ESTIMATION OF COSTS AND RETURNFOR THE ORGANIC GARLIC IN NEWLY CULTIVATED SOIL

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Abstract

A preliminary study focuses on economic analysis of organic garlic production in new cultivated soil under El-Minia Governorate conditions. Data were collected from growing 21 garlic genotypes under four compost levels. The obtained results showed that the total estimated cost of production for one feddan (4200 m^2) of organic garlic was ranged from 9382.25 to 12641.5 L.E for fresh yield and from 9882.25 to 13141.5 L.E for cured yield. In this study, the total gross for the production of fresh yield ranged from 0.9803 to 5.036 ton/feddan. For cured yield, it ranged from 0.633 to 3.445 ton/feddan. In conclusion, colored cultivar "Egaseed 1" or "El-Wady" white clone were the highest profitable genotypes under the condition of the present study.

Keywords: *Allium sativum* L., Genotypes, Compost, Organic production, Economics**.**

INTRODUCTION

Several academic institutions, researchers, nonprofit agencies and farmers have created budgets on a variety of vegetable crops. The University of California at Davis (2008) has perhaps the greatest number of such studies but these may be of limited value to growers outside of California, USA. However, an understanding of production costs is critical for decision makers. These types of analyses help farm managers understand and identify profitable enterprises (Frank, 1997; Toaima *et al*., 2001; Besheit *et al*., 2002; Estes *et al*., 2003; Conner and Rangarajan, 2009; Dahshan, 2013 and Abd El-Kareem, 2015). They concluded that many factors, such as crop rotation, soil type, marketing and production costs are vital information for production and pricing decisions.

The critical part of crop budget was the calculation of costs related to labor, field management, pesticides and fertilization. Pepper production was found to be a profitable enterprise considering the profit realized by farmers in the study area as reported by Sanusi and Ayinde (2013).

Hasan *et al.* (2012) estimated the benefit cost ratio for garlic (1.85) and showed that garlic cultivation was profitable. However, garlic cultivation requires a high level of working capital and human labor (Meena *et al.*, 2013).

Growth in organic food sales was 53% in the United states between 2005 and 2008 (Richards, 2011). Increased demand is motivating worldwide. More benefits can be gained from organic agriculture. These benefits due to a reduction of the use of synthetic chemical and fertilizers, which can reduce toxic chemical exposure and possibly reduce input costs. Also, the possible price premiums and growing value added markets are very important elements in the stability of organic products (Post and Schahczenski, 2012). Thus, improving the quality and quantity of organic products production and increased yield productivity are very important elements. Cost information will help the organic farmers to face marketing risks of organic garlic. The present investigation was carried out to estimate the organic garlic production cost and return under cultivated the new soil conditions to attract more organic garlic investors.

MATERIALS AND METHODS

The present study was carried out during the three successive winter seasons of 2011/2012/, 2012/2013 and 2013/2014 at the Experimental Farm of Central Laboratory of Organic Agriculture (CLOA) at Village 8, El- Minia, Egypt in new reclaimed soil.

The rate of application was based on N equivalent dose (120 and 60 kg total N per feddan).

The experimental design was split plot design with three replications. Commercial plant compost "El-Nil" and Plant- animal compost "El-Obour" each at two rates were distributed in the four main plots.

Compost El–Nil was applied at the rate of 10.666 and 5.333 tons/fed in the first season and 9.740 and 4.870 tons per feddan in the second one whereas compost El-Obour at the rate of 13.698 and 6.849 tons per feddan in the first season and 16.666 and 8.333 tons/feddan in the second season, respectively. Samples of ripe plant compost and plant+animal compost were subjected to chemical analysis and the results are presented in Table (1).

Table 1. The physical and chemical properties of the organic manure

Parameter	El-Nil compost		El- Obour compost	
	First season	Second season	First season	Second season
Weight of m3 dry, kg	600	620	700	700
Moisture, %	25	23	27	28
Organic matter, %	30	32	28	27
Organic Carbon, %	23	25	18	18
pH	7.1	7.2	7.4	7.5
EC (ds/m)	3	3.4	3.5	3.5
C/N ratio	1:15.5	1:16	1:17	1:17
Total N, %	1.5	1.6	1.2	1
Total P, %	0.8	0.85	0.65	0.6
Total K, %	1	1	0.85	0.80
Total Fe (ppm)	1500-2000	1500-2000	1000-1800	1000-1800
Total Mn (ppm)	100-150	100-150	80-120	80-120
Total Cu (ppm)	160-240	160-240	100-160	100-160
Total Zn (ppm)	40-80	40-80	30-50	30-50
Weed seed	Nothing	Nothing	Nothing	Nothing
Nematodes	Nothing	Nothing	Nothing	Nothing
Parasites	Nothing	Nothing	Nothing	Nothing

The 21 garlic genotypes were randomly arranged in the sub-plots. The sources and colors of the tested garlic genotypes were listed in (Table 2). No synthetic fertilizers and pesticides were used.

Uncultivated soil received the estimated amount of compost after ploughing and harrowing to pulverize the soil before making the ridges units. Main plots occupied the four compost treatments and garlic genotypes were randomly distributed in the subplots. Each main plot had12 rows and each plot area was 7.20 m x 33 m. Spacing was 10 cm between cloves within the row and 60 cm between rows. Garlic cloves were hand planted on both sides of each ridge on 10th and 15th of October 2012 and 2013, respectively. However the seed-cloves of all genotypes were produced organically in the previous season using plant compost equivalent to 120 kg total N/feddan as the only source of nutrients in 2011/2012.

In each replicate, the studied treatments were the product of 4 compost levels x 21 garlic genotypes = 84 treatments. Each treatment was replicated three times and planted in two rows, and each row contained 60 cloves.

Cost of organic garlic production was estimated and compared among the 84 treatments which are the combinations among 21 garlic genotypes and four levels of compost. These treatments were distributed in split-plot design with three replications. All input costs were taken into consideration for computing the production cost which include: compost (plant compost and plant-animal compost), seed, soil preparations, planting, hoeing, irrigation, harvesting and rent values. The local and exportable garlic prices per kilogram were considered to be 3.5-5.6 L.E for

white and 4.5-6.6 L.E for coloured type (Dr. Osman, Dr. Abdel-Moity and Mr. Hegazy Personal Communication). Economic analyses were performed to estimate returns and profitability using the following formula according to O'Dell (1984) and Hanque *et al*. (2013) with some modification:

* Gross= Total yield x Price

*Net return (NR) = Gross – Total cost

* Profitability, %= (NR/TC)*100

Table 2. Source, skin colour and bulb type of the tested garlic genotypes

Coloured genotypes	**Source**
Aiat clone 1 *	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
BaniGhany	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Clone 21	The Agricultural Egyptian Company for Seed Production, Egypt.
Clone 22	The Agricultural Egyptian Company for Seed Production, Egypt.
Egaseed 1	The Agricultural Egyptian Company for Seed Production, Egypt.
Egaseed 2	The Agricultural Egyptian Company for Seed Production, Egypt.
Grower's Clone	Department of Horticulture, Faculty of Agriculture, Minia University, Minia, Egypt.
Salaqus-3	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Sids 40 Aiat	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Sids 40 Station	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
White genotypes	**Source**
Clone 5	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Clone 10	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Clone 18	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Clone 22	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Clone 24	The Agricultural Egyptian Company for Seed Production, Egypt.
Clone 25	The Agricultural Egyptian Company for Seed Production, Egypt.
Egaseed clone	The Agricultural Egyptian Company for Seed Production, Egypt.
Egyptian	Department of Horticulture, Faculty of Agriculture, Minia University, Minia, Egypt.
Elwady	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Owainat	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.
Salaqus-3	Sids Horticultural Research Station, Agricultural Research Center, Giza, Egypt.

*All genotypes are soft-neck except Egaseed 2 (hard-neck) and Clone 24 (semi hard-neck)

RESULTS AND DISCUSSION

Estimation of cost and return for organic garlic production in the study area

The estimated costs and returns for the production of garlic are shown in Tables (3, 4and 5) and also in Figures 1 and 2. Production costs involved costs of field operations, labor, materials, harvesting and packing as well as land rent. Based on the seed-cloves price for each genotype, the total estimated cost of production per one feddan of organic garlic was ranged from 9382.25 to 12641.5 L.E for fresh yield and from 9882.25 to 13141.5 L.E for cured yield. Seed clovescost are vary among the tested genotypes. However, the price per kilogram of white garlic type was lower than that of coloured one. The cost of plant-animal compost comprised the highest input category followed by labour, land rent and seed cost in descending order. Tables (4 and 5) showed the total gross for the production of fresh yield of organic garlic ranged from 4411.5 L.E for Aiat clone 1 when received 60 kg total N rate from plant-animal compost to 21082.5 L.E for harvesting cultivar Egaseed 1 from plots received 120 kg total N /Feddan level.

The highest net return for the interaction treatments was obtained by Egaseed 1 with 120 kg total N/Feddan from plant-animal source. Twelve out of 42 plant compost treatments and 13 out of 42 plant-animal compost treatments had negative sign for the net return parameter. These results suggested that there is a need to a better understand of the role of choosing the adaptable cultivar for the type of production. Although, the organic garlic grower incurred a total cost of 12141.5 L.E the grower could earn a profitability rate of 73.64% (Table 4).

Regarding the cured yield, the estimated gross, net return and profitability parameters are shown in (Table 5). Interesting results were obtained with the assumption proposed that cured yield will be transferred to foreign markets. However, 11 genotypes had negative values under 60 kg total N/Feddan from plant-animal compost, while only 6ones had negative sign at 120 kg total N /Feddan from the same source. On the other side, 9 and 6 genotypes had negative sign at 120 and 60 kg total N/Feddan from plant compost, respectively.

In conclusion, this study showed that organic garlic production is a profitable enterprise when the coloured cultivar "Egaseed 1" or "El-Wady" white clone are used and fertilized with 120 kg total N/Feddan from either type of composts and further study should be done to maximize the yield per unit area through using better agricultural practices. In general improving the yield quality and quantity will lowered the economic and marketing risks of organic garlic production and will help to extend the organic garlic growing areas.

Table 3. Total cost for fresh yield of all garlic genotypes fertilized with different compost treatments.

Item / Genotypes	Compost cost				Seed cost[1]	Soil preparations	Planting	Hoeing	Irrigation	Harvesting	Rent value	Total cost (TC) L.E/Fed.			
	Plant compost		Plant-animal compost									Plant compost		Plant-animal compost	
	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed								120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed
Aiat" clone 1 "	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Bani Ghany	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Clone 21	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Clone 22 C	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Egaseed 1	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Egaseed 2	3162.5	1581.25	3215.5	1607.75	2750	435	900	2250	675	750	1666	12588.5	11007.25	12641.5	11033.75
Grower's Clone	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Salaqus-3 C	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Sids 40 "Aiat"	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Sids 40 "Station"	3162.5	1581.25	3215.5	1607.75	2250	435	900	2250	675	750	1666	12088.5	10507.25	12141.5	10533.75
Clone 5	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Clone 10	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Clone 18	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Clone 22 W	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Clone 24	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Clone 25	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Egaseed clone	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Egyptian	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
El-Wady	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Owainat	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75
Salaqus-3 W	3162.5	1581.25	3215.5	1607.75	1125	435	900	2250	675	750	1666	10963.5	9382.25	11016.5	9408.75

All numbers are in Egyptian Pounds

[1]= Seed cost estimated based on average seed price 4.5 L.E per Kg for coloured genotypes and 3.5 L.E for white genotypes

Table 4. Economic feasibility for fresh yield of all garlic genotypes fertilized with different compost treatments

Item / Genotypes	Total fresh yield Ton/Fed.				Gross as organic (L.E/Fed.)[1]				Net return (NR)[2], L.E				Grand mean across compost Net return, L.E	Profitability, % (NR/TC)*100			
	Plant compost		Plant-animal compost		Plant compost		Plant-animal compost		Plant compost		Plant-animal compost			Plant compost		Plant-animal compost	
	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed		120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed
Aiat" clone 1	3.004	2.018	1.901	0.9803	13518	9081	8554.5	4411.35	1429.5	-1426.25	-3587	-6122.4	**-2426.54**	11.83	-13.57	-29.54	-58.12
Bani Ghany	3.126	2.592	3.273	1.737	14067	11664	14728.5	7816.5	1978.5	1156.75	2587	-2717.25	**751.25**	16.37	11.01	21.31	-25.80
Clone 21	3.983	2.105	3.854	2.559	17923.5	9472.5	17343	11515.5	5835	-1034.75	5201.5	981.75	**2745.88**	48.27	-9.85	42.84	9.32
Clone 22 C	3.453	3.797	3.829	2.442	15538.5	17086.5	17230.5	10989	3450	6579.25	5089	455.25	**3893.38**	28.54	62.62	41.91	4.32
Egaseed 1	4.16	3.063	4.685	2.519	18720	13783.5	21082.5	11335.5	6631.5	3276.25	8941	801.75	**4912.63**	54.86	31.18	73.64	7.61
Egaseed 2	2.927	2.792	3.369	2.451	13171.5	12564	15160.5	11029.5	583	1556.75	2519	-4.25	**1163.63**	4.63	14.14	19.93	-0.04
Grower's Clone	2.438	2.674	3.363	1.801	10971	12033	15133.5	8104.5	-1117.5	1525.75	2992	-2429.25	**242.75**	-9.24	14.52	24.64	-23.06
Salaqus-3 C	3.719	2.682	3.328	2.515	16735.5	12069	14976	11317.5	4647	1561.75	2834.5	783.75	**2456.75**	38.44	14.86	23.35	7.44
Sids 40 "Aiat"	2.714	2.51	4.081	2.474	12213	11295	18364.5	11133	124.5	787.75	6223	599.25	**1933.63**	1.03	7.50	51.25	5.69
Sids 40 "Station"	3.135	3.236	2.566	1.512	14107.5	14562	11547	6804	2019	4054.75	-594.5	-3729.75	**437.38**	16.70	38.59	-4.90	-35.41
Clone 5	5.036	3.929	4.222	3.353	17626	13751.5	14777	11735.5	6662.5	4369.25	3760.5	2326.75	**4279.75**	60.77	46.57	34.14	24.73
Clone 10	2.188	2.637	3.217	1.777	7658	9229.5	11259.5	6219.5	-3305.5	-152.75	243	-3189.25	**-1601.13**	-30.15	-1.63	2.21	-33.90
Clone 18	3.118	2.543	3.345	2.801	10913	8900.5	11707.5	9803.5	-50.5	-481.75	691	394.75	**138.38**	-0.46	-5.13	6.27	4.20
Clone 22 W	2.678	3.288	3.486	2.197	9373	11508	12201	7689.5	-1590.5	2125.75	1184.5	-1719.25	**0.13**	-14.51	22.66	10.75	-18.27
Clone 24	3.448	3.513	3.896	3.252	12068	12295.5	13636	11382	1104.5	2913.25	2619.5	1973.25	**2152.63**	10.07	31.05	23.78	20.97
Clone 25	3.762	3.806	3.498	2.046	13167	13321	12243	7161	2203.5	3938.75	1226.5	-2247.75	**1280.25**	20.10	41.98	11.13	-23.89
Egaseed clone	3.941	3.189	3.21	2.793	13793.5	11161.5	11235	9775.5	2830	1779.25	218.5	366.75	**1298.63**	25.81	18.96	1.98	3.90
Egyptian	3.412	4.247	4.109	2.986	11942	14864.5	14381.5	10451	978.5	5482.25	3365	1042.25	**2717.00**	8.93	58.43	30.55	11.08
El-Wady	4.27	4.459	4.897	4.357	14945	15606.5	17139.5	15249.5	3981.5	6224.25	6123	5840.75	**5542.38**	36.32	66.34	55.58	62.08
Owainat	2.664	2.348	2.479	1.886	9324	8218	8676.5	6601	-1639.5	-1164.25	-2340	-2807.75	**-1987.88**	-14.95	-12.41	-21.24	-29.84
Salaqus-3 W	2.727	2.642	2.776	2.712	9544.5	9247	9716	9492	-1419	-135.25	-1300.5	83.25	**-692.88**	-12.94	-1.44	-11.81	0.88
Average	**3.33**	**3.05**	**3.49**	**2.44**	**13205.69**	**11986.38**	**13861.57**	**9524.59**	**1682.67**	**2044.61**	**2285.55**	**-443.69**	**1392.28**	**14.31**	**20.78**	**19.42**	**-4.10**

All numbers are in Egyptian Pounds

[1]Gross= Total yield x Price as organic 4.5 L.E per Kg for coloured genotypes and 3.5 L.E for white genotypes

2 Net return (NR) = Gross – Total cost

Table 5. Economic feasibility for cured yield of all garlic genotypes fertilized with different compost treatments

Item / Genotypes	Total cured yield Ton/Fed.				Gross as organic (L.E/Fed.)[1]				Net return (NR)[2], L.E				Grand mean across Net compost	Profitability, % (NR/TC)*100			
	Plant compost		Plant-animal compost		Plant compost		Plant-animal compost		Plant compost		Plant-animal compost			Plant compost		Plant-animal compost	
	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed		120 kg N/Fed	60 kg N/Fed	120 kg N/Fed	60 kg N/Fed
Aiat" clone 1 '	2.045	1.513	1.366	0.633	13497	9985.8	9015.6	4177.8	908.5	-1021.45	-3625.9	-6855.95	**-2648.7**	7.22	-9.28	-28.68	-62.14
Bani Ghany	2.332	1.959	2.452	1.253	15391.2	12929.4	16183.2	8269.8	2802.7	1922.15	3541.7	-2763.95	**1375.65**	22.26	17.46	28.02	-25.05
Clone 21	2.794	1.55	2.585	1.746	18440.4	10230	17061	11523.6	5851.9	-777.25	4419.5	489.85	**2496**	46.49	-7.06	34.96	4.44
Clone 22 C	2.489	2.733	2.789	1.689	16427.4	18037.8	18407.4	11147.4	3838.9	7030.55	5765.9	113.65	**4187.25**	30.50	63.87	45.61	1.03
Egaseed 1	2.948	2.231	3.445	1.766	19456.8	14724.6	22737	11655.6	6868.3	3717.35	10095.5	621.85	**5325.75**	54.56	33.77	79.86	5.64
Egaseed 2	1.881	1.851	2.198	1.496	12414.6	12216.6	14506.8	9873.6	-673.9	709.35	1365.3	-1660.15	**-64.85**	-5.15	6.16	10.39	-14.39
Grower's Clone	1.69	2.007	2.487	1.249	11154	13246.2	16414.2	8243.4	-1434.5	2238.95	3772.7	-2790.35	**446.7**	-11.40	20.34	29.84	-25.29
Salaqus-3 C	2.783	1.997	2.5	1.817	18367.8	13180.2	16500	11992.2	5779.3	2172.95	3858.5	958.45	**3192.3**	45.91	19.74	30.52	8.69
Sids 40 "Aiat"	2.11	1.859	2.655	1.727	13926	12269.4	17523	11398.2	1337.5	1262.15	4881.5	364.45	**1961.4**	10.62	11.47	38.61	3.30
Sids 40 "Station"	2.361	2.334	1.909	1.067	15582.6	15404.4	12599.4	7042.2	2994.1	4397.15	-42.1	-3991.55	**839.4**	23.78	39.95	-0.33	-36.18
Clone 5	3.067	2.481	2.65	2.45	17175.2	13893.6	14840	13720	5711.7	4011.35	3323.5	3811.25	**4214.45**	49.83	40.59	28.86	38.46
Clone 10	1.322	1.652	2.007	1.133	7403.2	9251.2	11239.2	6344.8	-4060.3	-631.05	-277.3	-3563.95	**-2133.15**	-35.42	-6.39	-2.41	-35.97
Clone 18	1.883	1.654	2.1	1.77	10544.8	9262.4	11760	9912	-918.7	-619.85	243.5	3.25	**-322.95**	-8.01	-6.27	2.11	0.03
Clone 22 W	1.627	1.95	2.088	1.338	9111.2	10920	11692.8	7492.8	-2352.3	1037.75	176.3	-2415.95	**-888.55**	-20.52	10.50	1.53	-24.38
Clone 24	2.029	2.029	2.4	1.871	11362.4	11362.4	13440	10477.6	-101.1	1480.15	1923.5	568.85	**967.85**	-0.88	14.98	16.70	5.74
Clone 25	2.288	2.465	2.128	1.285	12812.8	13804	11916.8	7196	1349.3	3921.75	400.3	-2712.75	**739.65**	11.77	39.68	3.48	-27.38
Egaseed clone	2.072	2.053	1.981	1.131	11603.2	11496.8	11093.6	6333.6	139.7	1614.55	-422.9	-3575.15	**-560.95**	1.22	16.34	-3.67	-36.08
Egyptian	2.008	2.595	2.476	1.803	11244.8	14532	13865.6	10096.8	-218.7	4649.75	2349.1	188.05	**1742.05**	-1.91	47.05	20.40	1.90
El-Wady	2.51	2.792	3.029	2.661	14056	15635.2	16962.4	14901.6	2592.5	5752.95	5445.9	4992.85	**4696.05**	22.62	58.21	47.29	50.39
Owainat	1.588	1.442	1.52	1.166	8892.8	8075.2	8512	6529.6	-2570.7	-1807.05	-3004.5	-3379.15	**-2690.35**	-22.43	-18.29	-26.09	-34.10
Salaqus-3W	1.531	1.587	1.7	1.646	8573.6	8887.2	9520	9217.6	-2889.9	-995.05	-1996.5	-691.15	**-1643.15**	-25.21	-10.07	-17.34	-6.98
Average	**2.16**	**2.03**	**2.31**	**1.56**	**13211.32**	**12349.73**	**14085.24**	**9406.96**	**1188.30**	**1907.96**	**2009.21**	**-1061.31**	**1011.04**	**9.33**	**18.23**	**16.17**	**-9.92**

All numbers are in Egyptian Pounds

[1]Gross= Total yield x Price as organic 6.6 L.E per Kg for coloured genotypes and 5.6 L.E for white genotypes

[2] Net return (NR) = Gross – Total variable cost as mentioned in Table 1 + 500 L.E for storage process

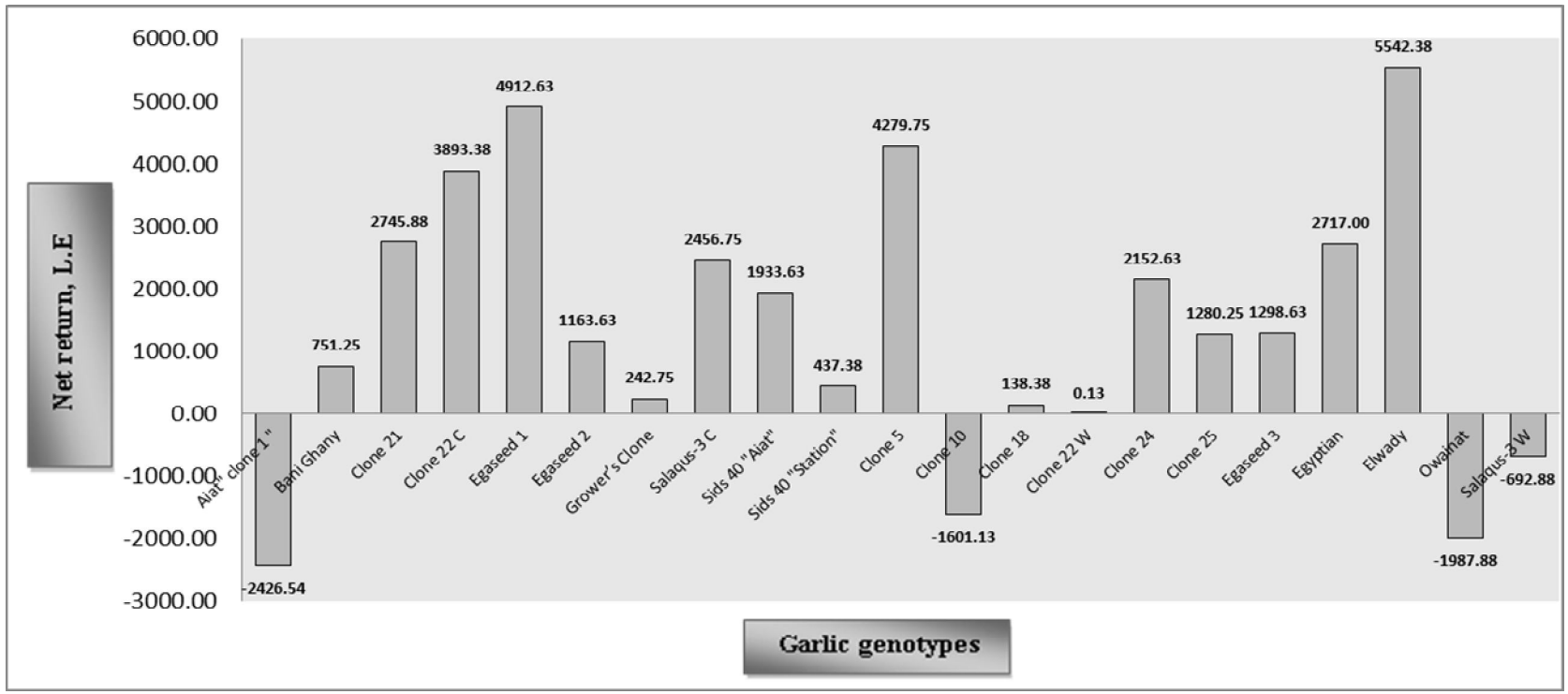

Fig. 1. Average net return of fresh garlic genotypes across the tested treatments.

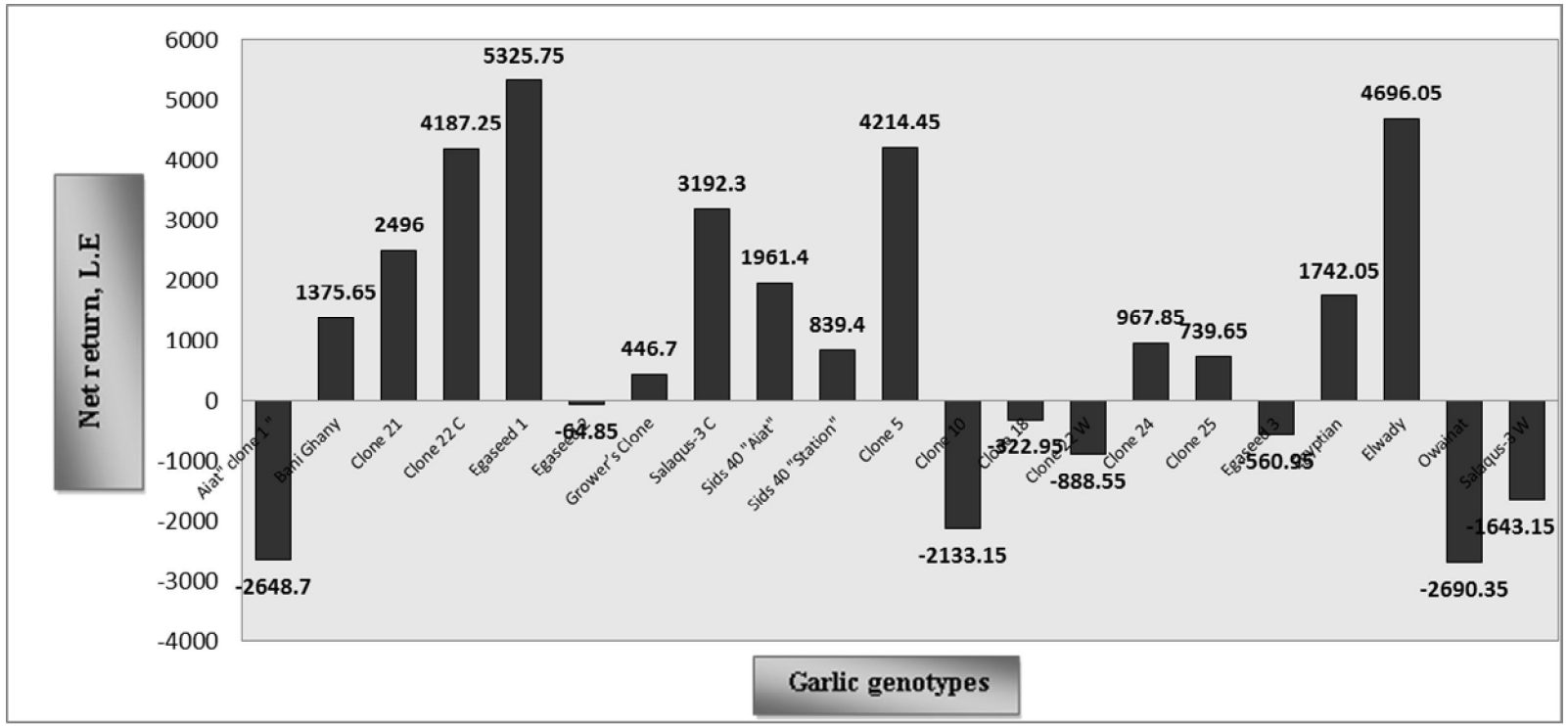

Fig. 2. Average net return of cured garlic genotypes across the tested treatments.

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تقدير التكاليف والعائد للثوم العضوي تحت ظروف الأراضي المزروعة حديثاً

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في دراسة إقتصادية أولية لإنتاج الثوم العضوي في الأراضي الجديدة تحت ظروف محافظة المنيا، تم زراعة ٢١ تركيب وراثي من الثوم الأبيض والملون وتم معاملاتها عضوياً بنوعين من الكمبوست (الكمبوست النباتي أو النباتي حيواني) ومستويين للإضافة (١٢٠ كجم و ٦٠ كجم نيتروجين كلي للفدان). وأظهرت النتائج المتحصل عليها أن إجمالي التكلفة لزراعة فدان من الثوم تحت ظروف الزراعة العضوية تراوحت من ٩٣٨٢,٢٥ إلي ١٢٦٤١,٥ جنيهاً للثوم الطازج ومن ٩٨٨٢,٢٥ إلي ١٣١٤١,٥ جنيهاً للثوم المعالج. كما أظهرت النتائج أن متوسط إنتاج الفدان من الثوم العضوي الطازج كان ما بين ٠,٩٨٠٣ إلي ٥,٠٣٦ طن/الفدان بعائد يتراوح من ٤٤١١,٣٥ إلي ٢١٠٨٢,٥ جنيهأ بينما كان متوسط إنتاج الفدان من الثوم المعالج ما بين ٠,٦٣٣ إلي ٣,٤٤٥ طن/الفدان بعائد يتراوح من ٤١٧٧,٨ إلي ٢٢٧٣٧ جنيهاً. كما أظهرت النتائج أن أعلي عائد إقتصادي للثوم العضوي الطازج او المعالج يمكن تحقيقة عند زراعة الصنف الملون إيجاسيد ١ والسلالة البيضاء بلدي الوادي.