Analysis of the Competitiveness and Comparative Advantage of Orange Fruit Production in Iraq: Salahuddin Governorate for the 2020-2021 Production Season As An Application Model

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Abstract

The objective of this study was to analyze the competitiveness and comparative advantage of orange fruit production in Iraq and in Salah al-Din governorate and the impact of its prices compared to social prices (Global) through the use of tradable and non-tradable inputs and study of the comparative advantage of the orange fruit crop in Iraq and in Salah al-Din governorate by measuring some indicators from the policy analysis matrix and measuring the competitiveness of Iraq's orange fruit crop and Salah al-Din governorate This was done using the policy analysis matrix as a statistical model for analyzing data obtained from the questionnaire and preparing the preliminary data. The results of the study showed that protection measures and comparative advantage indicators indicated that there was no government support for the output, even if it was found to be too small and not commensurate with the scale of State support for the world's farms. The results have also demonstrated a significant difference between domestic and social sales prices, as domestic sales prices are low and losing if compared to the world's sales prices. As well as the product subsidy ratio coefficient, where it was negative, it was valued at 30%, indicating the lack of government support for this crop. Through the findings of this study, some recommendations can be used, the most important of which is the State's support for the production inputs and outputs of farmers of orange fruit, such as the provision of fertilizer and necessary supplies, the establishment of refrigerated stores to ensure that the crop is not damaged and its prices are low, as well as that agricultural plans developed by the agricultural people include all orange fruit farms and access to the most important obstacles for farmers of orange fruit. Farms must also have control over the area they cultivate. It is essential to encourage factories created by investors to manufacture materials that orange fruit enters, such as juices, jams, etc.

Keywords: Analysis of the competitiveness and comparative advantage of orange fruit production in Iraq.

1. Introduction

Orange is a fruitful tree of the Rutaceae type, and the importance of orange is primarily compared to other types of citrus as the global production is 3/2 of the world's citrus productivity. Nutritional importance: orange contains 70.90% water depending on prevailing climatic conditions and solids, the most important of which is sugar, which represents 80.90% of the total solids dissolved, an important source of vitamin C, with a concentration of 40.70% mg per 100ml juice and vitamin C in the fruit orange per 90 mg. Economic importance of the orange tree: Orange trees are fruit crops trees with high economic value Multiplicity of types and varieties ", which increases their relevance and economic value, that mature and are marketed during different stages of the year Orange fruit is available on the market for most of the year, and orange fruit uses are versatile They are eaten fresh and make multiple kinds of jams, juices and desserts It also extracts from the leaves of the orange tree, fruit and flowers some types of essential oils that are used in the preparation and formation of various types of fragrances.

Global orange production annually stands at about 73,289,838 tons, and Brazil is one of the world's most productive countries for orange fruits. It produces about 17,251,291 tons annually, and China ranks second globally with production of about 8,550,865 tons annually. How it is produced, production costs, tradable and non-tradable inputs, government support, orange prices, marketing, transportation, etc., this needs to be known through the use of economic indicators and measures, as in the policy analysis matrix, which was used to determine the comparative advantage and competitiveness of orange crop production.

Relative scarcity represents the role of analysis of agricultural policy and its relevance and assessment of its impact on the efficient use of agricultural resources. Policymakers need to know the level of

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market distortions caused by government support to agricultural production, such as subsidizing outputs and subsidizing inputs to some crops only. Due to government intervention, taxation and other market distortions, there is a need to measure the comparative advantage and efficiency of the various agricultural patterns of these crops, and to see what results, indicators and metrics help decision makers develop Iraq's future orange production strategy in line with domestic consumption and global production level and changes.

Search Problem:

Although Iraq has all the potential to make it an agricultural country, domestic production of the orange crop has not been able to meet domestic demand and should therefore mobilize all possibilities to solve the problem of shortage of local production of the orange crop. The orange crop faces many problems in Iraq and the governorate of Salah al-Din during the process of production and marketing of this crop. These problems are the deterioration of production despite the intensity of its cultivation in Salah al-Din governorate and the exposure of the orange crop to many diseases and pests, as well as the lack of sufficient water for irrigation, as they all affect orange production. There is a lack of interest on the part of the competent authorities in Iraq, which has led to problems that have led to a decline in agricultural production, the failure to provide production supplies for this crop, the absence of refrigerated warehouses, the absence of fixed or subsidized prices by the Government and the security situation.

Consequently, all these conditions combined have led to a decrease in the productivity of the orange crop in Iraq and in Salah al-Din governorate. As a result of the increased demand for the orange fruit crop, the increased willingness to consume it by the community throughout the year and the insufficient supply of it and its inability to display it over the course of the year's months, an examination of this crop and whether Iraq has a comparative advantage in its production and the extent to which it is able to compete globally for the crop.

Research Objectives

The research aims to:

1- Calculation of social and private profitability transactions and the comparative advantage of Iraq's orange crop in Salahuddin Governorate using the policy analysis matrix for the period (2020-2021).

2- Demonstrate the efficiency and profitability of local production for Iraq's local orange crop producer, Salahuddin Governorate, using the policy analysis matrix.

3- To conclude the competitiveness of domestic production at the global level and the possibility of sustaining or leaving domestic production and relying on external import based on the value of the local supplier's cost factor (the comparative advantage factor).

Theoretical framework

The concept of agricultural policy: Economic policies can be said to encompass many methods and programs that society seeks to achieve its objectives. Goods and services policy, because agricultural policy means part of economic policy. Agricultural policy implemented by the agricultural sector includes a series of plans aimed at achieving specific objectives.

There are many definitions of agricultural policy, but most indicate that agricultural policy is a scientific process that distorts the country, including maximum means, methods and choices for agricultural reforms to care for agricultural workers (Najifi and Al-Qadu, 1984: 19-18)

Objectives of agricultural policy

1. Achieving a distribution of income and wealth

It is the most appropriate and fairly done within the agricultural sector, on the one hand, and between it and other economic sectors, on the other, in accordance with the criteria established by society for the distribution of the components of income and wealth justice.

2. Achieving productive efficiency

This involves rationalizing the use of resources and reducing economic loss in their use, and in other words adopting the alternative cost opportunity in resource allocation.

3. Exploitation of resources

This is in such a way as to prevent its depletion and degradation and, in other words, to take into account the issue of the environment and its sustainability. Although the Goals are interdependent, they go in one direction and remain synonymous with each other as parts of the same goal, namely "economic well-being in a manner that does not conflict with the conditions for sustainable agricultural development" (Al-Jabouri, 2012:32).

Price policy concept

Price policy does not materialize overnight, but it must progressively improve key components related to the standardization of price concepts, and the central concept of price installation, implementation and planning. During the construction phase, the price policy must be formulated to reflect the characteristics and characteristics of that phase, In addition to what is in line with its stated objectives. Agricultural commodity prices are a major factor affecting the performance of the agricultural sector and people's standard of living, given the economic importance of the sector, especially in developing countries, the growing problem of unreasonable price policies, and increased attention is a logical issue in determining policy adjustments to agricultural prices (Al-Jabouri, 2019:18).

Search Method

Policy analysis matrix: a tool that can be used to measure the impact of government support policies on the agricultural product system From farm production to product marketing and sales, Whether

they are domestic or export, or they are economic analyses of the commodity system, the computational framework of which is part of it can be said, Which encompasses both the profitability of society and the profitability of individuals, is the comparison between actual and shadow prices, and the difference between them.

Second, the price increase is due to the impact of price policy. The policy analysis matrix is designed for the process of analyzing market distortions and price policy interventions and their effects on the commodity system (Sayed Issa, 2003:43). Its work relies on a computational matching based on the following profit equation:

Profit = Revenue – Cost

The equation can be expressed mathematically as follows

Profit=e(Pq)Q-e(Pt)It-(Pn)In-X

Where:
e = Exchange rate
Pq = Output price
Q = Quantity of output
Pt = Price of traded inputs
It = quantity of traded inputs
Pn = Non-tradable input price (local resources)
In = Quantity of non-tradable inputs (local resources)
X = Costs of certain indirect external factors such as lack of information, risk, institutional monopoly, production methods and inputs that cause environmental degradation.

The structure of the policy analysis matrix

This structure is as in the following table:

Table (1) Structure of the policy analysis matrix

profits	costs		Revenues	Statement
	Non-Tradable Inputs	Tradable Inputs		
D	C	B	A	Market Prices (Private)
H	G	F	E	Socio-economic prices
L	K	J	I	Remittances(policy effect)

Source (Al-Zubai, 2014:187)

The matrix consists of three rows and four columns. It is the first row that represents the private prices or actual prices of both gross return (A), the cost of traded inputs (B), the cost of non-tradable domestic resources (C) and total profits at individual prices (D), where it is: (D = A – B -C)

The second row will represent real prices, shadow prices or social prices for both gross return (E), the cost of traded inputs (F), the cost of non-tradable domestic resources (G) and total profits at real prices (H), representing: (H = E-F-G).

The third row deals with remittances or the impact of government policies on both gross income (I), traded inputs (J), local non-tradable resources (K) and net profits (L) where they represent net impacts or net transfers of government intervention policy i.e. L = D-H or L = I-J-K. It means the difference between profits for both individual and social prices.

For the four columns, it consists of the first column representing return and individual (special) (A) prices at social (global) (E) prices and product transfers (I) and where (I) represents the difference between the value of the output at the individual and real prices as follows (. (I = A-E). The second column represents traded inputs in individual (special) (B), social (real) (F) and net traded inputs (J), which resulted from the difference between net inputs traded at social and individual prices: (J = B-F). The third column represents non-tradable inputs or local resources at individual (private) (C) prices, non-tradable inputs at social (G) prices and net non-tradable local resource transfers (K) resulting from the difference between net domestic resources at social and private prices where: (K = C-G). The fourth column is the last and represents profitability or total profits at individual prices (D), total profits at real or social prices (H) and the impact of the government intervention policy and net remittances (L).

A distinction is made between non-tradable and tradable inputs; This is because exchange rate policies only have an impact on traded inputs and the need for an efficiency measure for such a distinction (Pearson & others,2003:18_27);

2. Data sources

Through field research conducted through the orange fruit crop questionnaire form for the productive season (2020-2021) where field data was collected by personal interview with farmers producing orange fruit crop in Salahuddin governorate, where a random sample was taken by the amount of (111) Farms from the total number of orange fruit farmers from the whole of the research area where this sample included some districts and areas of Salahuddin governorate.

4.1.1. Field calculation of the policy analysis matrix

Note from Table (13) which shows the technical coefficients of orange fruit where they represent the elements and requirements of production for one dunum, as well as the productivity of one dunum. The traded inputs included both composted fertilizer, which was averaged 87.31 kg/dunum. Urea fertilizer was an average of 81.26 kg/dunum. Chemical pesticides are also added for each insecticide, which was averaged (1) l/d. The insecticide, which was at an average rate of 1.025 liters/dunum. Similarly, the fuel was by an average of 31.93 liters/dunums.

Non-tradable inputs included manual work involving each reap, where it averaged 33 hours/dunum. Also watering where it was an average of 70 hours/dunum. The capital was an average of 2099865.713 dinars/dunums. Mechanization (mechanical work) averaged 3.78 hours/dunum. as well as organic fertilizer, which was by an average of 1,599 kg/dunum. The Earth was an average amount of 1 dunum. Packing, where each ton was equivalent

to 40 boxes, averaged 306 dunums.

Table (13) Technical coefficients for Orange Fruit Orchards for 2021		
Input	Production Items	Quantity/ Dunum
Tradable Inputs	Urea fertilizer Composted fertilizer Insecticide Insecticide Fuel	81.26 kg/dunum 87.31 kg/dunum 1 liter/dunum 1.025 liters/dunum 31.93 liters/dunum
domestic resources	First: Manual Work - Reap - Watering Second: Capital Third: Mechanization IV: Organic fertilizer Fifth: Land Sixth: Mobilization	33hours/dunam 70hours/dunam 2099865.713dinars / dunam 3.78hours /dunam 1599kg / dunam 1dunums 1 tons (40 boxes), average production 7.66 tons = 306 boxes/dunums
	average productivity	100trees/dunums * 75.5 kg/tree = 7550 kg/dunum
Source: This table was prepared by the researcher based on the questionnaire form		

4.1.2. Calculation of the first row of the policy analysis matrix (private prices)

Table 14 shows the first row elements of this policy analysis matrix that mean that costs, returns and profits are calculated at special prices (market prices). The total cost of tradable inputs (B), which include urea fertilizer, composted fertilizer, chemical pesticides (insects and jungles) and fuel quantity, was approximately 301,630.28 dinars/dunums, depending on the dunum's production of 7,550 kg/dunum. Local resource costs (C), which included manual labor (watering, harvesting), capital, mechanization, organic fertilizer, land and mobilization, were estimated at approximately 849575.677 (dinars/dunums).

The land rental allowance has been calculated as alternative opportunity costs in all study areas and for all farmers. Capital has been calculated as alternative opportunities by taking the interest rate on the invested capital and adopting the rate (8%) approved by agricultural banks which it determines on advances and agricultural loans granted to farmers. The average return at special prices (A) was approximately 4530,000 dinars. According to this principle, the Special Profitability Estimate (D) was obtained and this was done by subtracting the total costs for tradable inputs and for non-tradable inputs from the return calculated at the market price, where the special profitability (D) was approximately (3378804.043) dinars/dunums.

Table 14. Return, production and return costs (field budget) at special prices			
Inputs	Production Items	The price of each unit	Cost of production items 1,000 dinars/dunums
Non- tradable Inputs	Urea fertilizer	873.874 dinars/kg	71011.00124
	Composted fertilizer	1881.98 dinars/kg	164315.6738
	Insecticide- insects	36486.49 Dinar/L	36486.49
	Insecticide- jungle	13504.50 JD/L	13842.1125
	Fuel	500dinars/liters	15965
Total- B			301620.28
C- Domestic Resources	First: Hand working Watering	1171dinars/hour	81970
	Reaping	2282dinars/hour	75306
	Second: Capital	(2099865.7 × 0.08) Dinar/dunum	167989.25
	Third: Mechanization	16000dinars/hour	60480
	Fourth: Organic fertilizer	97.5 dinars/kg	155902.5
	Fifth: Land	1927.927 dinars/dunums	1927.93
	Sixth: Mobilization	1000dinars/box	306000
C Total			849575.677
A private returns	7550	600	4530000
Private Profitability			3378804.043
Source: From the researcher's preparation based on questionnaire form and table (13).			

4.1.3. Calculation of the second row of the policy analysis matrix (social prices)

The social or global assessment of tradable inputs, non-tradable inputs and outputs is an important part of building the agricultural policy analysis matrix, where world prices reflect prices that if the economy is in full balance and markets are all fully competitive. Inputs in the social assessment process must be divided into import-traded inputs and export-traded inputs based on their prices. Some non-tradable inputs, such as land, capital, organic fertilizer, work, quality, network work, fences, etc. cannot be evaluated. Each has a special calculation and assessment method. Due to the lack of accurate information and data, border prices and estimated data have been relied upon. Import equality prices have been calculated according to the following formula:

IPP= BPcif * ER + HCP + TCMP + IC + TCFM

IPP = Equal price for import.
BPcif = Import border price.
ER = Equilibrium exchange rate.
HCP = loading and handling costs.
TCMP = Border-to-market transportation costs.
IC = Insurance costs.
TCFM = Farm-to-market transportation costs.
Calculation of export equity prices according to the following mathematical formula:
EPP = BPfob * ER – HCP – TCBM – IC – TCFM
Where:
EPP = Equal price for export.
BPfob = export border price.
ER = Balanced exchange rate.
HCP = loading and handling costs.
TCBM = Border-to-market transportation costs.
IC = insurance costs.
TCFM = Farm-to-market transportation costs.
Through table 15, which showed how global prices have transformed the equal import value at the farm door of orange fruit, the price of one ton of orange fruit has been relied upon globally (2021) and recorded in the World Food and Agriculture Organization's (FAO) bulletins which amounted to $535.56/ton, This import rate for the country was adjusted after multiplying the balance exchange rate of the Iraqi dinar against the United States dollar by relying on the exchange rate issued by the Central Bank of Iraq for 2021, which amounted to 1444 dinars/dollar.
The global price of orange fruit (773348.64) was dinars/ton, calculated according to the value and calculated according to the equal value of import of tons of orange fruit. After adding transportation, loading and unloading costs from the port or border to the main stores, the equal value of the import was obtained, which was worth (874574.24) dinars/ton After the cost of transportation from the farm door to the main warehouses, the social price of a ton of orange fruit was obtained at the farm door, which amounted to (840574.24) dinars/ton and represents the social return per ton of orange fruit.

Table (15) Global prices of orange fruit crop and its conversion to social equity value for import at farm door for 2021.	
Export price of tons of fresh global oranges in dollars ($/ton)	535.56
+Cost of transportation and insurance up to the country's borders (port) in dollars ($/ton)	42.4
=Country's import price in dollars (USD/ton)	577.96
X Balance exchange rate (JD/USD)	1444
= Country's import price in Iraqi dinars (T/T)	834574.24
+ Cost of transportation, loading and unloading from port to main stores in Iraqi dinars (1,000 dinars/ton)	40000
= Equal value of import (1,000 dinars/ton)	874574.24
+ Transportation costs from farm door to main warehouses (1,000 dinars/ton)	34000
= Social price of a ton of orange fruit at the farm door (1,000 dinars/ton)	840574.24
Source: Prepared by the researcher, based on:	

1- World Bank's Annual Global Prices Bulletin (2021).
2- Central Bank of Iraq, General Directorate of Statistics and Research, Annual Statistical Bulletin for 2021.
3- Study Sample Data for Orange Fruit Producers in Iraq - Season 2021

Table 16. Production component costs and return (field budget) at social prices			
	Production Items	Price per unit	Cost of production items 1,000 dinars/dunums
Tradable Inputs	Urea fertilizer	757.52dinars/kg	61556.08
	Composted fertilizer	906.18dinars/kg	79118.58
	Insecticide- insects	34078.4D/L	34078.4
	Insecticide- Jungle	21660JD/L	22201.5
	Fuel	594.9D/L	18995.16
Total F			215949.708
Domestic Resources G	First: Manual Work Watering	1171dinars/hour	81970
	Reaping	2282dinars/hour	75306
	Second: capital	(0.08 × 167989.25) Dinar/dunum	167989.25
	Third: Mechanization	16000dinars/hour	60480
	Fourth: Organic fertilizer	97.5dinars/kg	155902.5
	Fifth: Land	1927.927dinars/dunums	1927.927
	Sixth: Mobilization	1000dinars/box	306000
Total G			849575.7
Social Return E	7550	840.57	6346303.5
Social Profitability H			5280778.115
Source: Prepared by the researcher on the basis of a questionnaire and table (13)			

4.2.1 Research findings of the policy analysis matrix

After obtaining costs and returns at special and social prices, on the basis of which the policy analysis matrix can be built, an estimate of matrix elements, the extraction of special profitability indicators (D), social profitability (H), both return transfers (I), the cost of traded inputs (J), local resources (K), as well

as net transfers (L), of orange fruit to the dunum as seen in the following table:

Table (17) Policy analysis matrix for 1 dunum of orange fruit orchards				
Profits	Costs		Revenue	Details
	Domestic Resources	Tradable Inputs		
3378804.043 D	849575.677 C	301620.28 B	4530000 A	Private price
5280778.092 H	849575.7 G	215949.708 F	6346303.5 E	Social price
-1901974.049 L	0.023- K	85670.572 J	1816303.5- I	Divergences
Source: Prepared by the researcher on the basis of the tables' data (14) and (16).				

Through tables (14) and (16) showing the results of the policy analysis matrix for the production of 1 dunum of orange fruit crop, which constitutes (111) farms of the sample that represented the producers of orange fruit in Iraq in Salah al-Din Governorate for the year (2021) in thousand dinars, the tables show that the total cost of traded inputs at special prices (B) was about (3016.20202). Its total cost at social prices (F) was approximately (21,5949,708 dinars/dunums). The cost of non-tradable inputs to domestic resources at special prices (C) was approximately 8,49,575.677 dinars/dunums.

The total cost of non-tradable inputs at social prices (G) was approximately 8,49,575.7 dinars/dunums. For the return at social prices (E) approximately (6346303.5) dinars/dunums. The special return (A) (4530,000) was dinars/dunums. Among tables (14) and (16), the results indicated that the production of orange fruit crop in Iraq at a low market price yields special profits of 3378804.043 dinars/dunums.

Protection scale results and comparative advantage

After the elements of the policy analysis matrix (PAM) have been assessed and calculated, the impact of the Government's price intervention policy can be measured by estimating certain economic indicators "which include protection or comparative advantage coefficient. Table 18 shows the most important transactions:

Table (18) Protection coefficient and Comparative Advantage of Orange Fruit in Salah Al-Din Governorate for the Year 2021		
Coefficient	Mathematical formula	absolute value
Nominal Protection Coefficient of Output (NPCO)	$NPCo = \frac{A}{E}$	0.714
Nominal Protection Coefficient for Tradable Inputs	$NPCI = \frac{B}{F}$	1.4
EPC) (Effective protection coefficient	$EPC = \frac{A-B}{E-F}$	0.690
PC)(Profitability coefficient	$P.C = \frac{D}{H} = \frac{A-B-C}{E-F-G}$	0.640
)PSR (Producer subsidy ratio:	$P.S.R = \frac{L}{E} * 100 = \frac{D-H}{E} * 100$	%-30
)P.C.R (Private cost ratio	$P.C.R = \frac{C}{A-B}$	0.201
)D.R.C (Domestic resource cost coefficient	$D.R.C = \frac{G}{E-F}$	0.119
Source: Figures calculated by researcher based on table (17)		

1. Nominal Protection Coefficient of Output

The results obtained from table 18 indicate that the nominal output protection coefficient was 0.714. The value is positive and less than the integer. This indicates that there is no government support for the output of Iraq's orange fruit crop.

This means that the special price of orange fruit is lower than the global price.

2. Nominal Input Protection Coefficient

The results obtained from the table showed that the nominal protection coefficient for inputs (NPC1) was 1.4. We note that a positive value is greater than one, indicating government support but limited in some inputs.

3. Effective Protection Factor

The value of the effective protection coefficient was 0.690, indicating that the value added of orange fruit production at special prices is lower than the value added at social prices. The impact between the cost of tradable inputs and revenues makes private price gains higher than social price gains. This means that producers' returns are lower than if prices were frontier or global prices, indicating that there is no government intervention in the commodity system.

4. Social Profitability Coefficient

The profitability coefficient values of 0.640 indicate that they are positive. This indicates that Iraq's orange fruit crop system does not benefit from the government's policy of support for greater social profits at the expense of private profits, all of which were higher than the special profits of the categories and total sample respectively. This means that the commodity system loses profits to other sectors of the economy.

5. Product subsidy ratio

The value of the product subsidy ratio coefficient that had emerged negative (30-%) indicates that there is no real support for orange fruit farmers in Iraq. These explanations indicated that the crop was not purchased by the state and its price was lower in local markets.

6. Special cost ratio

The value of the special cost ratio is less than the integer one and positive which has reached (0.201) Indicating that the orange fruit crop system has competitiveness and that the social price system has competitiveness and yields positive profits compared to the world. This indicates that the net value added of the private prices invested in the production of orange fruit in Iraq is higher than the cost of its production per dunum, which leads to the ultimate reward prices in Iraq only and generates positive profits.

7. Domestic Resource Cost Coefficient

The domestic resource's cost coefficient values of 0.119, which confirm that Iraq has a comparative and competitive advantage, the coefficient is less than one. This indicates that the alternative cost of using domestic resources at world prices is lower than the value added of producing orange fruit at world prices, which means lower alternative costs of resources.

3. Conclusions

1- The results obtained from the study indicate that the return at social prices of 6346303.5 dinars is greater than the return at special prices of 4530,000 dinars for the orange fruit crop for the production season (2020-2021) in Iraq, indicating the lack of government support.

2- The results of the analysis indicated that the cost of non-tradable resources in private prices was 30,1620.28 dinars/dunums higher than the social prices of 21,5949.708 dinars/dunums, indicating a lack of government support for orange fruit farmers.

3- The results of the analysis showed that orange fruit farmers do not make rewarding profits when compared to social or global prices.

4- Output protection coefficient values (0.714) indicated a lack of government support for output, all of which were positive and less than the integer one.

5- The nominal protection coefficient for inputs was (1.4) positive and greater than one, indicating that there was a subsidy for inputs, but slightly as all were positive and larger than the integer one, except for the total sample. This confirms the lack of government subsidy for production inputs.

4. Recommendations

By drawing on the findings of the study and drawing on the findings of the study, some recommendations can be devised, including:

1- The State must support orange fruit farmers and provide them with the necessary production supplies such as fertilizers, pesticides, fuels, etc., and introduce techniques for the development of agriculture in this area.

2- The State also supports production outputs by supporting product prices and providing refrigerated markets and warehouses to ensure that the crop is not damaged, resulting in lower prices.

3- To guide farmers to the need to operate skilled labor in the cultivation of orange fruit as well as to pay attention to the farm's environmental and geographical location and to rationalize the use of irrigation water especially during the season of fruit formation and maturity where orange at this stage needs constant irrigation.

4- Encourage investors and industrialists to establish factories to manufacture materials that orange fruit enters into its production such as juices, jams, etc., by giving them concessional loans to absorb excess fresh consumption of orange fruit.

5- Registration of all orange fruit farms in the agricultural plan developed by the agricultural sector where the administrative unit is located, because during the questionnaire we found that some agricultural sectors did not register orange fruit farmers due to lack of interest in the crop.

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