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AN ECONOMIC STUDY FOR USING MODERN TECHNOLOGY IN AGRICULTURE IN FAYOUM GOVERNORATE

By

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Abstract

Became the scientific and technological progress as a decisive issue for all societies developed and developing countries alike, and then became the development of any society and the provision of factors of power and the revolution has largely depends on the success of this community to mobilize efforts and organizing to benefit from the introduction of methods of science and technology.

This is the wheat crop of the most important food crops in the world in general and Egypt in particular, in spite of increasing the cultivated area of wheat to approximately 3.08 million acres in Egypt in 2008, and increase production to about 55.2 million ardebs in the same year, high productivity rate to 18.12 ardebs / acre, but the gap wheat in Egypt is on the increase recorded in 57% in 2008 compared to 55% in 2005, after reaching our consumption of wheat to 13 million tons, due to high population increase, all This has led to increase the quantity of imported wheat to reach 7 million tons, representing the gap between domestic production and actual consumption, but for the tomato crop has fallen space planted to up to about 589 000 feddans in Egypt in 2008, which resulted in the total production of tomatoes decline to reach 7.798 million tons in 2008 compared to 8.147 million tons in 2005, which led to shortages of surpluses to export up to 11.9 thousand tons in 2007 compared to 13.258 thousand tons in 2005.

Was therefore to identify the main goal of research is to identify the economic implications of the use of certain technologies of modern agricultural production of wheat and tomatoes in Fayoum governorate, and to achieve this goal took a random sample of villages in central Atsa and Tamyah by the relative importance of space and number of holders, and the packets technological obtained for wheat farmers are: technological package (a) included the treatment of technology is only one seed, improved technological package (b) included the two deals technologies for two of the settlement by using a laser beam, improved seeds, technological package (c) included two things technologies for two mechanized farming Balstarp and seeds improved technological package (d) included three transactions technology, agriculture using Balstarp and settlement using lasers, improved seeds and technological package (e) included four transactions technology a settlement with lasers and mechanized farming Balstarp and mechanical harvesting cropper, improved seeds, and for farmers in tomatoes is technological package (a) included the treatment of technology and only one is to use the product hybrid, technological package (b) included the two deals technologies for both product hybrid settlement laser, the package of technological and (c) included two things technologies for both product hybrid, drip irrigation, growth regulators, the package Technological Advice (d) consisted of four transactions other technology, a variety of hybrid and drip irrigation and enhancers of soil and compound fertilizers, the package of technological and (e) included five transactions



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technology, a variety of hybrid and drip irrigation and enhancers of soil and growth regulators, fertilizers, vehicle, and the most important results obtained are:

--A distinction was seen in the production and total revenue and net return for all packages of technology used in the production of wheat (a, b, c, d, e) for the comparison group, where the percentage increase (25.3%, 19%, 43%), (38 %, 29%, 62%), (34%, 22%,%, 51%), (57%, 44%,%, 109%), (72%, 56%,%, 157%) for each of the packages the previous arrangement, but for tomato crop percentage increase (44%, 43%, 123%), (52%, 51%, 146%), (90%, 89%, 247%) (100%, 94% ,%, 252%) (110%, 103%,%, 282%) (110%, 103%,%, 282%) for each of the packets (a, b, c, d, e, f), respectively .

--The use packet technology (a, b, c, d, e) to move the production function of wheat crop to the right, and the amount of the offset (3.05, 3.50, 3.20, 6.50, 8.50) for the packages prior to the arrangement, but for the tomato crop was the amount of displacement ton (4.88, 5.75, 9.85, 10.5, 12.5), packets (a, b, c, d, e, f), respectively.

--Study of the flexibility the overall productivity of all packages of technology used in the production of wheat (a, b, c, d, e) was about () for each of the packages prior to the arrangement, while the flexibility overall productivity of wheat crop of about () for each of the packages a , b, c, d, e, f), respectively.

--Assessment functions of production costs for packages technological (a, b, c, d, e) used in the production of wheat shows that the optimal size of production and size of the holy profit (20:24, 22.2), (22.8, 25.6), (21.6, 23.4), (27.6, 29.34) (28.25, 31) ardebs per acre for each of the previous technological packages, respectively, while the optimal size of production and size of the holy profit for the comparison group (20.24, 22.2)

--As for the tomato crop and assessment functions, the production costs of packaging technology (a, b, c, d, e, f) used in the production of wheat shows that the optimal size of production and size of the holy-for-profit (23.4, 26), (24.5, 28.16), (30.0, 31.3), (30.25, 33.46), (31.14, 36.0), (30.25, 33.46) for packages previous technological, respectively, while the optimal size of production and size of the holy profit for the comparison group were hits (17.25, 19.85).

--Therefore, the study recommends changing the style traditional production and reduce the use of the items with low productivity and replacement of items recommended for cultivation of the proven superiority beam technology and modern varieties of seeds for traditional pattern vation and to use technological package integrated proven useful technically and economically under the conditions of the Egyptian

Summary and recommendations

The raising of merit Abigail for planting a key objectives of economic development of agriculture in Arab Republic of Egypt, like other developing countries that are national upset relative to the size terrestrial farm, where it's the increase in land area and thus the increase in crop area does not fit with the



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steady growth in population and subsequent increase in consumption, requiring the imperative to win the race between reproduction and agricultural production of food crops through the expansion of Naughty development, both to the development of agricultural resources exploited already, which is known to agricultural development vertical, or by adding the potential suppliers of agricultural new, which is known as horizontal agricultural development.

Problem of the study is that the gap in wheat cultivated in Egypt in a continuous increase was recorded in 57% in 2008, compared to 55% in 2005, after reaching our consumption of wheat to 13 million tons, due to high population increase, has led to the increase in the quantity imported of wheat for up to 7 million tons, representing the gap between domestic production and actual consumption, and decreased area cultivated tomato to about 589 000 feddans in Egypt in 2008, which resulted in the total production of tomatoes downward to 7.798 million tons in 2008 compared to 8.147 million tons in 2005, which led to shortages of surpluses to export up to 11.9 thousand tons in 2007 compared to 13 258 tons in 2005

Based on the research problem was identified main objective of the research is to identify the economic implications of the use of certain methods of modern agricultural technology in the production of wheat and tomato crops in the governorate of Fayoum

The study consisted of four doors of a major addition to the introduction and summary in Arabic and English and a list of references in Arabic and English, the first section the theoretical framework and review of reference for the most important results of previous studies by two chapters, Chapter One deals with the theoretical framework of agricultural technology through some of the concepts relevant to the study of the most important concept Technology and Chapter II benchmark and review of the economics of the use of technology.

Singled out the door the second characterization of the region and the study sample included two Riisien, singled out the first characterization of the Fayoum governorate as a range up my seat to a field study by examining the resources and the determinants of agricultural development in that province, Chapter II of Part Two was singled out by the characterization of the sample field study was then subjected to two main aspects, care The first is selection of the study sample representative of the community of Fayoum Governorate, and interested in the second: As a selected sample boiled light of data and information collected using the questionnaire for the study

While addressing Section III the impact of the use of technology on the production of wheat and tomato farms of the sample and has therefore included



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this section two main parts, singled out the first of them to clarify the effect of using technology on the most important economic indicators for the production of wheat and tomato sample search, where results showed a marked true in productivity of the basic product for all packages of technology used in the production of wheat crop for the comparison group used for the varieties of traditional, where the percentage increase in the average yield of the main output wheat crop is about (25.3%, 38% and 34%, 57%, 72%), each of the packages technology (a, b, c, d, e), respectively, while for the tomato crop there was a real advantage in productivity of the basic product for all packages of technology used in its production for the comparison group used for the varieties of traditional, where the percentage increase in the average yield of the gross tonnage to the main (44%, 52%, 74%, 110%, 33%, 228%) for each of the technological packages (a, b, c, d, e, f) pre-order.

The study also noted that there was no difference significant difference between the average total cost of the total acres of wheat pound farm used packets of different technology (a, b, c, d) for those that do not use the technology, while the average total cost of the total acres of wheat pound within the farms that have used technological package integrated (e) from those that did not use any technology, reaching savings in the average total cost of the total acres of wheat pound to 223.06 pounds, which represents about 10.88%, due this savings in the average total cost of the total acres of wheat in the privacy (e) to use cropper mechanism, either for the tomato crop indicate data the same table to the higher average total cost of the total acres of tomatoes pound farm used packages Technological Advice (d, e, f) from those that did not use technology, have disagreed that the rise of package technology to another according to the type of technology used in each package, where the increase in the average total cost of the total acres of tomatoes pound to 716.86, 704.58 o.4764 pounds for each of the packages prior to the arrangement, The percentage increase of about 17.35%, 17.05%, 115.3 per packages prior to the arrangement, because the rise in the average total cost of the total acres of tomatoes pound farm used packages Technological Advice (d, e, f) greater than in the farms that have used packages (a, b, c) because of the high cost of the network drip irrigation, and the high cost method of agriculture on wires.

The result showed a higher average net return pound farm used packets of different technology (a, b, c, d, e) for the wheat crop compared to farms that did not use technology, where the difference averaging about 706.11, 1003, 823.50, 1783, 2546 pounds per pack, respectively, and the percentage increase in net interest to 43.44%, 61.72%, 50.66%, 109%, 156%, for each of the packages previous technological boiled, respectively, As for the tomato crop we note data



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from the same table a higher average net return pound within the farms that have used different technological packages (a, b, c, d, e, f) compared to farms that did not use technology, where the difference averaging about 2452.2900, 4186.5870, 7247.8881 pounds per pack, respectively, The percentage increase in net revenue by 123%, 146%, 210%, 295%, 364%, 446% for each of the packages previous technological boiled respectively.

While the second chapter deals with assessing the impact of technology on the movement of the crop production function study sample search, where results showed statistical estimate for the wheat crop following:

- Using (a technological package) lead to the transfer function productivity of wheat crop by (3.11) ardebs acre.
- While the use of lead (technological package b) to transfer the function productivity of wheat crop by 4.592 ardebs acre.
- While the use of lead (technological package c) to the transmission function productivity of wheat crop and an estimated 3.79 ardebs acre.
- While the use of lead (package of technological d) to transfer the function productivity of wheat crop by about 6.877 ardebs acre.
- The use of (technological package e) to the transmission function productivity of wheat crop by 8.543 ardebs acre.

While the statistical results showed appreciation for the tomato crop following:

- Use the changing technology, which reflects the use of modern varieties (a technological package) lead to the transfer function of the tomato crop production by 5 tons per acre.
- While the use of lead (technological package b) to transfer the function of the tomato crop productivity by about 6.235 tons per acre.
- While the use of lead (technological package c) to the transmission function of the tomato crop production by about 9.05 tonnes per acre.
- While the use of lead (technological package d) to transfer the function of the tomato crop productivity by about 13.23 tons per acre.
- The use of (technological package e) to the transmission function of the tomato crop productivity by about 15.313 tons per acre.
- While the use of lead (and technological package) to the transmission function of the tomato crop productivity by about 29 tons per acre.

Finally, addressing Title IV production efficiency and economic use of technology farms sample through the main chapters, singled out by first assessing and analyzing functions, productivity for packages of technology used in the production of crop study, where results showed estimate production



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parameters using the regression model phased in the picture logarithms of the wheat crop are:

- For packet technology (a) was flexibility in overall productivity, which represents the sum of elasticity parameters of the model about 1.042, and to examine the economic efficiency of resources used in the production of wheat, based on the standard rate of value of marginal product to the price component output shows, it has been positive value greater than one for each of the the amount of manure and fertilizer nitrogen and human labor, which amounted to some 1.93, 13.33, 0.90, which means that the use of those resources is an economical way.
- While the flexibility overall productivity of the packet technologies (b) is about 0.994, and to examine the economic efficiency of resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer nitrogen and phosphate fertilizer and automation, which amounted to some 1.60, 14, 9, 1.9, which means that the use of those resources is an economical way.
- As for the package of technological and (c) were flexibility, productivity, a total of about 1.071, and to examine the economic efficiency of resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer nitrogen and phosphate fertilizer, which amounted to some 1.97, 13.26, 8:36 This means that the use of those resources is an economical way, while decreased the economic efficiency of human action as they reached about 0.86.
- While the flexibility overall productivity of the package of technological and (d) is about 0.965, which means that the rate of increase in output is Oqlmn rate of increase in resources under study, to examine the economic efficiency of resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of fertilizer Municipal and fertilizer nitrogen and phosphate fertilizer and automation, which amounted to some 1.95, 11.15, 6.11, 2.53, which means that the use of those resources is an economical way.
- As for the flexibility overall productivity of the packet technologies (e) was 0.993, and to examine the economic efficiency of resources used in the production of shows, it has been positive value greater than one for each of the amount of manure and fertilizer nitrogen and phosphate fertilizer and automation, which amounted to some 1.51, 15.31, 9.20, 2.81, which means that the use of those resources is an economical way.
- While the flexibility overall productivity of the package of traditional about 1.103, and to examine the economic efficiency of resources used in the



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production of wheat shows that they took the positive value greater than one for each of the amount of manure and nitrogen fertilizer and human labor, which amounted to some 1.58, 13.62, 1.41, which means that the use of these resources is an economical way.

As for the tomato crop showed the results of estimating production functions using the regression model in the picture phased algorithm are:

- The flexibility overall productivity of the packet technology (a) amounted to about 1.199, and to examine the economic efficiency of resources used in the production of wheat, based on the standard rate of value of marginal product to the price component output shows, it has been positive value greater than one for each of the amount of manure and fertilizer nitrogen and fertilizer phosphate and human labor, which amounted to some 2.54, 13.95, 22.20, 1.38, which means that the use of those resources is an economical way.
- While the flexibility overall productivity of the packet technologies (b) is about 0.994, and to examine the economic efficiency of resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer nitrogen and phosphate fertilizer and fertilizer potassium and automation, which amounted to some 2.11, 12.29, 25.94, 10.47, 1.35, which means that the use of those resources is an economical way.
- As for the flexibility overall productivity of the package of technological and (c) amounted to 0.992, and to study the economic efficiency of the resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer nitrogen and fertilizer potassium and automation and growth, which amounted to some 3.10, 14.22, 20.25, 5.68, 4.35, which means that the use of those resources is an economical way.
- While the flexibility overall productivity of the package of technological and (d) is about 0.993, and to examine the economic efficiency of resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer nitrogen and fertilizer potassium and automation and enhancers of soil and fertilizer complex, reaching about 2.11, 12.83, 10.09, 2.08, 1.30, 7.73, which means that the use of those resources is an economical way.
- As for the flexibility overall productivity of the packet technologies (e) amounted to 0.987, which means that the rate of increase in output is greater than the rate of increase in resources under study, to examine the economic efficiency of resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer



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phosphate and potassium fertilizer and automation and soil enhancers and growth regulators, fertilizers, vehicle, which amounted to some 2.11, 11.70, 8.70, 2.04, 1.46, 4.69, 5.58, which means that the use of these resources is an economical way.

- While the flexibility overall productivity of the package of technological and (f) about amounted to 0.974 and to study the economic efficiency of the resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer phosphate and fertilizer potassium and automation and enhancers of soil and growth regulators, fertilizers, vehicle, which amounted to some 1.95, 13.20, 8.41, 3.66, 1.62, 3.56, 4.93, which means that the use of those resources is an economical way.

- While the flexibility overall productivity of the package of traditional about 1.023, and to examine the economic efficiency of resources used in the production of wheat shows that they took the positive value greater than one for each of the amount of manure and fertilizer nitrogen and phosphate fertilizer and human labor, which amounted to some 2.03, 13.96, 24.10, 1.30, which means that the use of those resources is an economical way.

Singled out while the second chapter functions estimate costs of production for packages of technology used in the production of crop study sample search functions where possible to appreciate the costs overall productivity of the technological packages of different varieties of wheat and tomatoes, as shown by production cost functions for the wheat crop the following:

- For packet technology (a) turned out to be the beginning of the economic phase of production was when I produced the volume was estimated at (20.24) ardebs acre, as much as size of the holy profit about (22.51) ardebs acre.

- As for the technological packages (b), it was clear that the beginning of the economic phase of production was when I produced the volume was estimated at (21.83) ardebs acre, as much as the size of the holy profit estimated to be (23.15) ardebs acre.

- While the beginning of the economic phase of production for the technological packages (c) when I produced an estimated volume of about (21.53) ardebs acre, as much as size of the holy profit estimated to be (24.25) ardebs acre.

- As for the technological package (d) turned out to be the beginning of the economic phase of production was when I produced was about the size of (25.56) ardebs acre, as much as the size of the holy profit estimated to be (28.00) ardebs acre.



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- While the beginning of the economic phase of production for technological packages (e) When I produced was about the size of (28) ardebs acre, as much as the size of the holy profit Ihawwaly (32.9) ardebs acre.
- As for the traditional group (g) it became clear that the beginning of the economic phase of production was when I produced was about the size of (16) ardebs acre, as much as size around the holy-profit (19) ardebs acre.

As for the tomato crop showed production cost functions as follows:

- For packet technology (a) turned out to be the beginning of the economic phase of production was when I produced the volume was estimated at (23) ardebs acre, as much as size of the holy profit of about (26) tons per acre.
- As for the technological packages (b), it was clear that the beginning of the economic phase of production was when I produced the volume was estimated at (24.76) tons per acre, and estimated size of the holy profit estimated to be (29.75) tons per acre.
- While the beginning of the economic phase of production for the technological packages (c) when I produced an estimated volume of about (27.75) tons per acre, and estimated size of the holy profit of about (34) tons per acre.
- As for the technological package (d) turned out to be the beginning of the economic phase of production was when I produced was about the size of (34) tons per acre, and estimated size of the holy profit of about (42) tons per acre.
- While the beginning of the economic phase of production for technological packages (e) When I produced was about the size of (35) tons per acre, as much as the size of the holy profit (46) tons per acre.
- As for the technological package (f) turned out to be the beginning of the economic phase of production was when I produced was about the size of (47) tons per acre, as much as the size of the holy profit of about (53) tons per acre.
- As for the traditional group (g) it became clear that the beginning of the economic phase of production was when I produced was about the size of (14.85) tons per acre, as much as size-for-profit holy about (17.65) tons per acre.

Recommendations:

The study recommends the following:

- 1) Universal use (integrated technological package) to prove feasibility of technically and economically under the conditions of the Egyptian agricultural sector.
- 2) Change the style traditional production and reduce the use of varieties with low productivity and replacement of items recommended.
- 3) Mainstreaming the modality of laser leveling to stop the degradation of agricultural land from the Egyptian hand.



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- 4) Promoting the cultural level of the agricultural labor force to qualify them to accommodate the application of technological methods.
- 5) Government intervention, especially in the transitional period to encourage farmers to adopt technological innovations.
- 6) Activate the role of agricultural extension by providing science and knowledge.
- 7) The need to work to meet the turn-possessor.
- 8) Continue to develop highly productive varieties and the expansion of cultivation.
- 9) Increased user productivity of the elements related to the trade-off and confirmed statistically.

عميد الكلية

رئيس مجلس القسم

المتقدم للترقية

الأستاذ الدكتور/ منى
الخشاب

الأستاذ الدكتور/ إيناس صادق

الدكتور/ عيد نعيمة فيصل