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THE DEVELOPMENT POSSIBILITY OF RED MEAT ARAB PRODUCTION AND ITS IMPACTS ON THE IMPORTS AND THE ARAB INTER-TRADE

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ABSTRACT

The study aims to lessen the volume of Arab world imports of red meat by increasing the domestic production volume through vertical expansion of current production by implementing the permanent spring project "barely plantation" in the Arab world. Among the most important findings resulted from adopting and generalizing "the permanent spring project", barely plantation in the Arab world, are several positive impacts such as the red-meat self-sufficiency increase as a result of the red meat production increase of (cows and buffalos). The imports rate decline at the same production increase rate, increase of the relative comparative advantage of all Arab countries and the improvement of the Arab exporting performance of the Sudan besides increasing the red-meat inter-exports rates for all countries. Therefore, the Arab inter-trade volume increases which means the increase of the Arab red-meat self-sufficiency under the new conditions. Finally, the evaluation of the planted barely based cattle feeding method "the case study in Egypt" shows the decline of planted barely ton production cost as compared to its production cost under the current situation and the barely ton importing price. It shows as well the decline of a head feeding based on the planted barely as compared to the feeding cost under the current situation.

INTRODUCTION

The issue of food security and production insufficiency of consumption needs and its direct related impacts on the political, economic, social and environmental situations are among the most important issues facing the Arab world. In spite of varied agricultural environment and the availability of suitable economic conditions all over the Arab world, the Arab world suffers a food gap in general and in red meat in particular. In addition, the per capita individual average of the red meat is reduced to about 26 kg/year as a period average (2005-2008). Furthermore, there is a great divergence in the per capita individual average among the Arab countries which reached 85 kg/year in Kuwait and the United Arab Emirates. It is reduced to 16.5 kg/year and 20.1 kg/year in Yemen and Djibouti, a matter which emphasizes the invisibility of integration among the Arab countries. The animal wealth is concentrated in a limited number of the Arab countries. Therefore, most of the Arab countries import red meat with all its kinds, alive, frozen and manufactured with the exception of Sudan, Somalia and Mauritania. In addition, the lack of quality, canning, manufacturer, preservation and storing criteria and transportation are the most important barratries which face the meat producing countries to export their products. It hence impedes their attempt to achieve integration with the other meat importing countries. Therefore, the Arab countries need to change their red meat producing and exporting policies in order to achieve self-sufficiency among the Arab countries.

The Problem Statement

In spite of the produced red-meat amount increase in the Arab world by about 28.7% during the average period (2004-2008) as compared to the average period (1995-2000). However, it is found that the red-meat self-sufficiency rate is fixed at 86% during the two periods of the study. Therefore, it is necessary to meet the commodities' increasing demand by importing from abroad. Consequently, there is a continued increase of the food invoice and hence the payment balance deficit of most Arab countries will increase.

The Study Objective

The study aims to lessen the volume of Arab world imports of red meat by increasing the domestic production volume through vertical expansion of current production by implementing the permanent spring project "barely plantation" in the Arab world. It helps increase the red-meat production and reduce the Arab countries' imports

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volume and hence increase the Arab trade. Finally, the study evaluates the permanent spring project through comparing the production costs of barely cultivation under normal conditions and under the adoption of the permanent spring project as a case study in Egypt.

Research method and data collection

The study has relied, in achieving its objectives, on the descriptive analytical technique of the collected data from the website of the Arab Organization for Agriculture Development and the World Organization for food and Agriculture besides other electronic web sites and other relevant studies. The study has adopted the liner regression analysis and the proportion advantage estimate for the possibility of increasing the red-meat Arab inter-trade.

The distinguished aspects of the animal wealth in the Arab world

The animal wealth is an important source for providing food. The nutrition scientists assess the individual's needs of animal protein by 70 gram/ day and the two thirds of these needs should be derived from animal sources such as meat, eggs and milk.

By studying the distinguished aspects of the animal wealth in the Arab world, it is found that the traditional animal keeping way is the dominant way in the Arab world. The natural pasture area is estimated as 500 million hectares representing more than the third of the Arab world total area. The estimated proportion of the animal that totally or partially depend on the dry or sub-dry pasture areas is not less than 30% of cows, 70% of goats and sheep, and 90% of camels. The production of the animal unit of milk and meat is reduced under the traditional animal keeping way. The production features of the domestic cow, goats and sheep species in the Arab world is less that their foreign species counterparts in terms of the animal weight at first birth, mature and the annual average production of milk.

The Arab world possesses an enormous wealth of animal producing meat. These animals (cows, buffalos, sheep and goats) in the Arab world are estimated 374.4 million heads of which sheep represent a half of that pack by about 179.2 million heads with 47.8% of the total pack followed by goats 113.5 million heads representing 30.3%, cows 61.98 million heads representing 16.5%, and then camels 15.3 million heads representing 4.1%. Meanwhile, buffalos that reached 4.2 million heads represent 1.1% of the total animal pack number in the Arab world in the average period (2004-2008) (Arab League - Arab Organization for Agricultural Development, 1995 -2009)

The red-meat production and consumption situation in the Arab world

The red-meat production in the Arab world depends on the pasture areas and their capacities. The red-meat production in the Arab world is restricted in a limited number of Arab countries. Sudan comes on top with an estimated production about 1779.73 thousand tons representing almost 41.5% of the Arab world total production estimated about 4283.9 thousand tons. Egypt follows as its production reached about 704.95 thousand tons representing almost 16.4% of the Arab world total production. Then Morocco, Syria and Algeria follow as their average production reached about 253.4, 250.6 and 222.4 thousand tons representing about 5.9%, 5.8% and 5.1% respectively of the total meat production in the Arab world in the average period (2004-2008). The total production of these countries represents about 75% of the meat production in the Arab world.

Studying the red-meat production and consumption in the Arab world indicates that the red-meat production increased from 3329 thousand tons in the average period (1995-2000) to 4283.9 thousand tons in the average period (2004-2008); with an increasing ratio reached 28.5% and annual increase ration reached about 116.3 thousand tons, about 3.06% of the red-meat produced amount average in the average period (1995-2008). The red-meat consumption in the Arab world increased from 3832.2 thousand tons to 4961.8 thousand tons with an increasing ration reached about 29.1% and annual increase ratio reached about 134.6 thousand tons representing almost 3.1% of the red-meat average consumed amount during the average period (1995-2008) as shown in tables (1) and (2). Therefore, the red-meat increased rates exceed the increased rates of the red-meat production in the Arab world. This attributed to the increased population by a higher rate than the production rate. Thus, a reduction in the red-meat self-sufficiency rate occurred from 86.82% to 86.3% with a reduction rate reached about 0.57% during the two periods of comparison. As to the red-meat food gap in the Arab world, there is an increase in the gap volume from 503 thousand tons to 677.8 thousand tons with an increasing ratio reached about 34.75% during the second period of the study as compared to the first period. Equation no. 4 in table (2) shows the red-meat imported amount in the Arab world increased annually by almost 18.7 thousand tons representing about 3.14 the red-meat imported amount average in the Arab world in the average period (1995-2008).

The red-meat and protein per capita average in the Arab countries

The red-meat per capita average per ranges between two maximum amounts reached 85.62 kg /per capita/ annually in the United Arab Emirates and minimum amount reached16.53 kg / per capita / annually in Yemen. This divergence in the red-meat per capita average in the Arab countries is attributed to various individual income rates in the Arab countries (Arab Human Development Report 2009). In turn, this divergence shows the reduced red-meat protein per capita compared to the optimal rate devised by the World Health Organization reached about 35 grams /per capita / daily by almost 82.4% in Yemen, and about 17.3% in Kuwait (FAO,2009)

Table 1 The red-meat self-sufficiency rate, gap volume and consumption in the Arab world during the two periods of study (1995-2000) and (2004-2008)

year	Production Thousand tons	Consumption Thousand Tons	Imported amount Thousand tons	Imports value million dollars	Gap volume Thousand tons	% of self-sufficiency
1995	3192.7	3759.6	601.6	925.25**0**	566.80	84.94
1996	3029.8	3475.4	476.2	899.39**0**	523.50	87.18
1997	3222.5	3746.1	559.5	1004.21	445.50	86.02
1998	3276.8	3774.4	532.0	0969.01	497.60	86.82
1999	3331.2	3822.1	521.3	934.30**0**	490.80	87.16
2000	3922.5	4416.3	518.6	0927.90	493.70	88.80
Average	3329.3	3832.3	534.91	534.90**0**	503.04	86.82
2004	3956.0	4515.0	588.0	1154.00	559.00	87.60
2005	4153.0	4852.0	719.0	1456.00	699.00	85.50
2006	4235.0	4956.9	759.5	1464.40	721.90	85.40
2007	4453.0	5149.1	739.8	1723.60	696.10	86.40
2008	4622.7	5336.0	750.7	1833.00	713.30	86.60
average	4283.9	4961.8	711.4	1526.20	677.86	86.30

Arab League- Arab organization for agricultural development- annual statistical book for agricultural statistics- various editions.

Table 2 The public time-trend for red-meat production and consumption in the Arab world (1000 Ton) during the average period (1995-2008)

Equation	type	equation	R2	f	Growth rate	
1	Red-meat production amount in the Arab world	$Y^{\wedge}_I = 2922 + 116.3\ X_I$ (13.00)	0.93	169.00		3.03
2	Red-meat consumption amount in the Arab world	$Y^{\wedge}_I = 3345 + 134.6\ X_I$ (13.61)	0.94	184.40		3.10
3	Red-meat self-sufficiency rate	$Y^{\wedge}_I = 87 - 0.05\ X_I$ (-0.42)	0.15	000.15		0.80
4	Red-meat imports amount in the Arab world	$Y^{\wedge}_I = 953.9 + 18.7\ X_I$ (3.847)	0.52	014.80		3.14

Collected and calculated based on the Arab League data- Arab organization for agricultural development- annual statistical book for agricultural statistics

Table 3 The relative importance of red-meat inter-exports and imports compared to the total inter-agricultural exports and imports during the period (2004-2008).

Value=thousand dollars

country	Value of inter-red meat exports	Total value of inter-Arab agricultural exports	Relative importance of Arab inter-meat exports	Inter- red meat imports value	Total value of Arab inter-agricultural imports	Relative importance of inter-meat imports
Jordan	8858.54	430892.7	2.055	12077.3	347973.4	3.47
UAE	547.46	173917.4	0.314	15937.6	282483.0	5.64
Bahrain	2457.73	32127.35	7.64	9105.00	141206.4	6.44
Tunisia	8.72	279872.9	0.003	20.19	107476.4	0.01
Algeria	1.67	20541.87	0.008	58.38	66387.9	0.08
Djibouti	-	-	-	-	-	-
Saudi Arabia	34199.14	310419.6	11.01	31902.4	424555.4	7.51
Sudan	2034.4	200953.6	1.01	335.27	63726.8	0.52
Syria	549.8	880244.9	0.06	66.62	231414	0.02
Somalia	-	-	-	-	-	-
Iraq	-	-	-	-	-	-
Oman	5249.04	272486.1	1.92	19247.4	359628.1	5.35
Palestine	-	-	-	-	-	-
Qatar	942.24	18104.45	5.2	23309.5	216537	10.76
Kuwait	-	-	-	-	-	-
Lebanon	-	-	-	-	-	-
Libya	-	1870	-	-	458473	-
Egypt	806.38	373425	0.215	1385.3	165178.5	0.83
Morocco	6497.3	133226.5	4.87	1108.45	85704.4	1.29
Mauritania	-	-	-	-	-	-
Yemen	83.13	76361.11	0.108	5630.67	314623.2	1.78
Total	62785.35	320444.84		120184.08	3265367.5	

(-) refers to the unavailable data for that country

Arab League- Arab organization for agricultural development- annual statistical book for agricultural statistics

The relative importance of the inter-Arab agricultural trade and the inter-Arab red-meat trade during the average periods (2004-2008)

The total value of the inter-Arab agricultural trade estimated during the average period (2004 - 2008) about US $ 6.47 billion of which exports represent about 49.5%, and imports almost 51.5% as shown in Table (3). The Syrian exports represent the highest value of about US $ 880.2 million, whereas Libya represents the least value estimated US $ 1.87 million by about 27.4%, and about 0.06% of the total value of inter-Arab agricultural exports for each of them respectively. Meanwhile the highest imports value occurred in Libya by about U.S. $ 458.5 million, whereas the least value occurred in the Sudan by about US $ 63.7 million representing about 14%, and about 1.9% of the total value of agricultural imports for each of them successively. The red-meat Arab trade volume, as shown in the table, amounted to about US $182.97 million representing roughly 2.8% of the total Arab countries' agricultural trade. The Arab red-meat export and imports estimated about 34.3%, and almost 65.7% of the total red-meat Arab trade. The Arab red-meat inter-imports and exports estimated about 1.95% and almost 3.68% of the total Arab agricultural trade. Saudi Arabia accounts for about 54.5%, and about 26.5% of the total Arab red- meat inter- exports and imports, as shown in Table (3).

The red-meat Arab inter-trade

The red-meat inter- exports trends

The matrix study of the inter-meat Arab exports for 2008 indicates that Jordan's red-meat exports value to the Sudan and Iraq amounted to about US $ 40029 and US $ 28298 thousand dollars, representing about 56.1%, and 39.6% of the total value of Jordan's red-meat inter-exports total value estimated 71334 thousand dollars. Its exports to Lebanon, Kuwait, Qatar, Syria and the UAE estimated 1995, 226, 343 , 121, 226 thousand dollars, respectively, representing some 2.7%, 0.37%, 0.48%, 0.37% of Jordan's red-meat inter-exports total value in 2008. While the red-meat exports from Bahrain to Saudi Arabia amounted to about 3103 thousand dollars, representing approximately 47.9% of Bahrain's red-meat inter-exports total value amounted to $ 6476 thousand dollars. The value of Bahrain's red-meat exports to the UAE, Syria and Egypt estimated about 844, 897, 775 thousand dollars, representing some 13.6%, 13.8%, 11.96% of Bahrain's red-meat inter-exports total value in 2008. Tunisia's red-meat exports, amounted to about 28 thousand dollars to Oman and Jordan, representing about 90.2% of its red-meat inter-exports total value in 2008. Syria's exports to Iraq valued about 60032 thousand dollars, representing approximately 99.8% of its red-meat exports total value, amounting to 60135 thousand dollars. Meanwhile Oman exports to the United Arab Emirates, approximately 83.3% of its red-meat exports total value amounted to about 18424 thousand dollars. In turns, the table shows that Egypt's red-meat exports to Kuwait, Oman, UAE, Yemen estimated 812 thousand dollars accounted for about 31.5%, 29.6%, 13.1%, 10.4% of Egypt's red-meat exports total value, amounted to about 959 thousand dollars. Finally Yemen's red-meat exports total value to Saudi Arabia amounted to about 51590 thousand dollars, representing about 64.2% of its red-meat exports total value estimated 80320 thousand dollars in 2008 (Arab League - Arab Organization for Agricultural Development,1995-2009).

The red-meat inter-imports trends

The matrix study of the red-meat inter-imports in 2008 shows Jordan's red-meat imports value from Yemen and the UAE amounted to about 3675 thousand dollars, and about 2491 thousand dollars, representing about 32.8%, 22.2% of its red-meat inter-imports total value estimated 11173 thousand dollars. While Bahrain's imports value from Saudi Arabia and the United Arab Emirates amounted to11026, 3524 thousand dollars, representing about 91% of its red-meat inter-imports total value, reached about 15966 thousand dollars. The table shows Oman's red-meat imports value from the UAE amounted to 30439 thousand dollars, representing about 86.8% of its red-meat imports total value. The table indicates as well that Qatar's red-meat imports from Saudi Arabia and the UAE amounted to about 14278, 8224 thousand dollars, representing approximately 81.2% of its red-meat inter-imports total value, estimated about 27715 thousand dollars. It also shows that Yemen's red-meat imports from Saudi Arabia, UAE, Jordan estimated about 4605, 2490, 2315 thousand dollars, representing about 47.4%, 25.6%, 23.8% of its red-meat inter-imports total value reached about $ 9705 a thousand dollars in 2008. Therefore, it is necessary to establish an Arab common market which represents a meeting point among the Arab countries; facilitates trade movement among them in order to achieve their red-meat self sufficiency and reduce their dependence on imported meat from foreign world countries (Arab League - Arab Organization for Agricultural Development,1995-2009).

Possibilities of red-meat Arab inter-trade development

It means the total inter-Arab trade including both the inter-Arab exports and imports; decrease or increase of the Arab imports volume depending on the increase or decrease the domestic production volume of the commodity being studied. The countries tend to import in order to meet the gap in the different commodities domestic consumption. Therefore, the main objective of the study is to reduce the red-meat Arab imports volume by increasing the domestic production through vertical expansion in current production through the adoption and generalization of the permanent spring project (Arab Human Development Report 2009). The Permanent Spring project spring is the application of the least costly method of barely plantation. It is an ancient method of foddering known in the American continent. The method of barely fodders plantation provides a lot of least-costly fodders in all annual seasons.

Table 4 Comparison of the red-meat self-sufficiency rate in the Arab world under the current situation and the adoption of the permanent spring project

Amount= million tons value= billion dollars

statement	Total produced amount	Total imported amount	Rate of imported ton US $	Imports total value	Total consumed amount	% of self-sufficiency
Current situation	4.429	0.722	2125.8	1.554	4.938	89.7
Production increase by 10%	4.590	0.563	2125.8	1.198	4.938	92.9
Production increase by 15%	**4.670**	**0.481**	**2125.8**	**1.024**	**4.938**	**94.6**

The Arab League - Arab Organization for Agricultural Development - Statistical Yearbook of Agricultural Statistics -2009

Table 5 Comparison of the recorded figures of the status quo and the expected status from adopting the planted barely method

Indicator	**Apparent relative advantage**			**Export performance**			**Possibilities of Arab inter-trade development**		
country	**Status Quo**	**barely plantation Method**		**Status Quo**	**barely plantation Method**		**Status Quo**	**barely plantation Method**	
		Production increase			**Production increase**			**Production increase**	
		10%	**15%**		**10%**	**15%**		**10%**	**15%**
Jordan	0.59	0.66	0.79	0.62	0.71	0.83	27.51	39.5	44.1
UAE	0.05	0.06	0.08	0.01	0.08	0.12	1.24	4.2	7.8
Bahrain	1.18	1.32	1.61	0.42	0.65	0.7	19.25	23.5	39.5
Tunisia	0.16	0.18	0.23	0.03	0.11	0.33	11.5	18.2	24.3
Algeria	0.09	0.1	0.13	0.28	0.45	0.53	13.5	21.5	30
Djibouti	-	-	-	-	-	-	-	-	-
Saudi Arabia	1.4	2.05	2.06	0.75	0.88	0.94	42.12	60.5	77.5
Sudan	1.9	2.32	2.75	0.92	1.21	1.41	62.53	79.5	84
Syria	2.16	2.9	3.5	1.21	1.95	2.01	57.32	65.8	90
Somalia	-	-	-	-	-	-	-	-	-
Iraq	-	-	-	-	-	-	-	-	-
Oman	59	0.4	0.5	0.46	0.55	0.61	1.2	2.9	4.9
Palestine	-	-	-	-	-	-	-	-	-
Qatar	0.48	0.54	0.65	0.28	0.36	0.47	3.5	6.5	9.9
Kuwait	-	-	-	-	-	-	-	-	-
Lebanon	-	-	-	-	-	-	-	-	-
Libya	-	-	-	-	-	-	-	-	-
Egypt	0.25	0.27	0.29	0.53	0.65	0.74	14.35	30.5	46
Morocco	3.77	4.19	5.6	0.77	0.85	0.9	43.5	60.8	81.3
Mauritania	-	-	-	-	-	-	-	-	-
Yemen	0.06	0.07	0.08	0.01	0.04	0.08	5.4	11	19

(-) refers to unavailable data for those countries.
Collected and computed from the data of the Arab League- Arab Organization for Agricultural Development - Statistical Yearbook of

Simplified description of barely fodders plantation mechanism

It means spreading barely large basins- without sand etc. after being soaked in water for 24 hours to speed up the sprout.

The objective of establishing the permanent spring project

Ensuring the forage availability throughout the year, reducing the labor and turn it into more important actions which have higher profitable returns. Reducing the fodder-cultivated areas consumption and convert them human-food producing areas. Reducing large water wasted amounts to irrigate large areas for the production of green fodder little amount. Lessening of wasted fertilizers added to the land to improve its performance as these amounts increase over the time. Minimizing the agricultural pesticides use that cause great pollution for the environment and the ground water. Reducing the imports of fertilizers and pesticides. Maximum increasing the sheep keeping production with the least efforts. Reducing the meat and milk production cost in order to lessen the fodder cost. Providing an opportunity for sheep keepers to avoid employing the rest of the family, particularly children and direct them towards education.

Technical specifications for the permanent spring project:

It is a plant whose size differs according to demand and target of its plantation. The internal conditions are automatically controlled without the need of investor or labor's intervention in terms of the (temperature, humidity and intensity of lighting and the proportion of gases emitted from the plant and the dates of irrigation) to ensure an ideal permanent spring atmosphere for the crops. So as to provide all necessary needs for its growth

without external effects that impede the growth process. The cultivation process occurs inside the plant in rack-mounted basins without any agricultural soil. Agriculture occurs successively over time, giving the same production sequence in the same routine. The production capacity of the permanent spring plant is about one ton of green fodder per day and according to the unit area,. The plant needs les than one cubic meter of water per day. It needs two workers for four hours a day only. Each area of 50 cubic meters produced an amount of barley cultivated up to 180 tones of cultivated barley throughout the year, equivalent to seven acres of clover throughout the year. Each ton produces (6-8 tons) of dry barley(http://alhayat-co.com).

Characteristics and qualities of the permanent spring project product

It is the barley plant with the grain that still holds much unconsumed food by the plant in addition to the roots. The product is clean and free from diseases and sterile, high part of green plant (shoot) of 19-22 cm, plant age is 8 days. This is what gives it a unique chemical structure that cannot be obtained through conventional cultivation. It is capable of storing and making silage and can be packed in vacuum bags to keep it fresh for a long time. The daily production amount is (one ton) suffices to about 50 heads of dairy cows or 500 sheep or 500 heads of goats or 200 heads of horses, 40 camels and large numbers of rabbits (http://forum.zira3a.net/showthread.php). The planted barely digestion coefficients of digestion of the dry material and the organic material are, respectively (83% - 80%), giving the planted barley an increase in the milk and meat productivity up to 17%. The protein proportion in the planted barley of the dry material is about 16%, which is easy to digest. It is characterized high diet concentration reducing the consumption of dry fodders. The short life of this fodder provides high rate of protein and sugars because roots and seeds are maintained in its combination. Fodder and the non-consumption of and its stocks in the long growth process. The whole plant is given to the cattle when its length reaches 20 cm or more. It saves 50% of the fodder given to the animals (www.Samco&solution.com). Its energy equals to barley grains besides its ability to digest. Therefore, its benefit rate reaches up to about 95%, higher than other types of fodders. Due to the high prices of raw materials used in the manufacture of concentrated fodders which are related to the world prices, as well as the prices of materials used in animal fodders such as hay. This has resulted in an increase in the cost of feeding animals to be fattened and the withdrawal of most producers of meat animals of the industry. Therefore, the planted barley is one of the alternatives provided for fattening animals, and feeding on the planted barley occurs as follows:

If the animal weight at the beginning of fattening is 300 kg, the amount provided by the concentrate feed equals 4 kg length of the day. The amount provided by the planted barley is equal to (3 - 3.5 kg) throughout the day and provided fully, including (shoot and root). It is added separately or served with coarse material such as hay. It helps produce the animal with the weight required and reduce the feeding cost by almost 40%. The daily production of planted barley calculated according to the number of animals heads to be fed and the daily feeding rate per animal of the concentrated fodder minus 40% is the amount of the planted barley as follows: Daily production = number of animals x the amount of feed / animal / day = amount of concentrated fodder for all animals / day. Suppose that the number of animals is (10), the total amount of fodder is 60 kilos. Thus, the concentrated fodder provided for the animal = 36 kg or the amount of planted barely provided for the animal = 24 kg The seeds amount used per day equals to 4 kg of dry barley. In general, the cultivation of planted barley occurs in the winter without air conditioning because it is a winter crop, but in the summer to it should be planted in a temperature ranges between (20-22 degrees Celsius).

The expected impact of adopting the permanent spring project

In order to increase the red-meat self-sufficiency rate and Arab inter-trade, the study aims to increase the red-meat Arab production through vertical expansion. It means the increase of produced amount of the same number of existed animals' heads (cows and buffalos) through feeding method of planted barely which helps increase the red-meat production by 10% to 25%. The study has relied on the lowest determinants of 10% and 15% as an increasing percentage of the red-meat production in the Arab world. It calculates, then, the indicators of the possibilities of Arab inter-trade development of such commodity under the adoption on the permanent spring project (barely plantation). Therefore, it is necessary to study the impact on two stages: the first on the red-meat Arab production whereas the second on the Arab inter-trade development.

First: the expected impact of adopting the permanent spring project on the re-meat Arab production

Table no. (4) indicates that in the case of feeding the animals heads in the Arab world on the planted barely, there will be an increase of the red-meat produced amounts in the Arab world by about 10% and subsequent reduction of the imports volume by the same production increase volume. Therefore, the red-meat self-sufficiency rate will increase from the current rate 89.7% to about 92.9% and almost 94.6% in the case of red-meat domestic production increase in the Arab world and the product from feeding the cattle on the planted barely by 10% and 15% respectively.

Second: the expected impact of adopting the permanent spring project on the Arab red-meat inter-trade development

A statistical technique, consists of three equations, has been used to identify the activating possibility of the red-meat inter-Arab trade. The first equation is concerned with measuring of the apparent relative advantage of the agricultural exports (the case of red meat), while the second equation is concerned with assessing the relative export performance which shows the state's exporting ability of the commodity being studied in comparison to

the world exports of the same commodity. The third equation estimates the proportion of the possibility of developing the current inter-Arab trade.

Formation of the applied equations (Ali,Afaf, 2002)
The first equation - the equation of the matrix figure relative comparative advantage:(RCA)

$$RCA = \frac{VEXP_{ij}}{TVEXP_i} / \frac{VIMP_{ij}}{TVIMP_i} \quad (1)$$

Where

$VEXP_{ij}$ = the state I commodity export value to the Arab countries.
$TVEXP_i$ = total value of agricultural exports of the state I to the Arab countries.
$VIMP_i$ = imports value of the state I of the commodity j to the Arab countries.
$TVIMP_i$ = total value of agricultural imports of the state I to the Arab countries.

This equation can compare the contribution of the commodity being studied (j) in the total agricultural exports of the state being studied (I) to the Arab countries' share of the same commodity (j) of the total agricultural imports of the same state to the Arab countries.
The higher the apparent relative index of comparative advantage is, the more the evident of the state's ability (I) to export the commodity (j). This index becomes negative whenever the country is only an importer of that commodity. Or if the commodity exports proportion compared to its imports is less than the total Arab exports proportion to the total Arab imports. This index helps identify the state's relative efficiency to export the commodity or a group of exporting commodities and the ranking of the commodities in which the state has comparative advantages.

Second equation

The equation of measuring the index figure of the Arab exporting performance.

$$CEP = \frac{AVEXP_j}{TAVERXP} / \frac{WVEXP_j}{TWVEXP} \quad (2)$$

Where:
$AVEXP_j$ = the state's total exports of the commodity (j).
TAVEXP = total agricultural exports value of the state.
$WVEXP_j$ = Arab exports value of the commodity (j).
TWVEXP = total Arab agricultural exports value. When the value of this index exceeds the figure one, this means the state's exports of commodity (j) represent a large portion of the total Arab agricultural exports. In other words, commodity (j) is more important in the state's exports than in the Arab agricultural exports.

Third equation

It is the equation of assessing the index figure of the possibilities of developing the Arab inter-trade of the commodity being studied. It is as follows:

$$TP = RCA_j (TVEXP_j - AVEXP_j) / (TVIMP_j - AVIMPA_j) \quad (3)$$

Where

RCA_j = the apparent relative proportion of the index comparative advantage of the commodity (j).
$TVEXP_j$ = total foreign Arab exports value of the commodity (j).
$AVEXP_j$ = the inter-Arab exports value of the commodity (j).
$TVIMP_j$ = total foreign Arab imports value of the commodity (j).
$AVIMPA_j$ = inter-Arab imports value of the commodity (j).
This figure indicates the possible increase proportion of the inter-Arab trade of any commodity under the conditions of its export or import from abroad. This figure is unstable over time as it differs according to the advantages proportion difference; the production and consumption patterns and the trade in the Arab countries.
According to the estimates of the former model equations of the red-meat status quo in the Arab world countries whose data is available during the period (2004-2008), the index comparative relative apparent advantage for the red-meat exceeds the figure one for Morocco, Syria, the Sudan, Saudi Arabia and Bahrain. That figure estimates are respectively 3.77, 2.16, 1.9, 1.4 and 1.18 as shown in table no. 5. Therefore, these countries have the index comparative advantage of the red-meat exports to the Arab markets. However, there is no in general any state being studied, on which data is available, imports only the red-meat commodity. There is no negative value for any estimate of the index comparative advantage of any country. However, in the other countries whose figure is higher than zero and less than figure one, the red-meat export proportion to their imports is less than their total agricultural exports to their total agricultural imports.
As for the index figure for the Arab export performance, table no. 5 shows the figure's value is higher than figure one in Syria as it estimated 1.21. This means that Syria's exports of red meat represent a larger portion of the total Arab red-meat exports. It means that the red-meat has greater importance in the Syrian exports as compared to other Arab countries. Meanwhile this figure reached 0.92, 0.77 and 0.75 in the Sudan, Morocco ad Saudi Arabia. As the figure's value becomes more less, there is evidence on the reduction of commodity's importance (the red meat) in the country's exports being studied.

As for the index figure measuring the possibilities of developing the red-meat Arab inter-trade during the period (2004-2008), table no. 5 indicates that it is possible to increase the red-meat Arab inter-trade volume by 62.53% of the exports of the Sudan to other Arab countries. It shows as well 57.32% of Syria's red-meat exports to other Arab countries, 43.5% of Morocco's red-meat exports to other Arab countries, 42.12% of Saudi Arabia's red-meat exports to other Arab countries, 27.51% of Jordan's red-meat exports to other Arab countries followed by Bahrain's 19.25%, Egypt's 14.35%, Algeria's 13.5% and Tunisia's 11.5%. The table shows the figure of inter-Arab trade estimated its least value in Oman 1.2 %. It is evident that Morocco comes in the first rank of the apparent relative comparative advantage while Syria occupies the first rank in the index figure of the Arab exporting performance.

Agricultural Statistics.

The Sudan occupies the first rank in the possibility of increasing its red-meat exports to the other Arab countries. The previous model equations estimate in the case of increased production in the Arab world of red meat by 10%, 15% and the output of feeding cattle on planted barley, as illustrated in Table (5) was found to increase the index of comparative advantage in the most important Arab countries from about 3.37 to Morocco to about 4.19 in the case of increasing production by about 10% then to about 5.6 in the case of increasing production by about 15%. Meanwhile it increased in Syria from about 2.16 to about 2.9, and about 3.5 in both cases, respectively. In the Sudan it increased from about 1.9 to about 2.32 and about 2.75. In Saudi Arabia it increased from about 1.4 to about 2.05 and then to about 2.06. In Bahrain it increased from about 1.18 to about 1.32 and about 1.61.

As for the index of the exports performance, as illustrated in table (5), it has been shown Syria enjoys the status quo advantage in the red-meat export performance. It turns out that in the case of animal feed in the Arab world on the planted barley will join the Sudan and Syria in this feature. The exports index performance increased from about 0.92 to about 1.21 to about 1.41 and then, in each of the current situation and the production increase by 10%, 15%.

As for the possibilities of the red-meat inter-Arab trade development, table no. (5) shows the production increase by 10%, 15% contributed to the increase in the index for the development of inter-Arab trade of this commodity which reached a peak in the Sudan to about 79.5%, and about 84% increase in the cases, respectively, compared to 62.53% in the current situation. It is followed by Syria, where the possibility of red-meat export increase to the Arab countries from about 57.3% to about 65.8%, 90% of Syrian exports of red meat. Then came Morocco in the third rank in terms of the red-meat exports contribution to the Arab countries by about 43.5% in the current situation and increasing to about 60.8%, and about% 81.3. It is followed by Saudi Arabia, which increased its exports of about 42.12% to 60.5%, 77.5%. Finally, the proportion of Jordan's exports to Arab countries increased from about 27.51% to 39.5% and about 44.1% and in the case of feeding on the planted barley and production increase by 10%, 15% in each country respectively.

Therefore, in the case of the red-meat increased production in the Arab world by feeding the numbers of the heads of animals (cows and buffaloes only) on the planted barley and increase production by 10% as a minimum for the increase in the nutrition situation in this way, and about 15% as a second level resulted from this feeding, the index of comparative advantage is increasing, and improving export performance of Arab countries of the Sudan. In addition to increasing the red-meat exports proportion of all countries directed to the Arab countries. This means increasing the volume of inter-Arab trade, which means the possibility of increasing the proportion of the Arab red-meat sufficiency in light of new situations.

Evaluating cattle feeding on the planted barley "as a case study in Egypt":

First: - assessing the production costs in each of the current situation and feeding on the planted barley

Production costs of the 2008 barley crop in the current situation

- Total cultivated area = 96 thousand acres
- Total production of the cultivated area = 146 thousand tons
- The cost of production per feddan = 2850 L.E
- Total cost of the cultivated area = 273.6 million pounds
- The cost of production per ton = 1873.97 pounds / ton

Production costs of the planted barley crop

The planted barely production requires a greenhouse which needs two workers only to work every day. The barely ton production needs about (125-130 grams) of seeds of barley, and about 350 liters of water, as needed cultured to adjust the required temperature during the summer period only to about 22 degrees C (as a winter crop).

-Total cost of the planting room = 60 thousand pounds
-Total cost of the seed per culture medium = 100 pounds / week
-Total labor cost (two workers * 50 pounds / day * 360 days [= 36 000 LE / Year.
-Total number of planting rooms to produce about 146 thousand tons of barley= 406 planting rooms
-Total cost of 406 planting room = 024.36 million pounds
-Total cost of seeds = 1.827 million pounds / year
-Total labor cost = 14.616 million pounds / year
-Total cost of electricity = 1.949 million pounds
-Total cost = 42.797 million pounds
-Total volume of production = 217.44 tons
- The cost of production per ton = 196.82 pounds / ton.

Comparing the cost of producing tons of barley produced both ways show lower cost per ton of barley produced in the rooms where the culture was about 196.82 pounds / ton, while the cost of production in the current situation about 1873.97 pounds / ton.

Second: assessing the country's imports of barley

The state imported barley amount reached 6.62 thousand tons in 2008. The imports value amounted to about $ 4.08 million, the ton’s price reached about 61.63 U.S. dollars / ton (345 pounds / ton), while the cost of production per ton of planted barley reached about 196.82 pounds / ton.

Third: Evaluating the feeding method

One of the studies(php.showthread/net.a3zira.forum) explains that the feeding cost per a head in the current situation reached about 3150 pounds / session. Meanwhile, the same study has proven that the feeding cost per a head in the case of planted barley decline by about 70%. This means that the production cost per head may reach about 945 pounds / for the session. In light of the above-mentioned discussion, one of the most important findings that this study has concluded is that the adoption and generalization of the “permanent spring

project", barely plantation in the Arab world will have several positive impacts. These impacts could be summarized as follows:

- The increase of red-meat self-sufficiency rate by about 3.2% and about 5.9% resulted from the red-meat production increase (cows and buffalos) by an increase rate of about 10% and 15% successively. Therefore, there will a reduction of the red-meat Arab imports by the same production increase rate. Consequently, the red-meat Arab food invoice will be reduced because of the reduction of the red-meat Arab imports value by about 22.9% and almost 33.8% at the production increase two rates respectively. In addition, the allocated areas for barely cultivation could be directed to wheat production. This will lead to the cultivation of about 96 thousand faddens producing almost 269 thousand wheat tons.
- Feeding the animals (cows and buffalos) on the planted barely leads to increase the red meat production in the Arab world by minimum rate 10% and by about 15% as a second rate, a matter that increases the relative in ex comparative advantage in all Arab countries. The Arab exporting performance will be improved and all countries' red-meat exports directed to the Arab countries will increase. Therefore, the Arab inter-trade volume will increase and hence it is possible to increase the Arab red-meat self-sufficiency rate under the new conditions.
- Finally, it is evident from evaluating the cattle-based feeding method on the planted barely as a case study in Egypt that the planted barely ton cost is reduced by about 1677.15 L.E amounted to almost 89.5% as compared to its production cost under the current situation. the planted barely ton cost is reduced by about 148.18 L.E. amounted to 42.9% as compared to the importing price of the barely ton. The one head cost feeding on planted barely declined by 2205 per head/session amounted to about 70% as compared to the one head feeding cost under the current situation.
- In light of the study findings, the most important recommendations are represented in the necessity of activating the permanent spring project at the Arab world level because of its positive impacts on the red meat vertical expansion in the Arab world. Consequently, these positive impacts increase production, self-sufficiency due to the decline of the Arab red meat imports volume. As for Egypt, the study recommends the necessity of adopting the permanent spring project and its generalization in the Egyptian countryside offering it to farmers through agricultural guides. The state can support farmers in order to adopt that project through providing the 406 barely plantation rooms for the farmers with a total cost amounted to 24.36 million L.E. The state can, then, collect the sums from farmers on the basis of 250 pounds per acre and can thus recover the amount over only a year. The fadden production cost for the farmer will amount to about 286 L.E. as compared to its cost under the current condition estimated 2850 L.E.

Summary

The study aims to lessen the volume of Arab world imports of red meat by increasing the domestic production volume through vertical expansion of current production by implementing the permanent spring project "barely plantation" in the Arab world. To realize its objective, the study has investigated the current red-meat production and consumption situations in the Arab world. It focuses as well on the red-meat and animal protein per capita in the Arab countries. It has studied as well the red-meat Arab inter- trade and the possibility of its development through adopting and generalizing the permanent spring project. It is a project of planting the low costly barely fodders, which is an ancient method known in the American continent. The study has, then, handled the expected impact of adopting the permanent spring project through studying its impacts on the red-meat Arab production and developing the red-meat Arab inter-trade. The study has relied on the simple linear regression besides a statistical model to identify the possibilities of red-meat Arab inter-trade increase. Finally, it has focused on evaluating the planted barely based on cattle-feeding method "the case study of Egypt". It has evaluated the production costs under the current situation and planted barely based on feeding, assessing the state's barely imports and the feeding method as well.

Among the most important findings resulted from adopting and generalizing "the permanent spring project", barely plantation in the Arab world, are several positive impacts such as the red-meat self-sufficiency increase as a result of the red meat production increase of (cows and buffalos). The imports rate decline at the same production increase rate, increase of the relative comparative advantage of all Arab countries and the improvement of the Arab exporting performance of the Sudan besides increasing the red-meat inter-exports rates for all countries. Therefore, the Arab inter-trade volume increases which means the increase of the Arab red-meat self-sufficiency under the new conditions.

Finally, the evaluation of the planted barely based cattle feeding method "the case study in Egypt" shows the decline of planted barely ton production cost as compared to its production cost under the current situation and the barely ton importing price. It shows as well the decline of a head feeding based on the planted barely as compared to the feeding cost under the current situation. In light of the study findings, the most important recommendations are represented in the necessity of activating the permanent spring project at the Arab world level because of its positive impacts on the red meat vertical expansion in the Arab world. Consequently, these

positive impacts increase production, self-sufficiency due to the decline of the Arab red meat imports volume.

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