

Economics of Use Low-Quality Water for Irrigation in the Cultivation of Wheat

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Abstract: The total cultivated area in 2010 with wheat crop was about 3.147 million feddans, including 2.654 million feddans in old lands representing 84.33% of the total cultivated area. While, in the new land is 493 thousand feddans representing 15.67 % of the total area. The cultivated wheat crop area in Nubaria reached about 1.404 million feddans in 2010 /2011. The total production in the new land was about 7.679 million ardabs (productivity 15.57 ardabs (\approx 150kg) / feddan), and the total production totaled about 56.82 million ardabs (productivity 18.06 ardabs / feddan). The average cost of the production per feddan of wheat crop is about 3459 pounds, and net return per feddan 2190 pounds. It is clear from the study that the cultivated varieties are characterized by its ability to tolerate the adverse condition such as salinity. The farm crop irrigated by agricultural drainage water was higher in the average of physical output of farm crops irrigated with fresh water and mixed with water. It has been shown that the increase of the overall production flexibility by 1.2, which represents increased earnings capacity. It turns out that the pound spent in the production process of the sample irrigated with fresh water and mixed is obtained at 2.9 pounds after the submitting the total costs, followed in the profitability of the sample which irrigated with fresh water and agricultural wastewater at 1.3, 1.2 pounds, respectively. The increased economic efficiency of the mixed water sample 6.13% LE of the net production, followed by the sample irrigated with fresh water and agricultural drainage water.

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Introduction

The state is in a policy of re-expansion of the use of agricultural drainage water and treated wastewater for irrigation in order to achieve the horizontal agricultural expansion policies. The formal estimation of agricultural drainage water re-use is about 4.37 billion m³/year for the average period (2001/ 2011), about 1.77 billion cubic meters in the area of East Delta, about 1.92 billion cubic meters in the downtown area of the Delta and about 0.68 billion meters in the area of the western Delta.

The re- use in an informal way is estimated at about 2.76 billion cubic meters in the period (2009/2010), of which 1.11 billion cubic meters in the east of the Delta, about 1.02 billion cubic meters in the middle of the Delta and about 0.63 billion cubic meters in the west of the Delta.

Thus it should be mentioned that there is an existence of technical standards for judging the quality of agricultural drainage water suitability for irrigation. Also, the crops vary in the degree of tolerance of salinity and its impact on productivity, and also the problem of water pollution which is the most important key in determining of expansion in the re-use of water due to the adverse effect.

Nevertheless, there are obstacles and determinants of limiting the expansion in the use of agricultural drainage water in the future, of these determinants of how wastewater required to maintain normal life in

northern lakes and maintain the salt balance of the territory of the Delta in addition to the expected negative impact of surface irrigation development program.

As well as, the expected impact of the Toshka project on the quantity and quality of wastewater as for the amount of water from the sewage is estimated at about 2.28 billion cubic meters and distributed about 37% of this amount in the agricultural drains after secondary treatment. While, about 13% are drained in the northern lakes after primary treatment, about 2.5% are drained in the Suez Canal after primary treatment, and about 47 % of the design capacity of the treatment plants drained to the nearby land after secondary treatment.

The expansion in the reclamation and cultivation of new land is a major agricultural object of Egypt in 1954, which focused on the state through successive five-year development plans to add about 3.50 million feddans until 2007, about 78 % of them has been growing (2002/2003- Five Year Plan - 2006 /2007) targeted reclamation of about 803 thousand feddans will rise to about 825 thousand feddans during the next five-year plan (2007/2008- 2011/2012) and then to about 855 thousand feddans during the five-year plan (2012 /2013 - 2016 /2017).

The total productions of fruit and vegetables have increased from around 3.9 million tons in 1976 to about 13.7 million tons in 2000 as a result of increasing the

area under cultivation of vegetables and fruit as well as, from about 58 thousand feddans to about 156 feddans between the above two years.

The agricultural investments directed to the horizontal agricultural development programs are considered of the most important means of implementing agricultural development programs in Egypt, where they play an active role in achieving a high growth rate in the agricultural sector. Increasing the rate of investment in agricultural projects, contribute to achieve the objectives of development increase income and provide the requirements of food and raw materials to drive the development process. Generally, farm income represents about 55% of the main income in rural Egypt, while other entry represents the percentage of 45%.

Problem of the study: -

As is well known agricultural waste-water containing a high amount of salt as it contains the pollutants from the remnants of fertilizers and pesticides. Also, the treated waste-water contains chemical and pathogenic pollutants, in addition to the content of organic manure and nitrogen. The research problem include in the negative and positive impact for the re-use of those kinds of irrigation water on the production and supplies to the productivity and total income.

Objective of the study: -

The main goal is to estimate the parameters of the relations water productivity for the qualities of the different irrigation water and efficient economic performance and productive used to irrigate wheat crop. In addition to flexibility, productivity of water for irrigation and inputs other productivity, as well as flexibility total which reflects the return of the capacity in the quality and quantity of irrigation water for wheat crop in the sample the Nubaria area. As well as, the evolution of the cultivated area, productivity, and total production of wheat crop in the study area.

$$Y_H = AX_{1H}^{b1} \cdot X_{2H}^{b2} \cdot X_{3H}^{b3} \cdot X_{4H}^{b4} \cdot X_{5H}^{b5} \cdot X_{6H}^{b6}$$

YH = (H) physical production for the crop

X1H = (H) ground-feddan expense in viewing

X2H = (H) the amount of irrigation water(m³) used in the sample

X3H = (H) net amount of nitrogen(kg) in Views

X4H = (H) capital (the monetary value of seeds, chemical fertilizers and pesticides except nitrogen)

X5H = (H) of human labor(man/ day) in the viewing

X6H = (H) automation(watch) watch

Methodology and data sources: -

The study relied on methods of descriptive and quantitative analysis and estimate the production function (cup - Douglas) for the wheat crop. As well as, some indicators of economic efficiency as the study relied on published and unpublished data from the

Ministry of Agriculture and Land Reclamation to show the current status of the use of those qualities low of water for irrigation. Also, the study relied primarily on preliminary data field to achieve the goal, which has been collecting from field data for three hits of irrigated water re-use of those brands of irrigation water for wheat crop during the season (2010/2011) of the questionnaire in the Nubaria area.

Indicators of agricultural production of wheat in (2010 / 2011): -

First: - area, productivity, average production costs and net return per feddan of the most important winter wheat field crops: -

The evolution of wheat area of 1.3 million acres in 2009 and productivity about 16.8 ardabs (~150Kg) to the same year, the total cultivated area in 2010 wheat crop of about 3.147 million feddans, including About 2.654 million feddans of the old lands represent 84.33% of the total cultivated area, and about 493 thousand feddans of new land accounted for 15.67 % of the total area planted with wheat. As well as, wheat production is estimated at old lands About 49.141 million ardabs (productivity 18.52 ardabs / feddan), while in the new land, the Production has reached about 7.679 million ardabs (productivity 15.57 ardabs / feddan), and production totaled about 56.82 million ardabs (productivity 18.06 ardabs / feddan). The average cost of wheat crop production per feddan at about 3459 pounds, and net return per feddan was 2190 pounds.

The total cultivated area in 2010 from wheat crop in Nubaria about 1.404 million acres in 2010 / 2011, the North Al-Tahrier represents the 3202 thousand feddans with productivity estimated at 13 Ardabs. While, the sugar beet area was about 42.3 thousands feddans with productivity estimated by about 14.6 ardabs and West Nubaria region represent 29.11 thousand feddans with productivity estimated by about 13.9 ardabs. As well as, Bustan area accounts for about 18.4 thousand acres with productivity estimated at 12.4 ardabs and South Tahrir area of about 12.4 thousand acres with productivity estimated about 14.7 ardabs. The El-Nahda and Marriott represent about 37.73 thousand feddans with productivity estimated at 15.3 ardabs. The cultivated varieties characterized by the high cropping production and high resistance to genetic disease and feedbacks as Egypt 1, Egypt 2, Sakha 93, Sakha 94, Gemmeiza 9, Gemmeiza 7. The total of the Republic of Sakha 93 at about 1.13 millions feddans. The total production of about 20.22 million ardabs 17.86 ardebs productivity /feddan. The total state production of Sakha 94 at about 3.8 millions feddans, and production totaled about 71.17 million ardabs (productivity 18.41 ardabs / feddan). The total state production of Gemmeiza 9, about 46.14 thousand feddans and production totaled about 9.05 million

ardabs (productivity 19.6 ardabs / feddan). The total state production of Gemmeiza 7 at 26.5 thousand acres and production totaled about 4.88 million ardabs. The estimated production of the Noubaria area from Sakha 93 is about 49.15 thousand feddans and production totaled about 7.69 million ardebs, with productivity of 15.65 ardabs / feddan. While for the variety Sakha 94 to the same area (Noubaria) estimated about 37.92 thousand feddans and production totaled about 6.36 million ardabs (productivity 16.79 ardabs / feddan). The variety Gemmeiza 9 in the Noubaria is estimated by about 6.39 thousand acres and production totaled about 1.056 million ardebs (productivity 16.51 ardabs / feddan). Variety Gemmeiza estimated 7 in the same area of about 4.11 thousand feddans and production totaled about 6.904 ardabs of productivity (16.7 ardabs / feddan).

The most important crop structure in the region in the season 2010/2011 wheat, faba- bean, alfalfa, barley,

sugar beet, flax, onions, garlic, alfalfa Hijazi, rapeseed, and sugar cane. Where the estimated feddans are by 1.4 million acres, 25.2 thousand feddans, 58.7 thousand feddans, 1.4 thousand feddans, 18.6 thousand feddans, 0.25 thousand feddans, 5.2 thousand feddans, 0.980 thousand feddans, 849 thousand feddans, 0.078 thousand feddans, 0.400 thousand feddans respectively.

Second: - The production capacity of the new lands in the Arab Republic of Egypt:-

As shown in Table (1) cultivated areas of basic food crops in the new land ratio to the total cultivated areas nationwide. The datatable shows that the share of total new land varies from one crop to another, where the share of new land a maximum of upto 73% of the cultivated area in the barley crop, while up to a minimum of 0.33% in the soybean crop.

Table (1) shows the cultivated areas of important food crops in the new land and its share of the acre age at the level of the Republic (season 2010/2011).

Crop	Area /feddan	Area % to the total area of the country
Wheat	2.221 million	18.12
Beans	212000	31.3
Lentil	1875	1.81
Barley	83000	72.13
Rice	1.770 million	3.72
Maize Corn	1.643 million	9.79
Ground nut	146173	72.22
Sesame	66354	59.13
Soya bean	20699	0.33
Sunflower	826	8.35
Potatoes	148969	14.74
Tomatoes'	537206	29.57
Winter onion	101000	21.89

Source: - The Ministry of Agriculture and Land Reclamation - Central Department for Economic Affairs - Bulletin of the agricultural economy - in 2012

Third: - the size of the food gap: -

The strategy for agricultural development in Egypt targeted to achieve food security, consistent with the goal of maximizing the value of agricultural production. However, those policies has failed for pursuing due to the increasing rates of demand for food, leading to increase reliance on the outside in the

provision of food needs. As well as, the subsequent risk of dependency States that control the major food markets, increase financial allocations needed to finance the increased imports of food commodities. While, during the period 2000-2010 has not been achieved self - sufficiency in Egypt only from white

meat the rest of the essential food commodities have the same food gap, where it is as follows:-

For the wheat crop, one of the most important strategy food commodities, the average production during the period 2009/2010 was about 7.5 million tons, with an average consumption during the same period reached 12.6 million tons, and therefore the average size of the food gap of wheat, about 5.1 million tones, representing approximately 40 % of our wheat, are managed by imports from unsuitable wheat for human consumption. The annual consumption of wheat per capita has increased to about 165 kg per annum. The problem lies in the cultivation of more than 3 million feddans per year in Egypt, which is one-third of the total agricultural area.

The volume of the food gap of maize 36%, and 51% of municipal beans, lentils is about 97 %, oil about 77%, and red meat, 27 %, fish 13%, sugar 24%.

Fourth: - the deficit in the balance of trade and agriculture: -

Despite the intensive efforts made by the State in order to boost exports both in terms of simplification of export and give investors and exporters multiple incentives, but the volume of agricultural exports is still low and does not represent only a small percentage

of the total Egyptian exports reaching 13.9% in 2010, after that was reached to 19.3% in 1992. Where agricultural exports amounted to about 21092 million pounds and total exports about 151125 million pounds in 2010. As food exports represent about 40% of food imports.

In contrast, agricultural imports have seen an increase amounting in 2010 to 51 223 million pounds, also saw the balance of agricultural and food deficit of 58239 million pounds which represents about 39.1 % of the total trade deficit, which amounts to about 149 219 million pounds during the same year.

Discuss the results of the use of productive inputs: -

Data shown in Table (2) illustrates the most important various agricultural operations of sample cultivated by different irrigation water qualities in the agricultural season(2010-2011). As shown in Table(3) geometric mean of the amount used in the input farming and the resulting physical wheat crop depending on the quality of irrigation water used in the season (2010/2011), where mounting noticed an increase in the average amount of irrigation water, nitrogen net, the current capital, human labor, and automatic working the case of the use of water.

Table 2 shows the different agricultural operations and the physical output of the sample cultivated with different qualities of irrigation water for the agricultural season (2010/2011) in Noubaria region.

Agricultural operations	Agricultural drainage water	Fresh water (feddan)	Agricultural drainage water (feddan)	Mixed fresh and drainage water
Management	200	476	476	476
Superphosphate fertilizer	135	321.3	321.3	476
Seeds	280	666.4	666.4	321.3
Labor for seedling	50	119	119	666.4
Labor for preparation of the land for irrigation	75	187.5	178.5	119
Pesticides	130	309.4	309.4	178.5
Nitrates fertilizers	500	595	1190	309.4
Maintenance of irrigation machine	200	1100.75	476	396.6
Herbicides	55	130	130.9	1100.75
Irrigation labors	400	476	952	130
Plowing	100	238	238	317.3
Fuel	250	-	595	238
Gear	25	-	59.5	-
Harvesting labor	200	476	476	-
Wheat harvest	300	714	714	476
Total costs	3100	5800.35	7378	714
Output Basic	16.43	6.139	7.473	4453.2
Byproduct /totestraw	8	16.66	19.04	5.044
Byproduct value	2000	4165	4760	3570
Basic byproduct	-	11.6641	14.99	9584.3
Irrigation water quantity	2752	4445.8	5791.76	4998

Source: - collected and calculated from the study area Noubaria, the data in the growing season (2010/ 2011).

Maintenance annually guns =?= 925 + 2.38 = 220.5 pounds

Maintenance of the crop sprayers =?= 1100.7 pounds

Irrigation with different water qualities like agricultural drainage directly, and then fresh water, and agricultural drainage water blended, while increasing the rate of irrigation to wash impartial from any salts trailing a possible presence of water may affect crop growth with soil. As well as, the productivity of the crop and the consequent increase component of the work human and auto-work for various agricultural service operations.

The increase and clear mounting in the capital, when irrigation by agricultural reused water drainage directly compared to irrigation with fresh water is due to the increase in the rate of seed and amounts of nitrogen, phosphate fertilizers. In addition to the rate of pesticides used in the resistance to disease and weeds was observed. In the case of fresh water use directly in irrigation, it noticed that not use farmyard manure and decrease the amount of nitrogen added. While, maintaining those farms on the recommended average phosphate fertilizer to help in the process of flowering crop and the amount of irrigation water fresh hardly be less. It was found during the study that the farms that use agricultural water drainage reduced human labor and increase automated work hours compared to farms in the sample that with fresh water or mixed together due to the increase of automatic work as a substitute for the shortage of human labor was also observed to increase the rate of seeds to those farmers fear the risk of those seeds fungal Stoic created by the soil as a result of the use of agricultural drainage water. In addition to increase the rate of pesticides, because of the spread of fungal infection in some farms and the growth of unwanted weeds and the spread of insects.

Table 3 shows the geometric mean of the used quantity of production elements and the physical output of hectares of wheat crop farms sample depending on the quality of the amount of irrigation water used in the agricultural season (210 / 2011).

Item	Fresh water	Fresh and drainage water	Agricultural drainage water
Average of cultivated area (fed.)	1 FEDD.	1 FEDD.	1 FEDD.
Average of irrigation water (m ³ /feddan)	4445.8	4760	5791.86
Average of net nitrogen quantity (kg)	595	396.6	1190.30
The current average capital	5800.35	4453.2	7378.39
Human average working (man / day / feddan)	42.1	42	45.60
Average working hours automated user	48.79	65.25	63.18
Average physical product per (feddan)	6.139	5.044	7.473
Average gross byproduct / straw (feddan)	16.66	14.28	19.04
Byproduct price LE.	4165	3570	4760
Physical product price LE.	1.6641	9.5843	14.199
Total cost LE.	5800.35	4453.2	7378

Source: - collected and calculated from the study area Noubaria, the data in the growing season (2010/ 2011).

It has been found to be significant in all types of irrigation water used and all reflect the status of the marginal production decreasing. The sense that it increase the amount of irrigation water used by 1% of

As can be seen from Table (3) The average physical output of the crop implanted in the sample and Irrigated with agricultural drainage come in the first place, while comes in second average physical output implanted sample irrigated with fresh water while irrigated mixed at 1 : 1 comes in the third rank.

Relations of water productivity for estimated wheat crop:

Seen from the table (4) Estimates of water production function parameters according to the model is estimated in the form of (Cobb - Douglas), as well as flexibility in the wheat crop productivity for the study sample according to the model is estimated depending on the quality and quantity of irrigation water used. It is seen from the parameters estimated for the study sample of the output physical wheat and independent variables significant relationship at the level of 0.01. This confirms supply only the value of the coefficient of determination, which amounted to 0.86, 0.92, 0.97, respectively, any changes in the independent variables explain about 86 %, 92%, 97% of the changes that occur in the physical output according to the quality of irrigation water used is fresh water mixed and agricultural drainage water, respectively.

Studying the productivity of irrigation flexibility by water quality in the study sample were found to be approximately 0.393 % for wastewater agricultural, (-0.752) fresh water, and (-0.040) water mixed with any, it is positive in the case of irrigation Agricultural water drainage and negative in the cases of irrigation water mixed and fresh water, all less than one.

the level of the current use leads to increased total output physical wheat crop by an estimated 393 % in the case of irrigation water agricultural drainage. The negative value for flexible production of fresh water

for use excess water to wash salt in soil where the consequent increase damage user of irrigation water rates 1% for the years of the current usage sample which gives a total output physical wheat crop by an estimated 752 % portion, 0.40 % when using fresh irrigation water and mixed with irrigation water and fresh. studying the flexibility overall productivity found that about 1,211 in the case of irrigation water exchange agricultural direct manner of 0.743 in the case of irrigation with fresh water and about 921 % in the case of irrigation water mixed (fresh and Exchange Agricultural).

This means that the flexibility of productivity (GDP) of the state of irrigation water agricultural drainage represent a yield increasing productive capacity in the sense 1 % which increase in the level of resource use when studying the combined increase in total physical output achieved by the largest.

In the case of irrigation with fresh water or mixed water (agricultural drainage and fresh), the overall production flexibility represent a diminishing yield of the capacity of productivity because it is less than one correct. That means to increase productivity

input as a whole by a certain lead to increased physical output less as illustrated in Table (4).

Due to the importance of the relationship between the quality of irrigation water used and the nitrogen element, the statistical analysis has made it clear that overuse in the nitrogen element in the case of irrigation with fresh water or mixed represent production flexibility for both about (0.455), about (0.193), respectively, which is reflected the lack of physical total output by the same percentage.

Basic Accounting for irrigation water:

* **Irrigation efficiency:** - reflect the pound profitability obtained by the unit of water used.

* **Nonprofit economic efficiency of production:** - reflect pound spent in the production process for pounds obtained with the efficiency of farm management.

* **Microeconomic efficiency:** - reflect the profitability pound obtained after the cost of the water used.

* **Overall economic efficiency:** - reflect the pound obtained in the production process after the total costs.

Table (4) Estimates of parameters of water production functions of the type of cup - Douglas under varying conditions of irrigation water for crop quality product on the level of the sample farms of agricultural research for the season (2010/2011).

water quality	The number of Triangles	absolute limit A	ground X ₁	water irrigation X ₂	amount of nitrogen X ₃	the capital X ₄	human labor X ₅	X ₆ working robot	total elasticities	r ²	r	F Calculated	the moral
Agricultural drainage water	4	5.1381(28))	0.704)4.47(	0.393)3.20(	0.263)1.86(	-0.034)-0.95(	-0.160)-2.10(	0.045)0.45(	1.211	0.87	0.86	16.26	***
Fresh water	4	2.466)1.03(	1.842)2.57(	-0.752)-2.27(	-0.455)-1.07(	-0.555)-1.15(	-0.179)-0.97(	0.841)2.35(	0.743	0.94	0.92	35.23	***
Disbursement of agricultural + fresh water mixed)	4	0.197)0.490(	0.126)0.180(	-0.040)-0.38(	-0.193)-0.36(	0.712)5.71(	0.377)1.33(	-0.061)-0.33(	0.9211	0.89	0.97	141.67	***

Source: Compiled and calculated from data in the study area NUBAREYA agricultural season (2010/2011)

Values between brackets represent the standard error of the regression equations

*** Significant at the level of moral (0.01)

Mixed water (fresh water + wastewater by agricultural (1: 1).

Table 5 shows the Total costs. Net profit. Economic efficiency and the Basic Accounting for irrigation water of feddan of wheat crop farms sample depending on the quality of the amount of irrigation water used in the agricultural season (2010 / 2011) from the study area Noubari.

Item	Fresh water	Agricultural drainage water	Fresh and drainage water
Total cost per (fed.)	5800.75	7378	4453.2
Average of irrigation water (m³/feddan)	4445.8	5791.76	4760
Net Profit (wheat /feddan)	5784	7359	8700.8
Total irrigations cost per (season)	1576.75	2023	1418.05
Irrigation cost	394.18	505.7	354.62
Total Net Profet	15.8391	18.959	13.154
Overall economic efficiency	2.7	2.5	2.9
Irrigation efficiency	1.3	1.2	1.8
Nonprofit economic efficiency of production	0.02	0.9	1.8
Microeconomic efficiency	3.7	3.6	6.13
Production efficiency of water	1.3	1.29	1.05

Source: - collected and calculated from the study area Noubaria, the data in the growing season (2010/ 2011).

* Production efficiency of water: - (average production of water) and reflect the use of an additional unit and one of the water resource to maximize production within the farm.

As seen from Table (5) that the pound spent in the production process irrigated with fresh water and mixed obtained from the 2.9 pounds after the total costs, followed in profitability pound spent in the production process irrigated with fresh water and agriculture wastewater around 2.7, 2.5 pounds, respectively, after the total costs. As can be seen that each unit of water used is obtained from the 1.8 pounds profitability of pounds spent for irrigation of agricultural wastewater and fresh, followed in second place unit of water used in the production process irrigated with fresh water and agriculture wastewater at 1.3, 1.2 pounds, respectively.

As for the profitability of production shows that the pound spent in the production process, reflects an increase in net profit by about 1.8 pounds for irrigation agricultural drainage water, followed in ranking the third irrigation with fresh water at about 0.9, 0.02, respectively. For economic efficiency reflects pound spent per unit of mixed water with about 6.13% pounds in net production followed in second place with fresh water irrigation and agricultural drainage water for irrigation of about 3.7, 3.6 pounds in net output. Regarding the efficiency of water resource productivity shows that the use of an additional unit of water resource to achieve an increase in farm output at 1.3, 1.29, 1.05, respectively, for irrigation with fresh water and waste water and agricultural irrigation water mixed fresh.

Main and branch canals in Noubaria area at the most important villages: -

The field sample shows that the Nubaria Canal is the main branch of the branching area including sub Nubaria Canal and Nasare branch and Behara branch and the lake and the canal Solimaniya, canal Abu Masoud and Mariot Canal. It was found that the Naser Canal irrigates area and conquest of Baghdad and the El-Rowad, Badr and the Umm Saber.

As it turns out that the canal Nubaria sub-irrigated area of El-Tahady, El-Nagah and the investors. Also, it is shown that the canal Salmaniya irrigate El-Bustan area and expansion of the graduates, beneficiaries, companies, investors and includes the villages of Abbas El Akkad, She'shaie, Tawfiq al-Hakim, Naguib Mahfouz, Alharoa, Abdel Moneim Riad, Mohamed Refaat, Hussein al-Ghazal, Ahmed Rami, Ali ibn Abi Talab, police supervision and El-Reqaba.

For Al-Nasr Canal branching from the Nubaria canal irrigates West Nubaria area which includes the villages of Al-Shagaa, Bilal bin Rabah, Mohamed Abdel Wahab, Elisha, Prophet Solomon, Mohammed Azzam and Adam and Hussein Abu Yousr, Abdel Halim Mahmoud Shaltout, El-wafaa, Besar, Abdul

Rakeep, Mohammad Azzam, Ahmad Badawi, El-amal and Othman Ibn Affan. For Abu Masoud Canal irrigate Elnahda area and agricultural Mariot area. Regarding the Mariot Canal irrigate area of the Burg Al Arab.

The most important recommendations in the field of economics of modern irrigation methods:

The study concluded the following recommendations:

- 1 - the need for a modern irrigation methods in the reclaimed lands and modern reclamation due to limited water element.
- 2 - The study recommends the need to overcome the problems that cause a reduction of the use of modern irrigation methods. As well as made the availability of the modern technology at economical prices.
- 3 - The study recommends exempting modern agricultural machinery from customs duties and taxes in order to reduce cost prices while, the availability of the possibility of local manufacturing.
- 4 - The need education, training and media attention guided farmers of the importance of modern irrigation methods.
- 5 - To take measures for the introduction of irrigation water in the framework of economic accounting, which the consequent saving of about one billion cubic meters / year.
- 6 - The real and actual supervision of continuous irrigation engineers to deliver water to the land owners.
- 7 - Study the crop structure optimization which gives the greatest return for the water unit.
- 8 - Selection of salinity - tolerant crops in the land where it is used agricultural drainage water.
- 9 - Care drainage of surface and subsurface drainage to maintain the productivity of the new land.
- 10 - Taking into account the economic lifting accounts In such as the use of groundwater sources.

Special considerations circulate benefit from the study:

- 1 - The obtained results represent a sample of the study should be reservation in the cases where the circular requires that increase the sample size to represent the different types of soil, crops, locations and modern irrigation methods for reclaimed areas.
- 2 - Important study of behavior and common means of raising water use under Egyptian conditions and it is located on the technological aspect to the different irrigation methods and suitability for the types of soil.

3 - The study see that the need for integration between different disciplines on the study of water resources - land reclamation and how to rationalize water use and conservation of loss.

From the previous display shows the importance of the study of modern irrigation methods in the reclaimed land to maintain the amount of water lost in irrigation and agriculture new spaces by different crops and vegetables to meet the population increase expected and work to reduce the gap between consumption and production, and reduce the deficit in the balance of payments of Egypt.

Most important problems in the field of study:

- 1 - The high cost of irrigation supplies.
- 2 - Counting of experience and benefit agricultural farm tours.
- 3 - The difficulty of transportation.
- 4 - Irregular irrigation shifts and the lack of irrigation water in a timely manner.
- 5 - The high costs of production inputs.
- 6 - Lack of specialized labor wages rise.
- 7 - The emergence has cultivated in some areas.
- 8 - The difficulty of agricultural drainage water mixing in fresh water for irrigation.
- 9 - Drainage water containing a high amount of salts, pollutants, fertilizers and pesticides residues.
- 10 - The negative impact on acres productivity and then the total revenue of the crop in the case of the direct use of agricultural drainage water.

Summary:

The state in a policy of re-expansion of the use of agricultural drainage water and treated wastewater for irrigation in order to achieve the horizontal agricultural expansion policies. The estimated re-use water in a formal way of agricultural drainage water about 4.37 billion cubic meters / cubic / year. For the amount of sewage water is estimated at about 2.28 billion cubic meters, the average period (2001 / 2011). It should be noted the existence of technical standards for judging the quality of agricultural drainage water suitability for irrigation and crop vary in degree of tolerance of salinity and its impact on productivity, although the water pollution problem banks, which represent most major determinants of horizontal agricultural expansion.

The total cultivated area in 2010 wheat crop of about 3.147 million acres, including about 2.654 million acres in the old lands represent 84.33% of the total cultivated area, and about 493 thousand acres of new land accounted for 15.67 % of the total area planted with wheat. The wheat production is estimated in the old lands by about 49.141 million ardebs (productivity 18.52 ardebs / acre), while in the new land Production has reached about 7.679 million

ardebs (productivity 15.57 ardebs / feddan), and production totaled about 56.82 million ardebs (productivity 18.06 ardebs / feddan). The average cost of production per feddan of wheat crop at about 3459 pounds, and net return per feddan 2190 pounds. The total area planted with wheat crop Nubaria about 1.404 million feddans in (2010 / 2011), the Shamal Al-Tahrier area represents 3202 thousand feddans with productivity estimated at 13 Ardabs. While, sugar beet area about 42.3 thousand feddans with productivity estimated by about 14.6 ardebs and West Nubaria region represent 29.11 thousand feddans with productivity estimated by about 13.9 ardebs. As well As, Bustan area accounts for about 18.4 thousand feddans with productivity estimated at 12.4 ardebs and South Tahrir area of about 12.4 thousand feddans with productivity estimated about 14.7 ardebs. For El-Nahda and Marriot about 37.73 thousand feddans with productivity estimated at 15.3 ardebs.

The cultivated varieties characterized by its ability to tolerate the adverse effect of using low quality water such as salinity effect. It is clear seen from the study that farms which fed Agricultural drainage water has the average gross of physical was higher than the farms irrigated with fresh water and mixed water. Also, it has been shown that the increase of overall production flexibility about 1.2, which represents increased earnings capacity.

The statistical analysis showed that the excessive use of nitrogen element reflects a lack of gross physical product for each of the three types of irrigated sample. It turns out that the pound spent in the production process of the irrigated with fresh water sample and kinds obtained from the 2.9 pounds after the total costs, followed by profitability pound spent in the production process of the sample, which irrigated with fresh water and agricultural wastewater at 1.3, 1.2 pounds, respectively. While increasing profitability of production of the sample irrigated by agricultural drainage at about 1.8 pounds, has increased economic efficiency of the water sample mixed 6.13% of the net production, followed by the sample irrigated with fresh water and agricultural drainage water. The study was completed to some of the recommendations, including: - the need for a modern irrigation method in the reclaimed lands and modern reclamation due to limited water element. To take measures for the introduction of irrigation water in the framework of economic accounting, which the consequent saving of about one billion cubic meters / year. Choose salinity - tolerant crops in the land that used the agricultural drainage water. For the universal access to the study: that the obtained results represent a sample of the study should be reservation in cases where the circular requires that increase the sample

size to represent the different types of soil and crops. The most important problems in the field of the study is the high cost of irrigation supplies and the high cost of production inputs. As well as, lack of specialized high labor wages and agricultural drainage water containment a high amount of salts, contaminants fertilizers and pesticides residues, which has had a negative impact on the acres productivity and overall crop income.

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