

Reclamation of Agricultural Land and Its Impact on Exports and the Number of Workers in the Agricultural Sector in Jordan

Dr. Adnan Abdelkarim Thiabat
Al Balqa Applied University

Abstract

The study dealt with the plant production and agricultural areas in Jordan and its impact on unemployment rates and exports during the period (2011-2015), the problem of the study lies on non-agricultural land use with scarcity, where it constitute 10% of the area of Jordan and although it is few but only 30% of the fertile land is actually used which affect the agricultural sector's contribution to GDP and its role in employment in this sector, which suffers from high levels of unemployment as the exhibitors' workers are increasing continuously or seasonally in the labor market in the agricultural sector. The study compared the acreages with the numbers of employers in it and the ratio of unemployment during the study period; it also compared the acreages and the exports during the study period and created regression equation to estimate these relationships through statistical analysis for this study. One of the most important productions to increase acreages of fertile land, or reclamation of invalid land increases the production of exports and increases the creation of new job opportunities in the agricultural sector and the study recommended supporting the agricultural sector for agricultural reclamation from the government directly.

Keywords: Plant Production, Agricultural reclamation, Employees, Exports

Introduction

The agricultural sector is considered of the oldest sectors of the economy and the importance of this sector lies in that it provides the food security of the community, especially that there are countries its geographical nature made it a farming countries, and in Jordan with the lack of participation of the agricultural sector in the overall economic activity due to the lack of government attention in the development of this sector although the demographic nature of Jordan Valley makes the investment in it economically efficient because it has a soil and a climate capable of continuous production along the year, however, the Jordanian trade balance suffers from a deficit, but the trade balance for the agricultural sector is a surplus of all this did not satisfy the agricultural sector and it did not receive attention.

The population density in Jordan is higher in arable areas and the levels of unemployment of up to 13%, while the rate is higher in the agricultural sector and support this sector and its development will provide jobs and contribute to solving the problem of unemployment as well as achieved food security in the light of the current conditions in the neighborhoods and to achieve self-sufficiency.

The Problem of the Study

The problem of the study can be put in the form of questions:

1. Does the support of the agricultural sector economically efficient?
2. Does the arable land exploited effectively?
3. Is the agricultural sector a strong source of support in the trade balance?
4. Do the current circumstances enhance the interest in the agricultural sector?
5. Is the agricultural sector contributor to the decline in the unemployment rate?

The Purpose of the Study

The purpose of tackling this topic focused on trying to achieve the following objectives:

1. Clarify the concept of the agricultural sector as a supportive sector of economic activity.
2. Clarify the concept of unemployment and its rates according to different criteria.
3. Clarify the concept of Trade Balance and the role of the agricultural sector in supporting it.
4. Demonstrate the impact of the exploitation of farmland through the direct support from the government on GDP and unemployment rates.

The Importance of Study

The importance of the research is on the estimation of the agricultural sector as a sector has solutions to increase the gross domestic product and support exports and lower unemployment and create food security in difficult conditions experienced by the region, and the advancement of the sector with modern gnostic concept.

The study hypothesis:

The study relies on the basic premise of the following:

- Measure the impact of the independent variables on the dependent variables (increase the exploitation of farmland)
 1. Exports
 2. Employment

The study variables:

The study is limited to the independent variable (x) which is represented in the change in the size of the exploited land for farming

The dependent variables are:

- Change in exports (y1)
- Annual change in workers (y2)

Tools and measurements of the study:

For the purposes of proving or deny the validity of the research hypothesis, statistical analysis method will be relied on, first by studying trends (horizontal analysis) of the dependent and independent variables, and statistical analysis to calculate the correlation coefficient (R) which determines the strength and nature of the relationship between the dependent variable and independent variables will also be used, and also the coefficient of determination (R²) to analyze the impact of each independent variable on the dependent variable individually and the regression coefficient (B) to study the impact of the independent variables on the dependent variable, using statistical analysis in order to reach the goal of the research.

The population of the study and its sample:

The population of the study consists of farmland and the employed and the unemployed in the agricultural sector and exports and imports of the agricultural sector, which extends from the years (2011-2015).

Data collection:

The reports of Statistics and the Ministry of Labor and the Ministry of Agriculture and the Arabic reports were relied on, and for the purpose of statistical analysis for the period (2011-2015).

Previous studies and Theoretical background

First: Previous studies

Thiabat et al (2016) conducted a study entitled "Foreign Direct Investment in Jordan and its impact on growth in real GDP and unemployment rates and exports," the researcher studying the impact of foreign investment on exports and unemployment rates, and he reached a positive relationship to this effect with its weakness because the investment has focused on the service side, more than other aspects of the study and the study recommended to encourage investment in the remaining sectors and focus on production.

Obodest (2009) conducted a study entitled "Agricultural policies in developing countries (Syria as a sample)", the researcher analyzed the government's intervention in the agricultural sector to reduce the food gap in developing countries through the agrarian reform policy, pricing and support marketing plans and the role of agricultural development in supporting the national economy and the expected benefits of accession to the World trade Organization and the above was applied on the Syrian experience in agricultural development and access to self-sufficiency and export the surplus.

Fadi (2008) conducted a study entitled "The agricultural sector in Syria (characteristics, Reality and Prospects)", the researcher studied and analyzed the Syrian agricultural sector of the land and capital, organization and operation, and the concept of sustainable development of the sector and the division of Syrian territory by the usability of agriculture and confront the scourge of desertification and broad trade balance of exports and imports of the agricultural sector. the study also recommended that work on the reclamation of agricultural land to increase production and reduce the unemployment rate.

Karim (2003) conducted a study entitled "Jordan's agricultural sector: determinants and the sources of growth," the researcher studying the obstacles faced by the agricultural sector in Jordan and among these constraints the limited fertile land and planted areas and the researcher studying the role of labor and capital in agricultural production, based on the classical model of function Cobb-Douglas and he estimated the average and marginal gross of the worker and he clarifies the role of the agricultural sector in foreign trade and the development of Jordan's trade balance and the most important influences in the agricultural trade sector and the amount of the agricultural sector's exports with regard to the total exports of Jordan.

Second: theoretical background

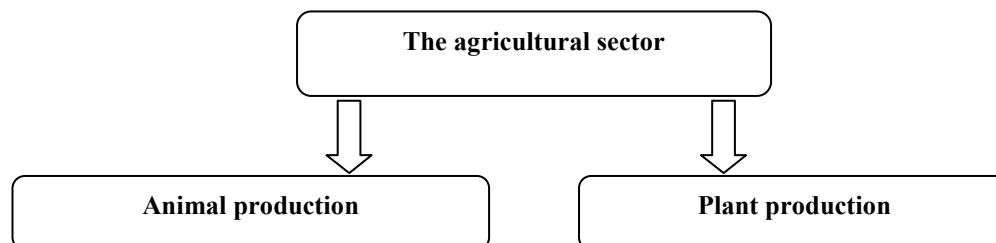
First: the agricultural sector

The agricultural sector is divided into two types:

- 1- Plant Production.

2. Animal Production

Each of them has its importance in supporting the national economy and this study will be limited to plant production and that to link the effect of increasing the exploitation of agricultural land to the raise of national output and reduce unemployment



The agricultural sector is considered one of the most important economic sectors in any country and is one of the total of the economic sectors there is the industrial sector, the commercial sector and the service sector, and is no doubt that the importance of this sector back to the importance of the products that represent the food security of the country, particularly in the current circumstances in some countries that break the conflicts, we did not see in Iraq or Syria appearance of famines because these countries rely on a strong agricultural sector, unlike some African countries where famine emerged as a result of the conflicts raging, such as Somalia and the countries varied in the relative importance of the sectors due to various factors, including :

1. Natural factors, which are considered something special for each country in the competitive ranking of the sectors, there are countries with natural resources help the growth of one sector at the expense of another, and the scarcity of these resources leads to the weakness of these sectors, countries where water is available and climate is appropriate with the land, the agricultural sector takes larger areas than the others.
2. Political factors determine the approach of the countries in the development of the sector at the expense of other sectors and most countries pursue this approach in the development of the industrial sector at the expense of the remaining sectors.

Jordan as a country with limited resources, the agricultural sector is considered a traditional sector in it because of the historical dimension for this sector as the Jordanians worked in agriculture since the inception of the country, where agriculture was the basic character of Jordan in addition to nomadism, which relied on livestock farming as well, and the vegetable production in Jordan is determined by the division of the kingdom geographically, the kingdom can be divided into three main regions:

1. The Jordan Valley is part of the Great African Rift, which is the most fertile portion in Jordan and extends from the northern border of the kingdom down to the Dead Sea, Jordan Valley is specialized to be as warmer than other areas in Jordan in winter, it has the advantage of special early production of vegetables and fruits compared to other regions of the Kingdom and neighboring countries.
2. High land from north to south in the western part of Jordan's territory, and separating the Jordan Valley from the eastern desert region. This high land ranges between 600 -1500 meters above sea level and receives the largest amount of rainfall in Jordan and enjoy a naturally vegetation broadest.
3. East Badia about 88% of the total area of Jordan, and the rate of rainfall doesn't exceed 100 mm per year. Jordan climate is a part of the Mediterranean climate, where the average rainfall does not exceed 90% of the area of about 200 mm per year, and is characterized by the difference in rainfall amounts of precipitation in different regions and extreme change from year to year.

Table (1) shows us the following important points for the year 2015, which describes the farmland in Jordan

- * The total area of the kingdom = 89. 000 square kilometers (one million acres)
- * Arable land area = 8.9 million acres
- * Ratio of arable land to the land of Kingdom = 10%
- * Cultivated land area in 2015 = 2.667 million acres
- * The cultivated land equivalent to (3%) of the total land of the Kingdom, and 30% of the arable area.
- * The cultivated area with field crops (2015) = 1, 314, 065, 3 million acres
- * The area planted with vegetables (2015) = 487 728.1 thousand acres
- * The area planted with fruit trees (2015) = 864 171.1 thousand acres

Table 1: cultivated areas and the increase of the total areas

Indicator	Year				
	2011	2012	2013	2014	2015
Cultivated land size/ acres					
Fruitful trees	850048.5	858647.2	835997.9	845258.2	864171.1
Field Crops	1129038	1155232	1277997	1385500	1314065
Vegetables	428627.6	449051.1	495438.6	508687.1	487728.1
Total	2409725	2464942	2611446	2741459	2667980
The proportion of the cultivated area to the area of the Kingdom%	2.7	2.8	2.9	3.1	3.0
The proportion of cultivated area to the area of arable land%	27.1	27.7	29.3	30.8	30.0

- *Source: Department of Statistics - agricultural surveys for several years.*

We note from the above the compact size of arable areas, which constitute 2.7% to 3.0% of the area of the Kingdom and this is governed by natural and geographical factors of the area while we note that only 27.1% to 30.0% of this area is exploited in agriculture and the rest are not taken advantage of it, and this error that the study find importance of taking advantage of unused land, which if exploited give good results.

Knowing that the Jordan Valley is one of the unique places in the world that produces a year-round, because of climate and due to being the lowest spot on the surface of the sea, as well as soil fertility factor, but that takeovers stumble in the optimal exploitation.

The problem of this sector stumbled back for many reasons can be summarized as follows:

1. Scarcity of water resources.
2. Lack of funding
3. Increase costs of production requirements.
4. The difficulty of product marketing
5. Lack of modern cognitive experiences.

Second: Unemployment in Jordan

The work is an important part that the human seeks in his life to feel accomplishment and a guarantee for the future, the human lose a lot if being without work, the work is worship.

Unemployment definition:

Unemployment is: people who are able and wishing and job seekers of working age not find it during the study period which is usually a year.

Unemployment measure can then divide the individuals who are in the working-age into three groups:

First: workers who are the people who do any paid work

Second: - The unemployed who are researchers who are able and wanting to work and did not find it.

Third: - Outlaws of the labor force who are elderly, children and people with special needs who are unable to work and the unemployed and Employment form (Labor Force)

Unemployment rate = $\frac{\text{Unemployed}}{\text{Unemployed} + \text{Employed}} * 100\%$

The classic economists say that the production is all the energies that there aren't any unused resources and they believe that the unemployment is a temporary situation. That means it is a temporary glitch soon as you the balance forces can overcome them and restore the national economy to the case of accepted unemployment from 4% -6%.

Keynesian analysis pointed out that unemployment is a feature of economic fluctuations, especially in a recession that may extend for long periods, if the country did not intervene to raise the overall level of demand, and Keynes attributes the idea of continuing unemployment for a long time on the basis that the unemployment part of the factors of production means lower aggregate demand, Hence the intervention of the country fiscal policy to find solutions in the presence of problems such as inflation or recession.

Types of unemployment

There are several types of unemployment that appear in the economic activity of the most important kinds which the study needs, seasonal unemployment and that appear in some of the seasonal production sectors such as the agricultural sector and the tourism sector, the situation in Jordan is not much different from the third world countries on the subject of unemployment, which is one of the biggest challenges facing the Jordanian economy under the complex economic conditions that afflict the world, where the unemployment rates of up to 13% in general that this ratio increases by various classifications in terms of region, gender, educational level, and we will take them in detail.

Distribution of the population of Jordan

Jordan's population is increasing at different stages because of increased migrations commodes to it and table 2 shows the population of Jordan during the study period and we see a significant increase due to the Syrian exodus to Jordan, which has impacted on the population increase of this magnitude

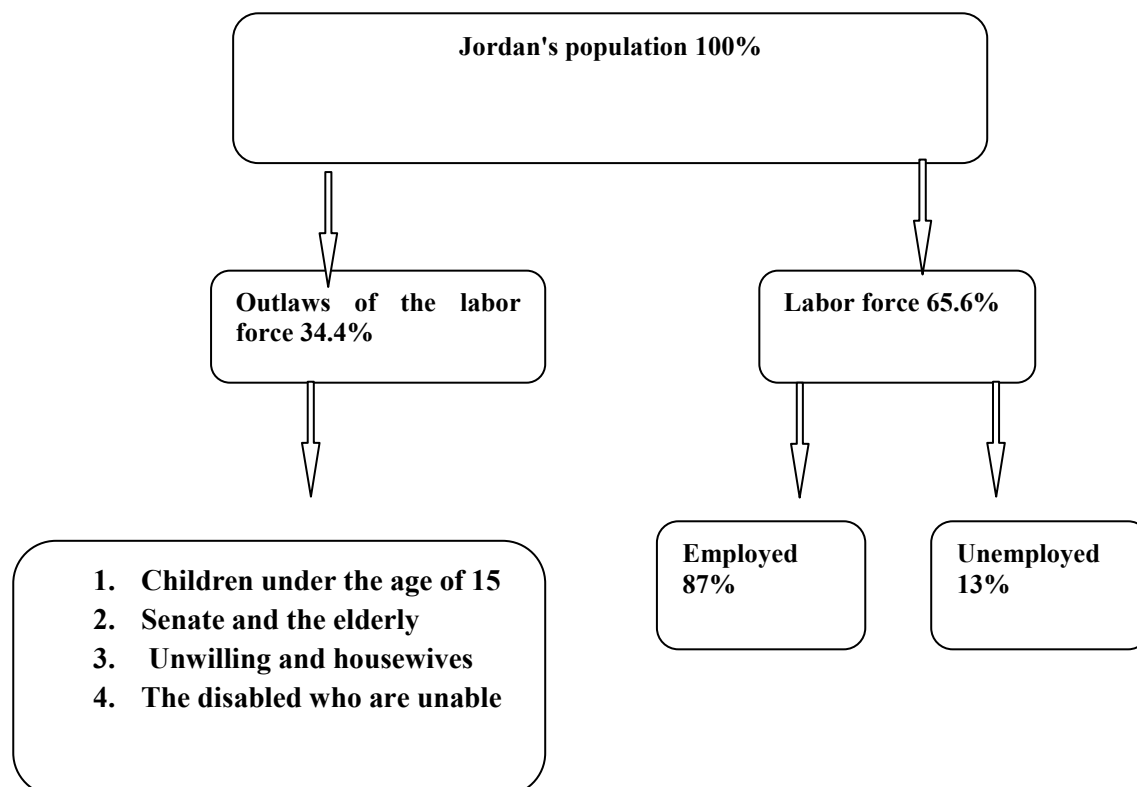
Table 2: Population

Year	Population / people
2011	6993000
2012	7427000
2013	8114000
2014	8804000
2015	9559000

Source: General statistics / demographic statistics in 2015

Jordan's population is divided according to the labor force to:

- The labor force and it equal to the workers + Unemployed
- Outlaws of the work force from the children and the elders and others



To deepen in the knowledge of the population table 3 shows the distribution of the population by educational level and by gender

Table 3: Percentage of population by educational level

Educational level	Male percentage	Female percentage
Illiterate	3.4	9.5
Less than secondary	59.0	49.9
High school	16.3	16.7
Intermediate Diploma	6.3	9.1
Bachelor degree or higher	15.4	14.8

Source: General Statistics / Employment and Unemployment Survey

As for the employees according to gender of males and females, the males rate is much higher than females and the distribution was as follows according to table 4

Table 4: Distribution of employees by gender in Jordan

Employees	2011	2012	2013	2014	2015
Males	1041263	1056003	1065318	1088865	1173730
Females	209708	212090	197318	197823	224300
Total	1250971	1268093	1262636	1286688	1398030

Source: Department of Labor / Report 2015

The percentage of unemployed by gender show unemployment raising in females it was according to the following distribution as in table (5)

Table 5: Unemployed by gender in Jordan

Unemployed	2011	2012	2013	2014	2015
Males	128524	122872	125922	121967	144337
Unemployment rate %	11	10.4	10.6	10.1	11
Females	56524	52598	56141	51683	65232
Unemployment rate %	21.2	19.9	22.2	20.7	22.5
Total	185049	175470	182063	173649	209569
Unemployment rate %	12.9	12.2	12.6	11.9	13

Source: Department of Labor / Report 2015

As regards the agricultural sector in vegetable production, there are two types of employment:

1. Permanent
2. Seasonal

In terms of number of workers permanently or seasonally and by gender for the years 2011-2015 the table (6) illustrates this

Table 6: workers in the agricultural sector permanently or seasonally or exhibitors to work / by gender

2011			
Distribution of workers by gender	Permanent work	Seasonal work	Exhibitors
Males	18460	1539	31723
Females	121	0	11907
Total	18581	1539	43630
2012			
Distribution of workers by gender	Permanent work	Seasonal work	Exhibitors
Males	13021	1016	22796
Females	228	15	7531
Total	13249	1031	30327
2013			
Distribution of workers by gender	Permanent work	Seasonal work	Exhibitors
Males	17856	2456	27593
Females	50	107	16033
Total	17906	2563	43626
2014			
Distribution of workers by gender	Permanent work	Seasonal work	Exhibitors
Males	11294	1177	19484
Females	183	651	6256
Total	11477	1828	25740
2015			
Distribution of workers by gender	Permanent work	Seasonal work	Exhibitors
Males	11363	1501	24216
Females	98	1039	4028
Total	11461	2540	28244

Source: Ministry of Agriculture / surveys of several years

Table 6 summarize the data and restrict the number of workers in each year and the number of unemployed and the unemployment rate and table 7 illustrates this and shows the high unemployment rate

Table 7: Distribution of labor force in the agricultural sector

Indicator	Year				
	2011	2012	2013	2014	2015
Work force	20120	14280	20469	13305	14001
Employees seasonal and permanent / individual	43630	30327	43626	25740	28244
Exhibitors to work / individual	68.4	68.0	68.1	65.9	66.9
Unemployment rate %					

From table 1, which shows the areas of farmland and table 6, which shows employees in these lands we get table 8

Table 8: Employed & Exhibitors to work in the agricultural sector in exchange for acreage

Cultivated area / acres	2409725	2464942	2611446	2741459	2667980
The proportion of cultivated area to the Kingdom area %	2.7	2.8	2.9	3.1	3.0
The proportion of cultivated arena area to arable land %	27.1	27.7	29.3	30.8	30.0
Employees in the plant production / individual	20120	14280	20469	13305	14001
Exhibitors to work / individual	43630	30327	43626	25740	28244

To analyze the above presentation of data through table 4 and table 7 we come out by the ratio of employees participation in the plant production to the number of workers in all sectors through the years of study from 2011 to 2015 and is clear to us that the rate varies from (1.6%) in two years 2011 and 2012 and stabilized at the rate of (1.0%) in the rest of the years 2013 and 2014 and 2015, which is low rate in participation and is due to the general weakness in the sector and the lack of employment growth and table 9 shows that

Table 9: Percentage of workers in the plant production for those employees in general

Indicator	Year				
	2011	2012	2013	2014	2015
Employees in all sectors/ individual	1250971	1268093	1262636	1286688	1398030
EMPLOYEEES in the plant production/ individual	20120	14280	20469	13305	14001
EMPLOYEEES in the proportion of the plant production of the total employed%	1.6	1.1	1.6	1.0	1.0

As table 10 shows the unemployment rate in the plant production with unemployment rates in general for all sectors and we note its raise in 2011 and 2012 to a level of 19% and then decline to 12.4% and rising to 15.2% in 2014 and then decline to 12.9% , this volatility is explained due to the decline of exhibitors to work in the years 2013 and 2014 and 2015 when the number was 43,630 in 2011 dropped to 25,740 in 2013 due to the exit from the labor market in this sector because of weak demand.

Table 10: Unemployment rate in the plant production to unemployment in general

Indicator	Year				
	2011	2012	2013	2014	2015
Unemployed / individual	185049	175470	182063	173649	209569
Exhibitors to work / individual	43630	30327	43626	25740	28244
Unemployed in plant production ratio of the total employed%	19.1	14.7	19.3	12.9	11.9

Third: Trade Balance

The trade balance and net exports (symbolized sometimes NX), which is the difference between the monetary value of exports and imports of output in the economy during a certain period of the economy. It is the relationship between imports and exports.

There are several factors that influence this balance including:

1. The exchange rates of the local currency.
2. Taxes or restrictions on international trade and multilateral and Non-tariff barriers such as environmental standards and health and safety.
3. The availability of sufficient foreign exchange to pay for imports.
4. Prices of manufactured goods at home and abroad.

In Jordan, the trade balance suffers from a large deficit during the study period and its predecessors and table 11 illustrates this growing deficit with a decline in 2015 due to the deflationary policy in spending because of the economic crisis.

Table 11: Jordanian Trade Balance

Year	Exports/ thousand dinars	Imports/ thousand dinars	Surplus or deficit
2011	4805873	13440215.3	-8634342.3
2012	4749569.7	14733749.3	-9984179.6
2013	4805233.9	15668010.2	-10862776.3
2014	5163028.7	16280188.6	-11117159.9
2015	4797583.4	14537182.2	-9739598.8

Source: Department of Statistics / foreign trade statistics for Jordan.

But the trade balance for the agricultural sector was on the contrary represents a surplus with double interest and scored good numbers in terms of agricultural exports grew to a higher-end 1130 million dinars in 2014 and table 12 shows that

Table 12: Agricultural sector exports

Year	Agricultural sector exports / MTD
2011	795
2012	864
2013	979
2014	1130
2015	972

Source: Department of Statistics / foreign trade statistics for Jordan.

But in terms of the quantities imported and exported/ ton, there was a surplus in favor of Jordan at varying rates during the study period and the top was acted by the year 2011 surplus of (665,616.7) tons and the highest value of exports was by the 2014 rate of (884,331.5) tons and table 13 illustrates this:

Table 13: The trade balance for the agricultural sector

Year	Vegetable exports/ ton	Vegetable imports/ ton	Surplus or deficit / ton
2011	841800.5	179183.8	662616.7
2012	801069.6	229560.1	571509.5
2013	793805	278276.9	515528.1
2014	884331.5	286438.6	597892.9
2015	782845.3	226714.2	556131.1

Source: Ministry of Agriculture / Annual Report of exports and imports for several years

By comparing acreage from Table 1, exports and imports of table 13, Table 14 shows the area for each year and the amount of import and export.

Table 14: Acreage and trade balance for the agricultural sector

Year	2011	2012	2013	2014	2015
Acreage / acres	2409725	2464942	2611446	2741459	2667980
The proportion of cultivated area to the Kingdom area %	2.7	2.8	2.9	3.1	3.0
The proportion of cultivated arena area to arable land %	27.1	27.7	29.3	30.8	30.0
Vegetable exports/ ton	841800.5	801069.6	793805	884331.5	782845.3
Vegetable imports/ ton	179183.8	229560.1	278276.9	286438.6	226714.2

Analytical framework for the study

Analysis and interpretation of the study relationships:

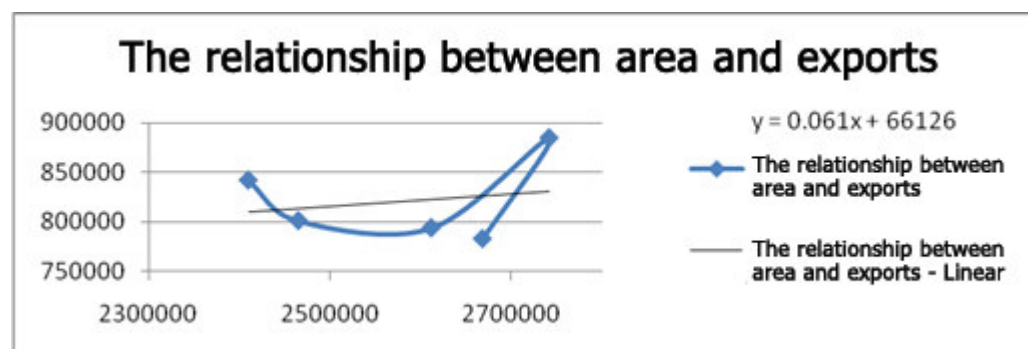
The researcher found a correlation coefficient and a determination coefficient and the linear regression equation between the cultivated areas and exports to find a correlation coefficient, we note that the correlation is positive, extrusive and weak with a value of (0.204) and the determination coefficient (R²) worth is (0.0418) meaning that (0.0418) from changes in the volume of exports caused by the change of one unit of cultivated area, while the value of (B) equal to (0.061) and the regression equation became as follows ($y = 0.061x + 66126$) and this indicates the presence of a weak relationship between variables.

Table 15 is derived from table 14 the relationship of cultivated areas in vegetable exports.

Table 15: Acreages relationship with exports

Year	2011	2012	2013	2014	2015
Cultivated area / acres	2409725	2464942	2611446	2741459	2667980
Employees in the plant production / worker	841800.5	801069.6	793805	884331.5	782845.3

Correlation coefficient	0.204
Determination coefficient	0.41



The result of the relationship between the cultivated areas and exports, the positive direction of the relationship is right, because increasing farmland increases production and increase exports but the weakness of the relationship is attributed to that exports affected by other factors had a role in the weakness of which conflicts and wars in the neighboring countries, reducing intra-regional trade and transit trade between Jordan and these countries, especially Syria.

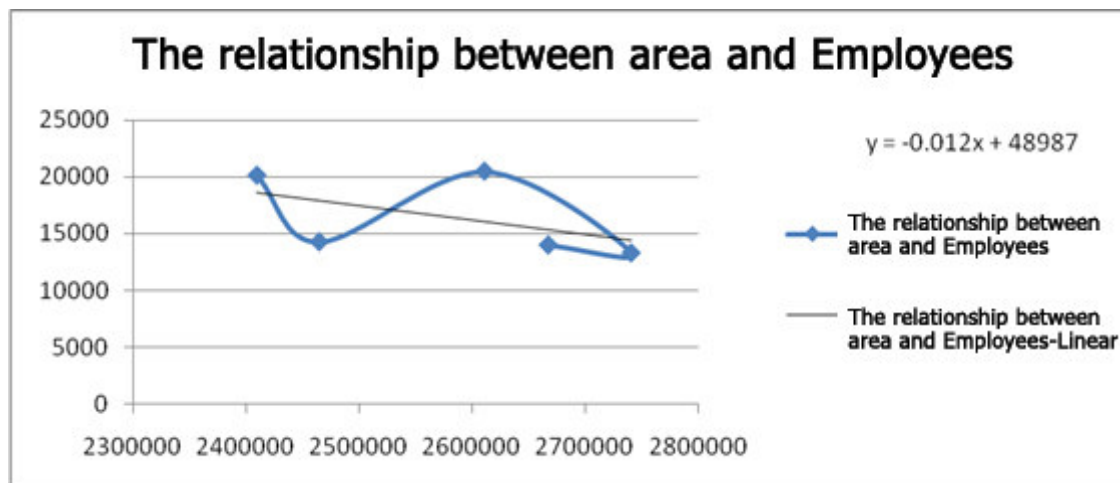
2. Find a correlation coefficient and a determination coefficient and linear regression equation between the cultivated areas and the number of workers.

Here we note that the correlation is negative, weak reached (-0.494) and determination coefficient (R²) reached (0.244) meaning that (0.244) of the change in the number of workers caused by the change of one unit of cultivated areas, while the value of (B) equal to (-0.012) and linear regression equation has become ($Y = -0.012x + 48987$), and this indicates the presence of a weak relationship between variables but the reverse correlation is negative

Table (16) derived from the table of planted / acres spaces relationship with the number of workers.

Table 16: planted areas and the relationship with the number of workers

Year	2011	2012	2013	2014	2015
Cultivated area / acres	2409725	2464942	2611446	2741459	2667980
Employees in the plant production / worker	20120	14280	20469	13305	14001
Correlation coefficient	-0.494				
Determination coefficient	0.244				



We can see that the relationship between the change in the area and number of workers is weak and it was Inverse relationship and this indicates a lack of labor statistics accuracy as a result of the un real permit for foreign workers which were taking agricultural permits and working in other sectors, creating a data disparity, especially between the years 2011, 2012 and 2013 , where it was 20120 then became 14280 and then returned to the 20469 and this disparity is unjustified.

The recommendations of the study

The study reached a number of recommendations which are as follows:

1. Interest in the agricultural sector and give it a role in food security and self-sufficiency.
2. The exploitation of arable land effectively and efficiently.
3. Reclamation of non-agricultural land and combating desertification.
4. The training of the agricultural labor force and the changing of agricultural patterns.
5. Create a legal framework in determining foreign labor and commitment to contracts and concluded permits.
6. Direct support from the government to the agricultural sector and its development to raise the gross domestic product.
7. Find new mechanisms in the marketing of agricultural products internally with the ground to determine the price of the products.
8. Opening up new markets for vegetable exports under conditions in neighboring countries and the holding of new agreements with the outside world.
9. Attracting investments and revitalization and give incentives to the agricultural sector, especially the Jordan Valley area.
10. Granting loans for agricultural projects in land reclamation for the unemployed.
11. Imposing customs duties on imported competitor products at the beginning of the period of land reform.
12. Attention to modern technology in irrigation under water scarcity.
13. The integration of the agricultural sector and other sectors, especially in the field of agricultural industrialization.
14. Balance supply of gross domestic product with the demand in the domestic markets.
15. Enhance the professional and economic support to farmers and stimulate the private sector to invest in the agricultural sector.

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