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Analysis of Agricultural Policies Affecting Medjool Date Palm Cultivation in Jordan

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Abstract

The objective of this study was analyzing the agricultural policies which affecting Medjool date palm cultivation in Middle Ghors region, Jordan. In this study, Primary data were collected by personal interviews to farmers in the target area while secondary data were collected from different governmental offices. According to the Policy Analysis Matrix (PAM) approach, results showed that the Domestic Resource Cost Ratio (DRC) was less than one 0.27, which means that there was a comparative advantage in producing Medjool date palms. The measures of economic protection showed that there was a subsidy for agricultural producer in the Middle Ghors region because of the domestic resource price of this crop was less than the world price. Therefore, encouraging planting Medjool date palm will enhance the economic efficiency of agricultural resources in the Middle Ghors region in Jordan.

Keywords: medjool, Policy Analysis Matrix (PAM), measures of protection

1. Introduction

Jordan is located in the eastern Mediterranean region, between latitudes 29°30′N and 32°31′N, and covers about 89,287 square Kilometers (Km^2). The climate of Jordan is predominantly of the Mediterranean type, characterized by mild wet winter and extreme variability in rainfall within and among years, and a dry hot summer with short transitional periods of spring and autumn (RJGC, 2000). The agricultural sector is considered to be one of the most important economic sectors in Jordan; however, it has a fair contribution to the total domestic product where the contribution was 3.2% of the value of total domestic product and with a fixed basic prices (Ministry of Agriculture, 2012). Moreover, the sector is closely related to local economic activities which contributed with about 27% of GDP (Ministry of Agriculture, 2009).

The palm cultivation in Jordan is relatively new. The last fifteen years have seen a significant expansion in the palm cultivation, this is mainly because palm trees are more adaptable to dry environment due to unsustainable high degrees of heat, drought and salinity (Alawaideh et al., 2008). That is besides the availability of appropriate environmental and climatic and investment conditions in the field of date palm cultivation in Jordan (Ministry of Agriculture, 2012). Despite the scarcity of private water resources, the area planted with palm trees has increased from 1082.9 to 21519.8 dunum. This is accompanied by the evolution in the production of 892.5 tons to 11980.7 tons during the period from 1994 to 2013. In the context of consumption patterns prevailing in Jordan, and high quality types of dates such as Medjool, Sukari and Albrahi, which forced farmers to expand the cultivation of those varieties; the number of palm trees has increased from 14857 trees to 304735 during the period between 1994 to 2013 (Department of Statistics, 2014) .The importance of this study came from the importance of the role played by agriculture sector in the study area in terms of the limited basic agricultural resources such as land, water, and capital and the high contribution of the region in the value of agricultural output (GDP). Particularly, the economic importance to the area in the production of Medjool date. This study will also provide the necessary economic information to make decisions that would raise the economic efficiency of agricultural resources available, and provide information for decision-makers to take appropriate decisions related to this important product.

1.1 Objectives of the Study

The central goal of this study is to analyze the agricultural policies affecting Medjool date palm cultivation in

Jordan. To that end, this study also has other objectives:

1) Estimation of returns and costs using market prices and world prices for Medjool date crop.

2) Computing various measures of economic protection.

3) Agricultural policy analysis and policy formulation for the Medjool date cultivation in Jordan.

2. Review of Literature

Nothing was found in literature review regarding the policies affecting on date palm cultivation in Jordan using policy analysis matrix (PAM) Approach.

El-Habbab and Jabarin (1991) studied the impact of government price policy on the production of wheat in the rainfed areas in Jordan. The results of the study indicated that the Nominal Protection Coefficient (NPCo) of wheat using traditional and modern methods was (1.01), this means that with policy, the price of wheat received by farmers increased by (1%). Using the Nominal Protection Coefficient (NPCi) for production inputs for both production techniques was (1.06), indicating an increase in the costs paid by farmers as fees (6%). The Effective Protection. Coefficient (EPC) was one. This means that the final result of the price policy was almost zero. Also, the results of the mentioned study indicated that there was a comparative advantage in producing wheat.

El-Habbab and Jabarin (1991) studied the impact of the government price policy related to irrigated wheat on water in the Jordan Valley area, on the efficiency input use, self-sufficiency ratio and the possibility of producing fodder crops in the southern areas of Jordan. The results of the study indicated that wheat production in the irrigated areas uses resources efficiently if it is compared to tomato production in the Jordan Valley or alfalfa production in the southern desert area. Also, the results indicated that the Domestic Resource Cost (DRC) was less than one in the case that the price of water is 6 fils/cm in the Jordan Valley and 27 fils/cm in the southern desert.

Kubursi (2002) studied the Lebanon's Agricultural Potential: A Policy Analysis Matrix Approach. The results of the study suggested that there were a number of agricultural products where Lebanon has a major comparative advantage. These include apples, tomatoes, pears, oranges, cucumber, watermelons, cantaloupes, etc. There were a few products where the subsidies sustained economically (profit-wise) inefficient outputs. This was particularly true for tobacco, wheat and sugar beets. Olives appeared to be marginal and in some cases inefficiently produced.

Salem (1996) studied the impact of wheat policy on dry land wheat production in the Republic of Yemen. The results of the study indicated that dry land wheat production is economically feasible, and Yemen has a comparative advantage of producing it. The Nominal Protection Coefficient (NPC) of tradable inputs (NPCI) for dry land wheat was 59% and the value of the subsidy for the tradable inputs and domestic factors for dry land wheat was 3098 Yrs/ton.

Wiendiyati and Umbu Reku Raya (2003) studied the Policy Analysis Matrix (PAM) on the impact of government policy toward the comparative and competitive advantage of soybean farming in Ngada Regency, Nusa Tenggara. The results of the study indicated some important findings, those were the followings: Imposing of import tariff on soybean increased the price of private output, and increased the competitive advantages of soybean farming system in Ngada.

Altahat (2010) studied the impact of governmental subsidy policy and risk analysis in vegetables production In the Yarmouk Basin (Syria) and in the Jordan Valley (Jordan). The results of the study showed that the Domestic Resource Ratio (DRC) for summer tomato, spring potato in Yarmouk basin in Dra'a and for spring potato in Deir Alla district in the Jordan Valley was less than one, which means that there was a comparative advantage in producing those crops in the irrigated areas. There were incentives to encourage farmers to produce these irrigated crops. While production of summer tomatoes in Deir Alla district in the Jordan Valley was not feasible. The measures of production indicated that the presence of taxing for output and subsidization for one or more input for all kinds of irrigated vegetables.

3. Methodology and Procedure

3.1 Primary and Secondary Data

This study based upon primary data from “Econometric Analysis of Medjool Date Production Costs in Jordan” (Altahat et al., 2013). In addition to primary data, Secondary data have been collected from different sources, governmental officials, research, literatures, and other sources that have been collected and used in the analysis. Two kinds of budgets were estimated: private and social budget. Private budget was that with prevailing market prices. Social budget was that estimated with adjusted prices (social prices or efficiency prices). The enterprise

budget was then used to build accounting matrix. The accounting matrix is called a Policy Analysis Matrix (PAM). Measures of protection and comparative advantage measures abstracted from PAM to determine if the production makes efficient use of domestic factors.

3.2 Study Area

The study was carried out in the Middle Ghors (Deir Alla); one of the four regions in the Jordan valley, Jordan. It covers about 83 thousand dunums, 2548 agricultural units (each unit about 30 dunums), 10 basins. The area is several degrees warmer in winter than the rest of the country. Agriculture is the major economic activity in the area. Palm cultivated area covered in the study is 6468.0 dunums, which is 29.4% of the total cultivated palm area in Jordan (21519.8 dunums). The number of palm trees in the study area is 84,877 trees; 27.9% of the total number of palm trees planted in Jordan (304,735 trees). The number of palm fruitful trees in Jordan 222340 trees, of which 28.4% (63178 trees) in the study area. The production of palm trees in the study area reaches up to 3664.3 tons; 30.6% of the total production on the level of Jordan (11980.7 tons) (Department of Statistics, 2014).

3.3 Policy Analysis Matrix (PAM) Method

Governments often intervene in the national economy to achieve certain objectives. These objectives includes; improving the distribution and stability levels of the real income, increasing production of food commodities, and improving the efficiency of resource allocation. To reach these objectives in the agricultural sector, a government uses different policy tools, such as (a) intervention in project plans; (b) fixing input prices; (c) subsidization of output prices; (d) quotas on imports competing with domestic products; and (e) multiple exchange rates for import and export. Markets play a crucial role in allocating resources and direct agricultural production. However, the public sector plays an important role in supporting markets. Whereas, the public sector providing the necessary infrastructure (such as roads), providing sound macroeconomic policies that avoid high rates of inflation and appreciated exchange rates, providing agricultural market information, research and extension, and facilitating the creation of an environment conducive to the development of competitive markets (ESCWA, 1995).

This study will be presented as an evaluation of the current production system of the Medjool date palm produced in the Middle Ghors region by means of the Policy Analysis Matrix (PAM) methodology. PAM method will be used to determine the impact of Jordanian Governmental policies, including output and input prices, credit subsides and exchange rates, on the efficiency of production. The principles of Policy Analysis Matrix (PAM) developed by Pearson and Monke in 1989 were used. The PAM method serves both as a logical framework for thinking about the effects of agricultural policy and as empirical analytical tool for measuring the policy impacts. The information used to feed PAM has been obtained by primary and secondary data. The PAM model is portrayed in Table 1. Private profits were defined in the first row as D = A - B - C, social profits were defined in the second row as H = E - F - G, and the policy effect were defined in the third row as L = I - J - K. The third row of the matrix shows the divergences or differences between the first row (private valuation) and the second row (social valuation). If market failure does not exist in the product market, distorting policies causes all divergences between private and social prices of tradable output and input. Policies, which may cause divergence, includes subsidies, taxes and quantitative controls applied to domestic production or trade of the commodity, price policies may also cause distortions. The first column in the matrix is labeled revenues. Costs are divided into two components, costs of tradable inputs (inputs which are traded in the world markets) such as fertilizer and pesticides, area included in the second column. The third column of the matrix includes domestic factors (non-tradable inputs because there is no international markets for these inputs) such as land water, labor, and capital. Column four in the matrix is labeled profits. Economic profit is the fundamental part of the PAM analysis. Profit is defined as the difference between the value of outputs (revenues) and the costs of all inputs (costs).

Table 1. The Policy Analysis Matrix (PAM)

Revenues	Costs		Profits	
	Tradable inputs		Domestic factors	
Private prices	A	B	C	D
Social prices	E	F	G	H
Policy effect	I	J	K	L

Source: Monke and Pearson (1989).

Note. The symbols (capital letters) stand for:

A: Total revenues in private price (market prevailing prices some times called financial prices).

B: Cost of tradable inputs (such as fertilizer and Chemicals) in private prices.

C: Cost of domestic factors (such as labor and capital) in private prices.

D: Private profit.

E: Total revenues in social price (prices that are adjusted to reflect government intervention).

F: Cost of tradable inputs (such as fertilizer and Chemicals) in social prices.

G: Cost of domestic factors (such as labor and capital) in social prices.

H: Social profit;

Private profit: (D) = A - B - C;

Social profit: (H) = E - F - G;

Output transfer: (I) = A - E;

Input transfer: (J) = B - F;

Factor transfer: (K) = C - G;

Net transfer: (L) = D - H.

4. Result and Discussion

Table 2 contains a summary for the policy analysis results of Medjool date palm cultivation in Middle Ghors region. The results were reported on a per dunum basis. Which have been dependable to get to the impact of agricultural policy. It was found that revenue for Market prices (local) was higher than the revenue for social prices (global) and this means that there was a subsidy that equivalent to 38.2% of the social price to harvested dates. As it turns out that the tradable inputs received a financial support equal to 9.9% of the cost of the tradable economic production price, while there was a financial support for local resources equal to a rate of 38.4% of the cost for local resources and economic price. Therefore, the overall impact of the policy was in the favor of the producers.

Table 3 shows the measures of economic protection for Medjool date palm cultivation The DRC or comparative advantage indicator is less than one, which means that the production of Medjool date palm makes an efficient use of domestic resources and Jordan has a comparative advantage in this production. Also, it was found that the Nominal Protection Coefficient for tradable output (NPCo) was 1.38 which means that there is a subsidy for agricultural producers and that the adopted agricultural

Table 2. Policy Analysis Matrix for Medjool date palm in the Middle Ghors

	Revenues	Cost of tradable inputs	Cost of domestic factors	Profits
Private prices	6289	411	675	5203
Social prices	4550	456	1096	2999
Effect of divergence & policy	1738	(45)	(421)	2204

Note. Figures in brackets ( ) are negative numbers.

Source: Calculated and tabulated from primary and secondary data.

Policy allows local market price to be larger than the international price. As for the Nominal Protection Coefficient for tradable inputs (NPCi), it was found that there is a decline in the costs paid by the producer (farmer) of 0.90 which indicates that the government has a high financial support to those farmers. In other words, domestic prices of tradable inputs were less than social prices. As far as that the Effective Protection Coefficient (EPC) was greater than one, which means there are incentives for farmers as a result of the positive impact for the policy of subsidy input and output. The Private Cost of Resources (PCR) was less than one, which indicates that local costs or money invested were less than the added value achieved, and therefore farmers reached high profitability. Using the Profitability Coefficient (PC) that is greater than zero means that there is profitability in the production of this crop. Subsidy Ratio to Producers (SRP) was greater than zero which indicates that there was a financial support for agricultural producer.

Table 3. Indicators of competitiveness, efficiency and policy impacts calculated for Medjool date palm in the Middle Ghors

Items	Value
PCR(C/A-B) =Private Cost of Resources	0.12
DRC(G/E-F) = Domestic Resource Ratio	0.27
NPCo(A/E) = Nominal Protection Coefficient for Output	1.38
NPCi (B/F) = Nominal Protection Coefficient for Input	0.90
PC (D/H) = Profitability Coefficient	1.74
EPC{(A-B)/(E-F)} = Effective Protection Coefficient	1.44
SRP(D-H/E) = Subsidy Ratio to Producers	48%

Source: Calculated from Table 2.

5. Recommendations

The study recommended the importance of encouraging planting Medjool date palm since there was a comparative advantage and led to enhance the economic efficiency of agricultural resources in the Middle Ghors region in Jordan.

References

Alawaideh, M. A., Fida, A., Najah, M., Samer, A., Moustafa, A., & Aminh, A. (2008). *The reality of palm cultivation in Jordan*. Agricultural credit corporation, Amman, Jordan.

Altahat. (2010). *The impact of governmental subsidy policy and risk analysis in vegetables production in the Yarmouk Basin (Syria) and in the Jordan Valley (Jordan)* (Ph.D. Thesis, unpublished). Aleppo University, Agricultural Economic Department.

Altarawneh, M., & Ebraheem, A. (2013). Econometric analysis of Medjool date production costs in Jordan. *Scientific Journal of King Faisal University, Basic and Applied Sciences, 14*(1).

Department of Statistics. (2011-2013). *External Trade Report*. Jordan.

Department of Statistics. (2014). *Crops statistics*. Jordan.

Economic and Social Commission for Western Asia (ESCWA). (1995). *Evaluation of Agricultural Policies in the Syrian Arab Republic (Policy Analysis Matrix)*. New York.

EI-Habbab, M. S., & Jabarin, A. S. (1991). The impact of wheat policy on traditional and modern rainfed wheat production in Jordan. *Dirasat, 18B*(3).

El-Habbab, M. S., & Jabarin, A. S. (1991). The impact of wheat policy on irrigated wheat production in Jordan. *Dirasat, 18B*(4).

Kubursi, A. A. (2002). *Lebanon's Agricultural Potential: A Policy Analysis Matrix Approach*. McMaster University and Econometric Research Limited.

Ministry of Agricultural. (2009). *Annual Report*.

Ministry of Agriculture. (2012). *Annual Report*.

Monke, E. A., & Scott, R. P. (1989). *The Policy Analysis Matrix for agricultural development*. Cornell, USA: Cornell University Press.

Royal Jordanian Geographic Center (RJGC). (2000). *Monthly Reports*. Amman, Jordan.

Salem, M. A. (1996). The impact of wheat policy on dry land wheat production in the republic of Yemen. *Dirasat, Agricultural Sciences, 23*(1).

Wiendiyati and Umbu Reku Raya. (2003). *Policy Analysis Matrix (PAM) on the impact of government policy toward the comparative and competitive advantage of soybean fanning in Ngada regency*. Nusa Tenggara, Nusa Cendana University in West Timor, Indonesia.

Appendix

Appendix 1. Enterprise budget of Medjool date palm in the Middle Ghors (in JD's per Dunum)

Item	Market prices	Social prices
Tradable Outputs	6288.9	4550.4
- Crop produce (output) (JD/du.)	6099	4360.5
- By-product (JD/du.)	189.9	189.9
Tradable Inputs	410.8	455.8
- Cuttings Palm (JD/du.)	312.5	329.8
- Chemical Fertilizer (JD/du.)	42.4	69.5
- Plant Protection Chemicals(JD/du.)	11.8	12.5
- Machinery labor (JD/du.)	36.6	36.6
-Threads (JD/du.)	7.4	7.4
Non-Tradable Inputs	675.2	1095.7
- Water Requirement (JD/du.)	185.3	520.0
- Manure (JD/du.)	9.0	9.0
- Manual Labor (JD/du.)	244.5	244.5
- Interest (JD/du.)	80.4	166.2
- Land Rent (JD/du.)	150	150
-Maintenance (JD/du.)	6.0	6.0

Source: Calculated and tabulated from primary and secondary data.