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EFFECT OF FARM POSSESSION ON THE ECONOMIC EFFICIENCY OF WHEAT

YIELD PRODUCTION IN THE IRRIGATED REGIONS OF IRAQ

(AL-AZEZIA, KHAN BNE-SAAD), CASE - STUDY

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ABSTRACT

One of the economic development aims is ending the hunger and poverty and sustainable use of the environment, for achieving this it depends greatly on how to treat land by correct management and scientific use. It is possible to reach safely and honest to these resources and control them, this confirms adequate foods and achieves the advanced rural development and makes the life ways for the present and future generation. The aim of this study is investigation on the economic efficiency of wheat production in the two study regions and study the relation between size of the farm and the important profits factors by choosing a randomized sample of farmers in Diyala and Wasit governorates. Forty farmers were asked to answer a questionnaire prepared for this purpose. From analysis of costs scheme, it was shown that the costs of family work was the most importance of the constant cost items and it represented 70%.The costs of the family work in the second group decreased and its rate was 59% of the amount costs. The third group it was 30% of the constant costs while it was 34% of the constant costs in the fourth group. When the evaluation parameters were applied on the sample groups, the results showed that the fourth group gave the best results for investment income index and profit index, that means there is a high incomes in wheat production, and it also reflects the efficiency of investment of the available resources and increasing of production value. The wage productivity index in the second group was the highest and reached 10.39 and that means that this group had good use efficiency of work phenomena, while the changeable capital productivity index was the highest among the four groups and it was 2.25, this indicates presence of high efficiency in using elements and requirements of the changeable production terms, and these may be due to the small size of farm. It may be recommended the need of activation of prices encouragement policy and investing in the large farms due to their positive effects and giving simple and available loans to farmers.

KEYWORDS: Wheat, Investment, Farmers, Income

INTRODUCTION

The agricultural system is integrated groups of activities done by farmers in the fields under resources and conditions of the agriculture to achieve the highest amount of production and net income on a continuous bases according to the kind of agriculture systems and to evaluate the possibility of increasing farmers' incomes by distribution of these resources between these activities (7). One of these activities is cultivation of wheat which is considered as the main and strategic crop. Wheat crop came in the first order of the cultivated area and productivity on world level (3).Its secondary products can be used as dry hay (6).In Iraq, in spite of the huge wheat cultivated area which was 1552 million hectare, the production is still under the required level. The yield of hectare is 1235 kg/hectare. The farmer is concerned on

increasing the wheat cultivated areas to increase wheat productivity by means of horizontal expansion of new areas and using the resources in good ways resulting profits expansion (2).Size of farm affects greatly the productivity efficiency of farm and this in turn effects on the profits. Uses government price policy is also considered as active and encouraging means of wheat cultivation expansion (3). The economic efficiency may be defined as an economic based on the best work chance for getting unlimited needs of the limited resources, that means facing shortage problem and to reach to the economic efficiency. The economic must achieve technic efficiency and that means the society gets the highest productivity from the available resources and ensure that there are no wastages in production processes (10).The economic efficiency can be achieved by doubling is aim of the productivity unit and if the farm is the economic unit then the profit is the aim that must be doubled by using the resources in increasing the profits, while if the economic unit included the agricultural work and the farm family then the family luxury life would be the aim that must be increased and if the aim was increasing the luxury of the society then the economic luxury may be achieved when the uses of the resources are directed to achieve this aim (4).

RESEARCH PROBLEM

The main problem of wheat production is multi-possessions and presence of many possessions that get lost the farmers the mass production phenomena (size economic).

RESEARCH AIMS

- Exploring the economic efficiency of wheat production in the studied areas

- Study the relation between size of the farm and the important profits parameters

RESEARCH NECESSITY

The necessity of the research comes from crop importance itself because wheat is considered as strategic and important crop and the necessity of different kinds of farm possession with different capacities on achieving farming properties.

METHODS

The data were obtained from their primary sources by using questionnaire prepared for random for this purpose for random samples that included 8% of the wheat farmers in Was it and Diyala governance. The research samples were divided into four groups according to the wheat planted area.

The four group included the farmers who have farm area between (0.5 – 5), (5.5-10), (10.5-25) and (more than26) hectares for first, second, third and fourth groups respectively. Group of parameters were used to measure effect of capacity and farm values on profits and incomes of the four farmers groups. These parameters were:-

- Productivity wages index = value of production /wages

- Investment income index =profits / the invested capital

- Profit index = Total income – total costs

- Productivity of variable capital index = total incomes / total costs

Wheat Cultivation in was it and Diyala Governorates from 2000 to 2014

Time intervals were taken for the cultivated area, mean of yield and total production on Wasit and Diyala governorates levels from 2000 to 2014 in purpose of knowing the relative necessity of these variables, so we shall explain the case of wheat production using

First: The Cultivated Area

Table -1- shows that medium of wheat cultivated area in Wasit was 664 thousand donums and there were clear changes in in the area which reached at maximum level 936 thousand donums in 2014 and minimum level 535 thousand donums in 2009, while in Diyala, the medium of wheat cultivated was 350.5 thousand donums and the maximum area was 616 thousand donums in 2014 while the minimum area was 114 thousand donum in 2009. Expansion in the cultivated area in 2014 resulted from the input rules for increasing productivity.

Second: Total Production

Table -1- shows wheat production medium in Was it governorate which was 347.33 thousand tons during the study period. There was clear change in the production that reached its maximum level 658 thousand tons in 2014 while its minimum level was 205 thousand tons in 2008.In Diyala governorate, Wheat production maxiumum level was 536 thousand tons in 2014, while its minimum level was 36.7 thousand tons. The medium level of wheat production was 219.5 thousand tons.

Third: Yield of Donum

Table -1- shows the medium of donum yield over Wasit governorate, it was 521 kg/donum for the study period and in 2012 the maximum wheat yield of donum was 715 kg/donum and the minimum was 322 kg/donum in 2008. The medium level of donum yield over Diyala governorate was 578.5 for the study period. Its maximum level was 933.2 kg/donum in 2013 and its minimum level was 250 kg/donum in 2000.

Table 1: Production Area and Yields of Wheat in was it and Diyala Governorates During 2000- 2014

Years	Production Thousand Tons	Area Thousand Donum	Yield Kg/Ton	Production Thousand Tons	Area Thousand Donum	Yield Kg/Ton
Diyala	Diyala	Diyala	Diyala	Wasit	Wasit	Wasit
2000	36.7	146.8	250	275	607	453
2001	90.9	225.5	403	280	599	467
2002	135.4	262.9	515	307	660	465
2003	177.4	361.3	491	306	637	481
2004	133.6	349.9	382	282	593	476
2005	220.5	435	508	411	666	617
2006	258	453	569	288	630	458
2007	233	431	541	312	657	475
2008	149	299.6	433	205	638	322
2009	85.6	114	751	241	535	450
2010	145.7	146	701	312	667	467
2011	286.7	456	629	314	657	478
2012	280.8	403.4	696	518	724	715
2013	524	562	933.2	501	755	664
2014	536	612	876.4	658	936	702
medium	219.5	350.5	578.5	347.3	644	512.6

Source: Ministry of planning and developing cooperation /the central statistics center

RESULTS AND DISCUSSIONS

The research requirements data were got by using questionnaire of random group of 40 farmers in Was it and Diyala governorates. The research samples were divided into four groups according to farm size. The first group included farm with size from 1 to 19 donum and the second group was 20-30 donum and the third group was 31-100 donum, while the fourth group was 100-1500 donum. Suitable indexes were used of the agricultural activities which are considered the bases of evaluation of the agricultural activity coefficient of these farms, in addition to their high difficulty in the same time. The used evaluation indexes in this study were:-

- Wages productivity index

- Investment income index

- Profit index

- Variable capital production index

Table-2-shows values of the last indexes, the highest value of wages productivity index was 10.39 in the second group and that means the second group had considerable use efficiency of work element in absence of unreal working. The investment income index highest value was 1.52 in the fourth group and that means there were high sense in wheat production in this group. The profit index highest value was also in the fourth group that reached to 910365600 dinars which reflects good investment efficiency of the present resources and increasing production value. The variable capital production index value was 2.25 in the first group and this indicates presence of high efficiency in using elements and requirements of the variable production elements and that may be due to the small size of farm.

Table 2: Indexes Values Used in This Study

Index	Group 1	Group 2	Group 3	Group 4
Wages productivity index	7.58	10.39	9.0	9.44
Investment income index	1.49	1.34	1.37	1.52
profit index	33701700	40455500	82006050	910365600
Variable capital production index	2.25	2.06	2.07	1.94

Source: The researcher work depending on the questionnaire

Table 3 and 4 shows values of relative importance of costs and values of constant and variable investment costs, returns and profits of the four group per donum respectively. The cost items were:

First: Investment Costs

They included instruments, agricultural machines, pumps and farmers houses. The total costs of these items in the research samples were (11650000, 198650000, 254975000 and 416500000) respectively, while the costs of one donum were (82624, 810816, 53472 and 103606) dinar respectively. It can be seen decreases in the cost of investment of one donum with increase of farm size (Table 4).

Second: The Constant Costs

They are the costs that do not change with production change. They included cost of family work and losses, capital profits and land rent. The average of family work costs for one donum for the first group was 117446 dinars, that represented nearly 70% to the constant costs, while in second group the costs decreased to 99918 dinars with

increasing farm size for this purpose and it was 59% to the constant costs, while in the third group and fourth group they were 30% and 34% respectively because of decreasing medium of costs with increasing the cultivated area. The profit of investments as a rate of 15% in the Iraqi banks. These costs for one donum for the first group was 40707 dinars and its value to its constant costs was 24%.In the second group, it was 11682 dinars and its value to the constant costs was 0.06%.In the costs of one donum for the third and groups were 85528 and 44475 dinars respectively.

Third: The Variable Cots

It included costs of production requirements and rented work costs and other direct payments, The average of costs of production requirements of the first group was 150900 dinars that rated 47% to the variable costs the rented work costs were zero and the other direct payments were 53% to the variable costs. In the second group, the average of costs of production requirements was 167032 dinars with 53% ratio to the variable costs and with zero for the rented work, while the other direct payments were 47%.For the third group, the average of production requirements costs for one donum was 181969 dinars that rated 57% to the variable costs and medium of the rented work for one donum was 7532 dinars that rated 0.02% to the variable costs and the other direct payments were nearly 42%. In the fourth group, the average of production requirements costs for one donum was 179952 dinars and this rated 53% to the variable costs, while the rented work costs were 16035 dinars with 0.04% to the variable costs and the other average of direct payment were 145164 dinars and rated nearly 46% to the variable costs.

Fourth: Incomes

It is shown in Table -4- that the income of one donum in the first group was 729907 dinars and that was the highest recorded income among the four farmer groups and the total incomes of this group 102917000 dinars while farms of the second group gave 158973000 dinars as total income in average for one donum it reached 648869 dinars. The third group got a total income as 304845000 dinars with an average income of one donum reached 662706 dinars. The fourth group gave the largest total income reached 2662518000 dinars due to the big size area of farms while the average of one donum income decreased to 662317 dinars and that reflects the effect of farm size on the area unit productivity and its income, this agrees with Vaman and Tosporn who indicated that the relation between farm size and productivity was negative in some of the under developing countries (9).Dwayne found a negative relation between farm productivity and work density and farm size in the under developing countries(6).It is worth saying that increasing production in the big farms compared with the smaller dose not only relate to fertilizers use or other elements but it relates to increase the technological development and other possibilities because that the area unit is capable to overcome and allows of modern productivity techniques.

Table 3: The Relative Importance of Costs

Item	Group 1	Group 2	Group 3	Group4
Variable to total	66	65	66	78
constant to total	34	31	34	22
Total production requirements	31	35	38	41
Machinery to variable	42	17	20	19
Irrigation to total	8	9	6	7
fuel to total	4	3	3	4
marketing to total	3	4	3	5
family work to constant	71	59	31	6
Land rent to constant	2	5	1	42
Agricultural mechanical work to variable	36	13	16	15

Table 3: contd.,				
Item	**Group 1**	**Group 2**	**Group 3**	**Group4**
Mechanical harvest to variable	6	4	4	4
mechanical work to farm work	39	32	48	69
Human work to farm work	61	68	52	31
Land renters to total number	36	27	30	50
private possession to total number	64	73	70	50

Source: The researcher work depending on the questionnaire

Table 4: Values of the Investment, Constant, Variable, Income, and Profits Costs of the Four Groups per One Donum (Dinar)

Cost Items	**Group 1**	**Group 2**	**Group 3**	**Group 4**
Investment Costs	82624	810816	534728	103606
Constant Costs				
family work	117446	99918	50086	50373
losses	4131	40540	26736	51803
profit on capital	40707	11263	85528	44475
land rent	4148	9183	1521	-----
total	166423	160904	163871	146651
Variable Costs				
production costs	150900	167032	181960	197952
rent work	0	0	7532	16035
other payments	173553	148477	131065	145164
total	324453	315509	320557	359151
total costs	573509	1287229	1019156	609408
total incomes	729907	648869	662706	662317
Profits	**156398**	**-638360**	**-356450**	**52909**

Source: The researcher work depending on questionnaire

CONCLUSIONS

- From this study data, It is found that the dominated system in the two governorates was as private possession and it has 65% from the environmental study followed by rent system with 35% rate and this gave clear imagination that the most farmers have a single projects especially in the fourth group in where no rent system present at all.

- The greater ratio of farmers sample are using the machinery in irrigation, so that they pay large costs in using electricity, fuel and oils besides costs of maintenance and repairing.

- The averages of the cultivated area in the studied groups were 12.8,22.2,64 and 502 donum per farmer in first, second, third and fourth groups respectively, while the averages of agricultural production of wheat were 9.173,17.67,96.54 and 414.31 for first, second, third and fourth groups respectively. The averages of yield of donum were 757,793,794, and 824 kg/donum for first, second, third and fourth groups respectively.

- The percentages of the variable costs were 71,88,84 and 76 of the total costs in first, second, third and fourth groups, while the percentages of the constant costs were 29,12,16,and 24 of the total costs in the four groups respectively.

- Farm capacity affecting medium farm profit per unit area gave medium profit per one donum in the first group compared with rest groups at which the area ranged from 1 to 19 donum.

- In study effect of wheat farm capacity on productivity costs, it was clear that the fourth group was the less in medium cost and that means that it can be adopted as minimum limit of medium costs for different capacities.

- From the analyses, it may be concluded that the first capacity was the best in estimated income among the rest capacities at which the medium of donum income was 729907 dinars/donum.

- Price policy did not completely support of the larger farms especially in production tools, nevertheless the efficiency of this group of farmers is still having an efficiency in decreasing total cost medium more than the other groups

RECOMMENDATIONS

From the obtained results in this study, It may be recommended the followings:

- Put efforts in activation of encouraging price policy greatly for support production tools prices especially to big farms to get advantages from mas cultivation (size economics).

- There is necessity of investment of big farms due to their positive and high productions besides their ability to use the technology economically

- Make agricultural loans available to farmers by simplification of routine regulations in the agricultural banks and minimizing bureaucracy.

- Put an efforts in production activity development by increasing the other economic resources except work element.

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