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The Economics of Plant Production of Household Garden

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Abstract

The objective of this research is to investigate the economics of household plant gardening activities. The questionnaire used as a tool for data collection. The questionnaire included different parts concerning the inputs of household gardening, the processing activities and the outputs of these activities. The household population of the study was divided into different stratum according to household income and the location of households in urban and sub-urban areas. The results showed that the garden inputs are reliable on garden size. The extent of external labor use was dependent on the household income and the size of garden. The returns of household gardens were higher for trees then for vegetables.

Keywords: household gardens, net returns, expenses, returns, plant production

Introduction

Household gardens are considered very important for some families in different aspects. Some families considered the household gardens as a source of income to support the family financial activities (S. Mazumdar & S. Mazumdar, 2012), other families consider gardens as a source of family food, while the third group consider garden as a recreational household activity. These attitudes will make differences for the method of considering the behavior of families for the management of household gardens.

Some families considered the household garden as a source of saving food for the family, other families considered a source of economic activity (Legesse et al., 2016). In both cases, the household gardens considered a tool to alleviate poverty and improve the nutritive condition of household.

The household gardens considered small-scale activities that can face difficulties through the management activities (Galhena et al., 2013). Such private condition of household production will affect and being affected of household social and economic conditions (Ninez, 1987). On the other hand, the wide species that can be planted in household gardens will increase the challenge of household to success in this activity (Gittleman, 2009). The high variation in household gardening is considered a challenge of continuity and sustainability (Addo, 2010).

Economically, the household garden should be managed in a way that accomplish added value for families and encourage the family to continue practicing these activities (Igue et al., 2000). The extent of success of garden economically depends mainly on the way the family looking for the garden. The more serious thinking of gardens as a business will increase its potential and improve its continuity and sustainability (Coomes et al., 2004; Trinth et al., 2003; Watson et al., 2002). On the other hand, household gardening participates in job creation in different urban, sub-urban and rural areas (Kobayashi et al., 2010).

The production of household garden was affected by different factors. The most important factor is the size of the garden (Gaston et al., 2005). Garden size will affect directly the type of gardening that will be handled to be profitable with the area (Dereje, 2007; VAM, 2013), and household age composition (VAM, 2013). The planting patterns of household gardens affected by the importance of the crop for the household and the added economic value the crop provide for the family (Mohan, 2004). Garden inputs highly affected by the size of the garden and the family income as well (Vogl et al., 2002). The type of plant production was affected by the climate and region (Mohan, 2004).

2. Methodology

Recently, the household garden production became one of the economic solutions to improve household income and nutritive value (Legesse et al., 2016). The objective of this paper is to investigate the household returns of

gardening plant activities according to family income and location. To accomplish this objective, questionnaire used as a tool to collect data. The questionnaire designed to collect information about the socio-economic characteristics of households, plant production practices in households' gardens. The plant production included parts that was concerned for the collection of data about the input and the output of agricultural activities of household gardens. The questionnaire was prepared and tested before the collection of the final sample.

The population of this study includes all households in urban, sub-urban, and rural that contain gardens. For the purpose of this research random sample was taken. The population of this research divided into six stratum. The income and classification of household as urban or sub-urban considered in stratifying the household population. The different strata was representing different household income levels as well as the location of household garden in urban, sub-urban and rural areas. The strata were as follow:

Stratum 1: represents the people with low income

Stratum 2: represents people with low to moderate income

Stratum 3: represents people from moderate to high income

Stratum 4: represents the people with high income

Stratum 5: represents Wadi Al Ssir Area

Stratum 6: represents Amman suburbs

The collected data entered and cleaned using Excel. The data classified into two major topics including plant production. Each section of data divided to socio-economic characteristics and the inflow and outflow of the gardening activities. The collected data entered to SPSS (Ver. 22) for analysis. Excel was used to calculate and accumulate the expenses items and returns.

3. Results and Discussion

Before moving to investigate the economics of plant production, the first parts give some information about the practices taken over in household gardens. Figure 1 shows the results for method of household garden supervision and care in general by the family. The results showed that all household members contribute to care for gardens in different levels despite their working status. The results showed that the house women were in the first position to take care for household gardens (Igue et al., 2000). The results showed that the household wives effort is not enough to execute all gardens processes. This calls for hiring external labor work to fulfil the garden requirements especially for the large gardens area.

The least stratum that requires care for garden was the first stratum because of the low area and the low income of the family, while on the other hand the highest care was in the fourth stratum as this stratum almost contains higher gardens area with higher household incomes. The care for household gardens was taken over by females more males because of the larger time they spent in their homes.

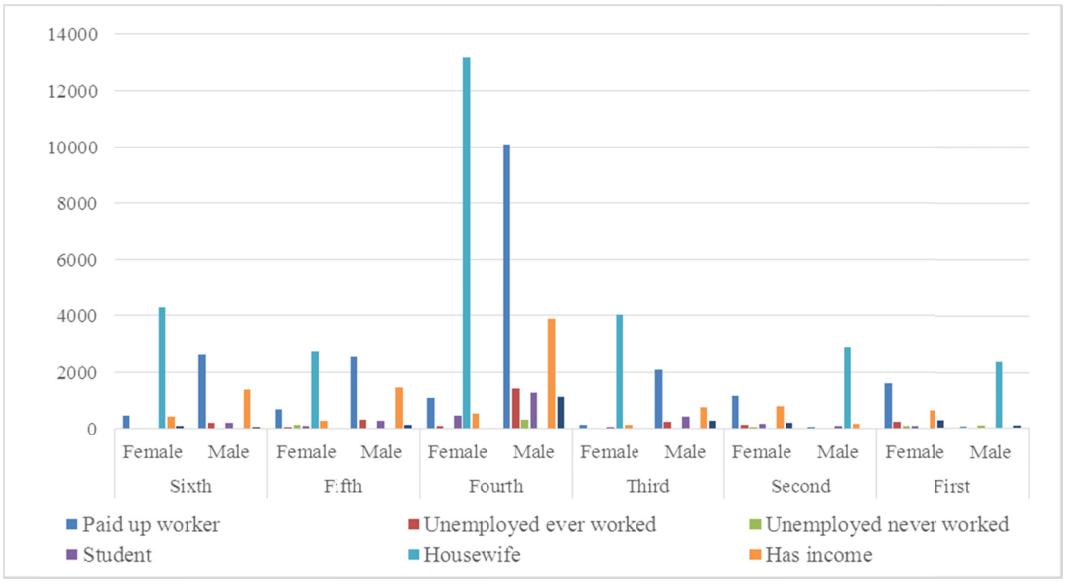

Figure 1. Distribution of household members looking after the plant production garden by sex, status of economic activity and stratum

Figure 2 shows the type of outside help given to care for household gardens. The results show that hiring labor to care for the household plant production gardens was the most dominant especially in fourth, fifth and sixth stratum which requires high work to care for plant production gardens. These three strata contains gardens with high area and households with moderate to high income.

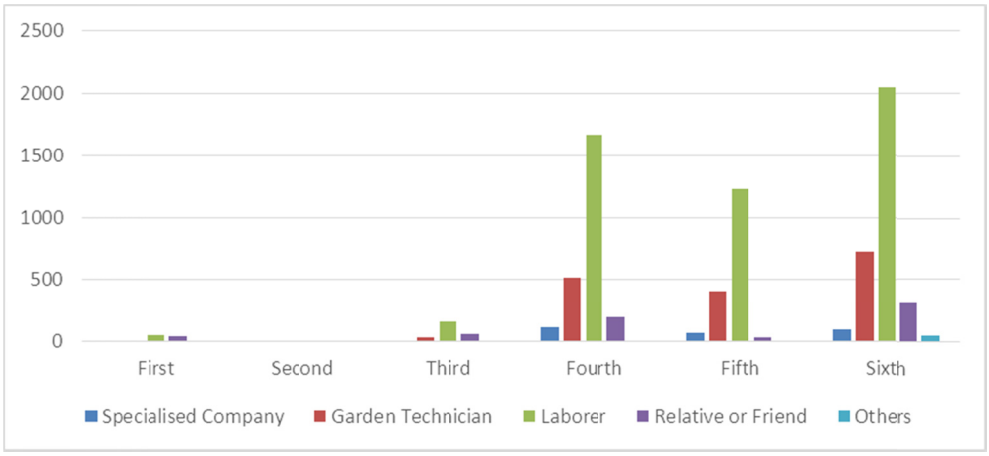

Figure 2. Distribution of gardens by method of looking after the garden excluding household members and stratum

According to garden area, the results showed that seeking for help by hiring outsources was higher in large area gardens (more 200 m^2) (Figure 3). Garden technicians also are hired to care for gardens with very low percentage compared to laborers.

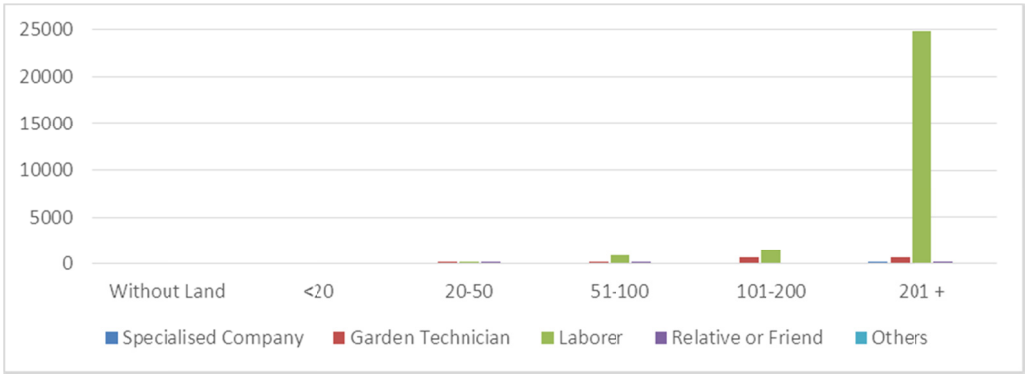

Figure 3. Looking after the garden by agency or person excluding household members by area class

Figure 4 shows some attitudes for the households concerning hiring outsources to care for gardens. The results showed that the higher objection on hiring laborers to care for garden was in the sixth stratum. Also, this point of view appeared in less emphasizes in fourth and fifth strata. In the first, second and third stratum, the attitudes were against hiring outsources to care for household gardens. The results for the fourth and fifth stratum showed higher tendency to hire outsources to care for gardens.

The first, second and third strata did not have any attitudes concerning the method of payment, satisfactory for outsources work or the method of payment as these layers did not hire outsources to care for their gardens. On the other hand, the fourth, fifth and sixth strata showed that they rely to some extent on outsources to take care for gardens. The attitude of fourth and fifth stratum will be reflected on the expenses and returns of household gardens.

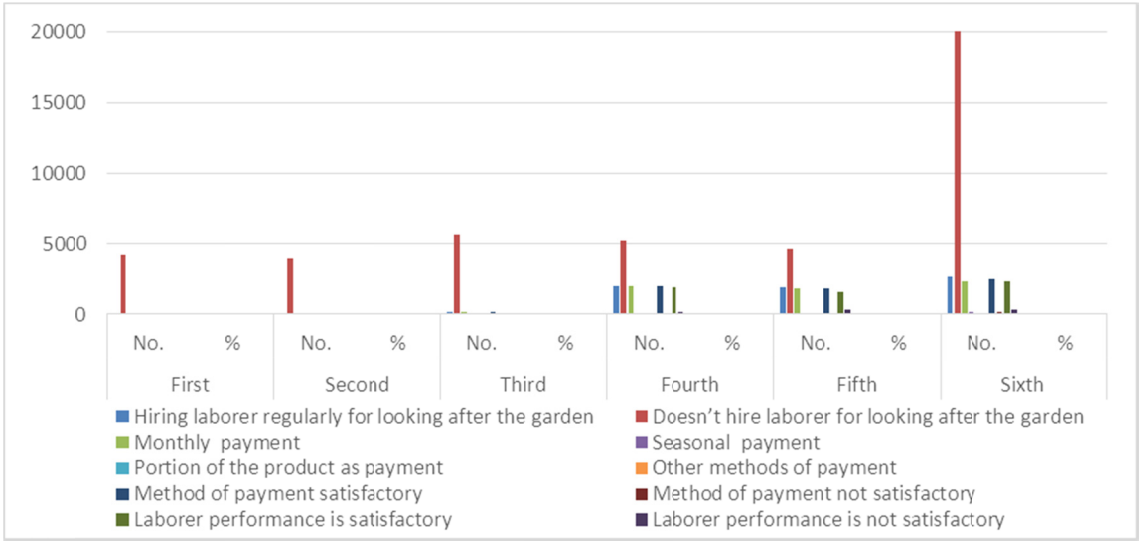

Figure 4. The household attitudes concerning outsources to care for gardens

Table 1 shows that most of families depend on their personal sources to finance the households' garden activities. Minor number of households showed that they get loans to finance the activities of household gardens (only 33). Good number of families (145) showed that they use the garden return to support the financial activities of their gardens in the coming seasons.

The pattern of saving the financial expenses for gardens was different in sixth strata due to the large area of gardens and wide variety of species in the garden. In this stratum, the sources of providing garden activities exceeded the personal supply to loans and use of returns to support activities.

Table 1. Distribution of households by main source of finance per stratum

			Personal Sources	Loans	Garden Product Returns	Non Applicable	Total
	Total No. of Households	No.	46659	33	145	3261	50097
		%	93.1	0.1	0.3	6.5	100
Stratum	**First**	No.	3749	0	0	441	4191
		%	89.5	0	0	10.5	100
	Second	No.	3075	0	19	818	3913
		%	78.6	0	0.4	21	100
	Third	No.	5018	0	0	675	5693
		%	88.1	0	0	11.9	100
	Fourth	No.	6879	0	26	300	7205
		%	95.5	0	0.4	4.1	100
	Fifth	No.	6300	0	0	176	6476
		%	97.3	0	0	2.7	100
	Sixth	No.	21637	33	100	850	22620
		%	95.7	0.1	0.4	3.8	100

Practicing agricultural activities requires good experience. Most of families showed that they get the experience to take over the garden activities through their own personal experience. Some households use books and publication as a source of their knowledge to practice the agricultural activities. Also, other households use the agricultural directorates help and private companies to manage their household gardens (Table 2). The results showed wide variety of sources to get experience to handle the agricultural processes in gardens. These activities will affect widely the expenses and the returns of gardens.

Table 2. Distribution of households by source of information on garden care and stratum

		Sources of Information	Agricultural Directorate	Private Companies	Personal Experiences	Media means	Books & Publications	Others
	Total No. of Households	**No.**	2137	2365	36512	6094	1773	9042
		%	3.7	4.1	63	10.5	3.1	15.6
Stratum	**First**	**No.**	359	33	3284	582	96	497
		%	7.4	0.7	67.7	12	2	10.3
	Second	**No.**	127	45	2787	465	0	461
		%	3.3	1.2	71.8	12	0	11.9
	Third	**No.**	239	99	4594	370	95	662
		%	3.9	1.6	75.8	6.11	1.6	10.9
	Fourth	**No.**	189	238	4920	385	196	1872
		%	2.4	3.1	63.1	4.9	2.5	24
	Fifth	**No.**	396	225	4038	551	268	2176
		%	5.2	2.9	52.8	7.2	3.5	28.4
	Sixth	**No.**	828	1724	16889	3741	1119	3374
		%	3	6.2	61	13.5	4	12.2

The expenses of production distributed among all the garden input items with different levels (Table 3). The results showed that the least expense goes for seeds, pulps, seedlings, insecticides, fungicides, acricides, and rodenticides. While the highest expenses goes for service inputs, which form the highest in the sixth stratum due to the highest garden areas and decreased with decreasing the garden area.

Table 3. Value of intermediate commodities and service inputs used in the garden by item and stratum (JD)

Item	Stratum							
	Sixth	Fifth	Fourth	Third	Second	First	%	Total value
Water	130873.6	41534.4	35850.8	20746.9	6171.3	7582.0	8.6	242758.9
Seeds	11746.2	2859.7	1836.9	1732.4	363.5	461.3	0.7	18999.9
Pulps	5107.5	1384.6	959.8	843.7	310.9	285.8	0.3	8892.4
Seedlings	26356.6	6977.5	19427.7	3814.7	361.2	1045.3	2.0	57983.1
Insecticides	35835.4	10765.6	10653.7	6414.2	850.4	1749.3	2.3	66268.6
Fungicides	23006.5	6732.7	5464.8	2071.6	337.4	525.7	1.3	38138.8
Acricides	219.8	0.0	0.0	0.0	0.0	0.0	0.01	219.8
Rodenticides	249.4	0.0	0.0	0.0	0.0	0.0	0.01	249.4
Organic fertilizers	106614.1	31549.4	32455.5	9173.4	1942.7	3556.0	6.5	185291.2
Chemical fertilizers	33342.0	12243.6	10152.0	4232.0	323.1	1732.8	2.2	62025.5
Service inputs	708813.8	436429.8	489960.9	52648.0	9471.3	14486.6	60.3	1711810.0
Others	393.4	302.5	0.0	0.0	0.0	0.0	0.02	695.9
Total	1082558.0	550780	606762.0	101677.0	20131.8	31424.8	100.0	2393334.0
%of total	49.3	20.1	21.6	5.9	1.4	1.7		100.0

Table 4 shows that the expenses for the inputs increases as the area of the garden increases. This pattern is applied for all plant garden inputs. The highest inputs recorded in the sixth stratum for all inputs. While the least inputs recorded in the first and second stratum as these two stratum has the least income and the lowest ability to expend on household gardens.

Table 4. Value of intermediate commodities used in the garden by item and area class (JD)

Item	Area Class (Sq.)					
	201 and above	101-200	51-100	20-50	Less than 20	Total value
Water	98720.5	63494.1	42746.5	28549.2	9248.7	242758.9
Seeds	8615.0	5020.1	3087.7	1783.1	494.0	18999.9
Pulps	3873.2	2453.8	1363.2	938.3	264.0	8892.4
Seedlings	31906.0	9960.6	7290.9	7447.6	1378.0	57983.1
Insecticides	30555.5	18295.4	10114.7	5035.4	2267.6	66268.6
Fungicides	25373.5	7392.6	2815.7	2011.2	545.9	38138.8
Acricides	0.0	219.8	0.0	0.0	0.0	219.8
Rodenticides	249.4	0.0	0.0	0.0	0.0	249.4
Organic fertilizers	116863.7	36932.9	18574.6	9937.3	2982.6	185291.2
Chemical fertilizers	29618.3	16711.0	10564.1	4294.2	837.8	62025.5
Service Inputs	872886.0	502701.5	228641.3	95159.8	12421.8	1711810.0
Others	577.5	118.4	0.0	0.0	0.0	695.9
Total	1358223.8	817326.7	372634.9	190019.6	109807.5	2838793.8
% of total	47.8	28.8	13.1	6.7	3.9	100.0

The highest income of gardens activity was recorded for fruit trees products of about 1,731,185JD, followed by vegetables with a total return of about 95,135JD (Noble, 2010). The least returns recorded for ornamental plants of about 26,795JD. The total amount of returns of household garden activities recorded was 1,927,136JD (Table 5).

Table 5. Quantity and value of plant production

Item	Unit	%	Value (JD)	Quantity
Field Crops	kg		503.9	812.8
	Bundle		24.7	124.0
	Baleh		127.1	51.0
	Total	0.03	655.7	
Vegetables	kg		72301.2	148170.5
	No.		1275.7	10484.0
	Bundle		21558.2	131892.0
	Total	4.9	95135.1	
Fruit Trees	kg		72301.2	148170.5
	No.		127.3	498.0
	Bundle		11.2	55.0
	Total	89.8	1731185.3	
Aromatic and Medical	kg		54822.9	58217.0
	Bundle		18541.9	114621.0
	Total	3.8	73364.8	
Ornamental plants and bushes	kg		68.6	171.5
	No.		4114.8	16060.0
	Bundle		22612.2	21632
	Total	1.4	26795.7	
	Grand Total	100	1927136.6	

The highest returns recorded for the sixth stratum for all types of products. In this stratum, households consider the household garden is a type of investment that they care for the amount of expense and the amount returns they get from their activities. In the fourth and fifth stratum, the returns were less as these two strata have intermediate to high income among the others. In the first, second and third stratum the households care for the income as it considered supported part for the household income (Table 6).

Table 6. Value of plant production by stratum (JD)

Item	Stratum						Total Value of Production
	Sixth	Fifth	Fourth	Third	Second	First	
Field crops	301.9	217.5	103.7	0.0	0.0	32.6	655.7
Vegetables	57749.2	11759.3	10382.3	8343.9	1679.8	5220.6	95135.1
Fruit trees	1011622.6	251419	219061	141681.1	50876.1	56525.5	1731185.3
Aromatic and medical plants	46753.3	12956	5587.6	5977.2	896.0	1194.7	73364.8
Ornamental plants and bushes	16286.8	6199.3	2798.1	1260.3	251.2	0.0	26795.7
Total	1132713.8	282551.1	237932.1	157262.5	53703.1	62973.4	1927136.6
% of Total	58.8	14.7	12.3	8.1	2.8	3.3	100.0

The results in Table 7 showed that the net returns was higher in the sixth stratum followed by the first, second and third strata, while the returns were negative in the fourth and fifth stratum because these two do not care for the garden returns as part of the household income, they consider as a type of entertainment and recreation.

Table 7. Net profit of plant activities according to stratum

Item	First	Second	Third	Fourth	Fifth	Sixth
Expenses	31424.8	20131.8	101676.9	606762.1	550779.8	1082558
Total returns	62973.4	53703.1	157263	237932	282551	1132714
Net Profit	31548.6	33571.3	55585.6	-368830	-268229	50155.5

4. Conclusions

The objective of this research is to investigate the patterns of inputs and outputs of the household gardens for plant production. The results of this research showed that the variation among the behavior pattern for the different strata was high. The care for the inputs and method of financial supply depends on the method the household deals with the garden. The sixth strata which represent the garden in the suburban areas showed more business attitudes in their management of gardens. The fourth and the fifth strata showed less business consideration for the method of garden management.

The higher expenses were shown in the sixth stratum and the highest laborer hiring was in this strata. The reason for that is the large areas of the gardens in this stratum and the higher the effort required to care for gardens.

The first, second and third strata have different procedures to manage gardens, due to low areas and low income of these families. The families of these strata considered the garden as a source of support for family in their nutrition and income, so they try their best to decrease the expenses as much as possible.

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