

محمد محمود محمد احمد[1] و باسمه محمد سليم[2]
١- معهد الاراضي و المياه و البيئه
٢- معهد بحوث البساتين – قسم بحوث العنب

تم اختيار ثلاثه مزارع للعنب بمحافظه اسيوط بها نفس الاصناف و عمرها ٥ سنوات في اراضي رمليه جيريه تروى بنظام الرى بالتنقيط من المياه الجوفيه و تختلف فيما بينها في نوع مهد الشتلة المضافة في الجور ففي احدها وضع الطين وفي الاخرى وضع السماد البلدى و الثالثه تم اختيارها في التربه بدون مهد كما هي– و بدات الدراسه في موسم ٢٠٠٤ و سجلت البيانات الخاصة بالنمو والمحصول والجودة لموسمي النمو ٢٠٠٥ و ٢٠٠٦ و ذلك لدراسه تاثير بعض محسنات التربه كمهد للشتلات في بساتين العنب في صحراء اسيوط على الانتاجيه و الجوده و بعض العلاقات المائيه .

و كانت النتائج كالتالي :

١- تاثرت كل عوامل النمو و المحصول و الجوده لاصناف العنب المختلفه بمحسنات التربه المستخدمة كمهد للشتلات بالمقارنه بتلك التي لم تستخدم محسنات التربه .

٢- تفوق صنف الروبي سيدليس في المحصول و الجوده بينما ازدادت قيمة الحموضة في العصير في صنف العنب الرومي الاحمر في وجود الطين كمهد للشتلات عنه في وجود السماد البلدى .

٣- تحسنت بعض صفات مهد الشتلات من الناحية الفيزيائية والكيمائية.

٤- كان لوجود الطين كمهد للشتلات قدره عاليه على الاحتفاظ بالماء بينما زاد قدرتها على تراكم الاملاح بالمقارنه بالسماد البلدى .