Economic Efficiency of the Okra Crop Farms in Baghdad Governorate - Eastern Karrada (Application Model) in the summer season of 2016.

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Abstract: *okra is one of the most important and widespread summer vegetable crops, it is cultivated in all areas of Iraq and consumed by most people, it is consumed cooked with tomatoes as well as it enters into the canning and freezing industry, some people still keep it drying and store it for winter use, its nutritional importance comes through its containment of carbohydrates, proteins, salts and minerals, okra is ranked fifth among the vegetable crops in terms of cultivated area after the water melon, tomatoes, melon and cucumber.The research aims to study the economic indicators of the okra farms in Baghdad, the cost and revenue data were obtained through a questionnaire and found that all the studied respondents achieved good economic returns, economic standard were applied such as farm net income, which averaged 386.41 thousand IQD, the highest farm income of the (holding categories) was 2-2.5 dunums (category 4) which amounted to 6768.55 thousand IQD, the return of the invested dinar at a sample level was 3.18 IQD, the fourth holding category 2-2.5 dunums achieved the highest invested dinar 0.55 at sample level, the (fourth category) achieved the best period of capital recovery amounted to 0.39, while the total value added of the study sample was 19867.8 thousand IQD, the production at break-even point at sample level reached 2.06 tons.*
Keywords: *economic efficiency, farm, okra crop.*

I.   Introduction

Okra crop belongs to the malvaceae family, it is one of the important summer vegetable crops in Iraq, its nutritional importance is because it contains carbohydrates, proteins and some minerals, fresh green pods contain 88.6% water, 2.4% protein, 7.6% carbohydrates, 0.3% Calcium and 0.051% Phosphorus, in addition, it contains some vitamins in medium rates such as riboflavin, petamine and vitamin C (10), the okra crop is grown for the consumption of green pods after cooking and is sometimes preserved by drying or freezing of pods, the okra is cooked alone or with some other vegetables Especially with the tomatoes and this is the most famous in Iraq.Okra crop occupies the fifth place in terms of cultivated area among the summer crops in Iraq after the watermelon, tomatoes, melon and cucumber (11), there is a clear increase in the production of this crop and cultivated areas due to increased demand and consumption of this crop, the Plans of agricultural development in Iraq include is the expansion of the cultivation of important vegetable crops, including okra, there are two methods to increase production, the first method is horizontal expansion by increasing the cultivated area, and the second method is the vertical expansion by increasing the production of the area unit to the maximum extent (1), so the interest in agricultural research increased, development of the production factors and use of modern and advanced technologies, and improve farm management systems in order to increase the productivity of cultivated areas according to economic standards in the exploitation of production resources to achieve food security (9), because this subject is looking at and interested in economic efficiency indicators for farmers interested in the production of this crop so we will mention the results and recommendations of some research in this fild, Mashhadani 2000 studied the economic ownership of poultry production and concluded that all the studied projects achieved positive returns, the return of the invested ranged from 215 to 404 fils, he concluded that the large capacity categories of poultry farms were the best in all economic standards (8), also Al-Mashhadani and Muhannad,(2006) studied the economic efficiency of the field pistachio farmers in Diyala Governorate and found that all farmers achieved positive returns, and Large ownerships gave the best returns (7).This study was conducted in order to determine the economic efficiency of the okra farmers in Baghdad, and this study requires the study of the most important economic indicators which through them the efficiency of management can be estimated by directing economic resources to increase production and agricultural income.

Research problem
The agricultural sector suffers from a decrease in the productivity of crops and strategic crops in general, as well as some vegetable crops, especially the okra crop, despite its nutritional importance, due to the decrease in cultivated areas and the reluctance of some farmers to grow this crop

.Research objective
The study aims at estimating the economic efficiency of the cultivation and production of okra crop through the application of economic efficiency standards for the cultivation of this crop in the Eastern Karrada district in Baghdad governorate , by conducting a questionnaire on a sample of 62 farmers who planted an area of 36.5 dunums in the agricultural season 2015-2016.

Search hypothesis
The research assumes that the farms of the okra crop suffer from productive problems that led to a decrease in profits and the futility of cultivating the okra economically, these reasons led to the reluctance of farmers to expand the cultivation of this crop in Iraq.

II. Materials and Methods

The farmer seeks to achieve his objective of increasing the profits by producing higher quantities at the same cost, or by the same level of production with the reduction of costs (15), in both cases the returns will increase, economic efficiency is the use of wealth resources in a way that maximizes the net income (4). this is achieved by applying economic efficiency indicators to the production project and conducting an economic analysis of the various items of expenditure and revenues of the project within a specified time frame in order to estimate the efficiency of productive units in directing economic resources (5), the economic efficiency measures include the net farm income, profits (the total revenue minus the total cost) (16), the returns of farm labor (net farm income minus capital interest)(12), farm management returns (farm returns minus work of family members) (2), there are another measure of project evaluation is the gross value-added measure (which equals profit plus labor wages, depreciation and interest on capital) (3), net value added (which equals the total value added minus depreciation) (6), and the return of the invested dinar which equals total income divided by total costs (13), in addition to the period of capital recovery (which equals the total costs divided by net farm income) and the production at break-even point equal to{ fixed production costs / (production unit price minus average variable costs} (14).

III. Results and discussion

The results of Table -1- show that the total ownership of farmers amounted to 20000 dunums, 36.5 dunums were actually planted with okra crop, this area represents 0.18% of the total ownership of farmers.

Table 1. : Distribution of ownership area and number of farmersofth study sample.

Categories of ownership Dunums	Total ownership (dunum)	Cultivated Area (dunum)	(%) of cultivated area of ownership	Number of farmers	Percent of farmers (%)	Percent of cultivated area for categories
0.5- less than 1	1000	0.5	0.05	3	4.84	1.36
1- less than 1.5	6000	6	0.1	18	29.03	16.44
1.5-less than 2	4000	6	0.15	17	27.42	16.44
2- less than 2,5	6000	12	0.2	18	29.03	32.88
2.5 and more	3000	12	0.4	6	9.68	32.88
Total	20000	36.5	0.9	62	100	100

Reference: Done by the researcher dependingon the questionnaires.

The total production of okra crop in the research sample was 14.08 tons, table -2-, productivity of dunum reached 0.39 ton/dunum, the total revenues of production amounted 24780.8 thousand IQD, the price of the kilogram okra was 1760 IQD with an average 678,93thousand IQD per dunum, the costs included variable costs (seeds, fertilizers and pesticides) table -3-, the highest percent of cost was the mechanical work cost by 35.41% of the total variable costs, followed by fertilizer costs by 32.25% of the total variable costs then seed costs by 21.49% of the total variable costs, Finally, the cost of pesticides by 10.84% of the total variable costs, in addition, the fixed costs included the cost of alternative opportunities (work of family members and interest on capital) as well as the rent of land Table -4-, the cost of family work was the highest percentage of fixed costs by 86.38%, followed by the cost of capital by 12.65% ,then the rent of land by0.96%. While the percentage of variable costs in the research sample was 62.66% of the total costs, the fixed costs ratio was 37.34% of the total costs Table -5-, the total profit reached 16984.39 thousand IQD which obtained from study sample.

Table 2.: Total average of production and farm revenue of okra crop in the research sample.

Categories of ownership Dunums	Yield of green pods (ton)	Yield value (1000 IQD)	Yield average (ton.dunum^{-1})	Average of total incomes (1000IQD.dunum)$^{-1}$
0.5- less than 1	0.35	616	0.7	1232
1- less than 1.5	2.9	5104	0.48	850.67
1.5-less than 2	2.93	5156.8	0.49	859.47
2- less than 2,5	5.8	10208	0.48	850.67
2.5 and more	2.1	3696	0.18	308
Total	14.08	24780.8	2.33	4100.81

Reference: Done by the researcher dependingon the questionnaires.

Table 3.: The total variable costs of the okra crop farmers in the research sample and its relative importance.

Categories of ownership Dunums	seeds	%	Fertilizers	%	Mechanisms work	%	Pesticides	%	total
0.5- less than 1	18.75	1.78	28.1	1.78	90	5.20	-	-	136.85
1- less than 1.5	225	21.43	337.8	21.44	480	27.75	73	13.79	1115.8
1.5-less than 2	225	21.43	337.6	21.43	400	23.12	103	19.45	1065.6
2- less than 2,5	412.5	39.29	618.8	39.28	480	27.75	264	49.86	1775.3
2.5 and more	168.75	16.07	253.2	16.07	280	16.18	89.5	16.90	791.45
Total	1050	100	1575.5	100	1730	100	529.5	100	4885

Reference: Done by the researcher depending on the questionnaires.

The concept of net farm income differs from the concept of economic profit (12) as shown in Table -6-, which shows that the sample of the research achieved a net income of 14104,01 thousand IQD and the highest value 6768.55 thousand IQD was recorded in the fourth category (ownership category 2- less than 2.5 dunums) by 47.99% of the net farm income at the sample level, while in the third category decreased to 22.30 % of the net farm income, followed by the second category, then the fifth category but the first category ranked the latter by (22.30%, 16.01%, 11.81% and 1.89%) respectively of net farm income, the best profits were obtained from the first category that gave the one-dunam profit 732.72 thousand IQD, for invested dinar the average of the sample was 3.18 IQD per Dinar invested and this is considered a good return compared to other projects, the results of the study indicated that the highest return of the dinar obtained from the fourth category that was 3.81 Iraqi dinars, the period of equity capital recovery was 0.55 year at the sample level, which is a good period and represents the period of survival of the crop in the field and range between 60-75 days of cultivation, the fourth category gave the best period 0.39 year, which is another indicator proves the superiority of this ownership category (2- less than 2.5) which produce the okra crop as shown in table -7- which showed that the total value added was 19867.8 thousand Iraqi dinars, while the amount of production at break-even point was 2.06 tons when applying the following standard:

$$= \frac{TFC}{PY - AVC} = \frac{2911.41}{1760 - 346.946}$$

TFC: total fixed costs.

PY: price of yield unit.

AVC: average variable costs.

$$= \frac{2911.41}{1413.05} = 2.06$$

production quantity at break-even point as its values:

$$= \frac{TFC}{1 - (\frac{TvC}{TR})}$$

$$= \frac{TFC}{1 - (\frac{4885}{24780.8})} = \frac{2911.41}{1 - 0.197} = \frac{2911.41}{0.803} = 3625.67 \text{ thousand IQD}$$

which is relatively high value.

TFC: total fixed coasts.

TR: total revenues.

TVC: total variable costs.

Table 4.: Total fixed costs (thousand IQD) for the okra crop in the research sample and its relative importance.

Categories of ownership Dunums	Wages of the farmer and his family work	%	Capital interest	%	Rent of Land	%	Total fixed costs
0.5- less than 1	100	3.98	12.29	3.34	0.5	1.79	112.79
1- less than 1.5	820	32.60	83.69	22.72	6	21.43	909.69
1.5-less than 2	430	17.10	79.92	21.96	6	21.43	515.92
2- less than 2,5	760	30.22	133.15	36.14	11	39.29	904.15

| 2.5 and more | 405 | 16.10 | 59.36 | 16.11 | 4.5 | 16.07 | 468.86 |
| Total | 2515 | 100 | 368.41 | 100 | 28 | 100 | 2911.41 |

Reference: Done by the researcher depending on the questionnaires.

Table 5. total variable coasts, fixed and total costs and averages (1000IQD) of the okra crop farmers in the research sample and its relative importance.

Categories of ownership Dunums	Yield (ton)	variable coasts	%	Average of variable costs	Fixed coasts	%	Average of Fixed coasts	total costs	Average of total costs
0.5- less than 1	0.35	136.85	2.80	381	112.79	3.87	322.26	249.64	790.4
1- less than 1.5	2.9	1115.8	22.84	384.76	909.69	31.25	313.69	2025.49	698.44
1.5-less than 2	2.93	1065.6	21.81	363.69	515.92	17.72	176.08	1581.52	539.77
2- less than 2,5	5.8	1775.3	36.34	306.09	904.15	31.06	155.89	2679.45	461.97
2.5 and more	2.1	791.45	16.21	376.88	468.86	16.10	223.27	1260.31	600.15
Total	14.08	4885	100	-	2911.41	100	-	7796.41	-

Reference: Doneby the researcher dependingon the questionnaires.

Table 6.; farm net income, farm labor returns and farm management returns (1000IQD) for okra crop farmers in the research sample.

Categories of ownership Dunums	Profit	Farmer number	Average profit for farmer	Average Profit for dunum	Net income	percentage	farm labor returns	Farm management returns
0.5- less than 1	366.36	3	122.12	732.72	266.36	1.89	254.07	154.07
1- less than 1.5	3078.51	18	171.03	513.085	2258.51	16.01	2174.82	1354.82
1.5-less than 2	3575.28	17	210.31	595.88	3145.28	22.30	3065.36	2635.36
2- less than 2,5	7528.55	18	418.25	627.379	6768.55	47.99	6635.40	5875.40
2.5 and more	2435.69	6	405.95	202.97	2030.69	11.81	1971.33	1566.33
Total	16984.39	62	1327.66	2672.034	14104.01	100	-	-

Reference: Done by the researcher depending on the questionnaires.

Table 7.: Total added value, the invested dinar return, period of equity capital recovery(1000IQD), and quantity of production at break-even point (ton) for the okra crop farmers in the research sample.

Categories of ownership (Dunum)	Total value added	invested dinar return	period of equity capital recovery	quantity of production at break-even point
0.5- less than 1	478.65	2.47	0.94	0.08
1- less than 1.5	3982.2	2.52	0.89	1.47
1.5-less than 2	4085.2	3.26	0.50	1.13
2- less than 2,5	8421.7	3.81	0.39	1.84
2.5 and more	2900.05	2.93	0.62	0.91
Total	19867.8	-	-	-

Reference: Done by the researcher depending on the questionnaires.

IV. Conclusions and recommendations

1 - Reject the hypothesis of research, which says that the low profits and the futility of cultivating the okra crop, where it was found that all the categories of the research sample achieved profits.

2 - The best return for the farmer was in the cultivated ownership especially ownership (2 - less than 2.5) dunums.

3. The returns of farm labor and the returns of farm management have been rewarding for farmers.

4 - most farmers do not own agricultural machinery can rely on it so they rent agricultural tractors.

5- Focusing on cultivating the okra crop with areas between (2- less than 2.5) dunums, where the used criteria indicated that these areas achieved the best farm net income.

6. It is recommended to increase agricultural loans to introduce mechanization and expand the cultivation of crops in general.

7 - It is recommended to pay attention to the method of crop irrigation and adopt the appropriate way to benefit from water, which is the most important elements of agricultural production.

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