Profitability and Competitiveness of Peanuts Farming in Oued Souf: A Policy Analysis Matrix approach

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Abstract:
The study used the Policy Analysis Matrix (PAM), which is one of the most important quantitative analysis tools in this field, to answer the research problem centered on the profitability and competitiveness of peanuts, one of the most important manifestations of agricultural intensification in the region of Oued Souf. The results and outputs of the PAM matrix showed a comparative advantage and competitiveness for peanuts, and various indicators accurately identified the impact and role of government policies and programs on the crop production system. As for the sensitivity analysis, which was based on four indicators, which are the Financial Cost-Benefit Ratio (FCB), the Domestic Resource Cost (DRC), the Effective Protection Coefficient (EPC), and the Producers Subsidy Ratio (PSR). That showed the degree of sensitivity and the answer to the productivity of peanut in the event of a shift in the level of the various PAM indicators.
***Key Words*:** agricultural intensification, comparative advantage, competitiveness, policy analysis matrix, sensitivity analysis.

JEL Classification : Q12, Q18.

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Introduction:

Although to its desert character, Oued Souf (Algeria) is an important agricultural area. In addition to its national leadership in the production of some crops such as dates and tobacco, and the signs of the success of the experiment of olive cultivation and production in recent years, El-Oued occupies the first place nationally in the potato production. In addition to the success of the experiment of cultivating peanut and the intensification of its production in the eighties of the last century, and the expansion of cultivation areas and success in increasing productivity, it is considered an agricultural boom worthy of study and analysis.

This research will concentrate on understanding the role of government policies in the region's agricultural boom and more specifically, the crop of peanut. Research efforts have been made to create concise, easy-to-measure, and understandable criteria for analysing the impact of agricultural policies on agricultural products. From here arose a new method of agricultural policy analysis,

which is the Policy Analysis Matrix of (Monke & Pearson, 1989). The study addresses the main problematic involved in the following fundamental question:

What are the levels of profitability and competitiveness of the peanut crop in Oued Souf?

This study included the following hypotheses:

- Peanut in Oued Souf has a comparative advantage;
- Peanut in Oued Souf has high competitiveness;
- Government policies have played an encouraging and stimulating role for peanut production in Oued Souf.
- The economy does not benefit much from the peanut production system in Oued Souf.

The importance of this study is demonstrated by knowing the tools and methods of quantitative analysis of an important and strategic sector, namely the agricultural sector. Specifically, assessing and knowing the success of the agricultural policies adopted on the agricultural boom in Oued Souf, especially the peanut crop.

I. Theoretical basis:

The policy analysis matrix is a quantitative mathematical, analytical method and used to analyse comparative advantage by measuring the impact of government intervention policies and market distortions on the vertical commodity system or commodity chains from farm to final consumption and export point (Saad, Zhang, & Xia, 2019). (Monke & Pearson, 1989) published their first research using the Policy Analysis Matrix (PAM) in 1989, while (Picazo, & Estruch,, 2008) used the policy Analysis Matrix to study the profitability of the rice crop in Spain. While (Mohanty & Jagadan, 2003) used a policy analysis matrix to determine the state policy intervention in the cotton crop. Also (AL-Fllujy & Mudh, 2012) used the Policy Analysis Matrix to investigate the impact of state intervention on the fisheries sector in Iraq. On the other hand, (Soejono, Maharani, & Zahrosa, 2020) used the Policy Analysis Matrix to analyse the comparative and competitive advantages of Pronojiwo snake fruit in Indonesia and his farming development strategies to be competitive in the international market.

The PAM is an approach to the analysis of two accounting identities: i) private profit, defining profitability as the difference between revenues and costs; and, ii) social profit, which evaluates the effects of divergences (policy distortions and market failures) as a result of the difference between the parameters observed in the domestic market (private prices) and indices and indicators that would exist if the divergences were removed (social prices) (Monke & Pearson, 1989). The structure of the PAM is comprised of a double entrance accounting system composed of two identities (Table 1).

Table 1: The accounting structure of the Policy Analysis Matrix

	Revenue	Costs		Profit
		Tradable Inputs	Domestic Factors	
Private Price	A	B	C	D (1)
Social Price	E	F	G	H (2)
Divergence	I (3)	J (4)	K (5)	L (6)

(1) Private Profits (D = A – B – C) / (2) Social Profits (H = E –F – G)
(3) Output Transfers (I = A - E) / (4) Input Transfers (J = B – F)
(5) Factor Transfers (K = C –G) / (6) Net Transfers (L = D – H or L = I – J – K)

Source: (Monke & Pearson, 1989)

From the PAM structure indicators can be obtained that allow us to conclude whether or not a determined agricultural system is competitive and has comparative advantages. For this investigation only the first row of the matrix was used (private budget), that is, the analysis at private prices. Therefore, from this row the information that can be obtained is as follows: production costs at private prices (CP=B+C); gains at private prices (D=A-B-C); ratio of private profitability (RRP=D/(B+C)); ratio or efficiency of the private cost (RCP=C/(A-B)), value added to private prices (VAP = A-B / A) (Rebollar-Rebollar, Morales-Hernández, Hernández-Martínez, Guzmán-Soria, & Rebollar-Rebollar, 2011).

To find out comparative and competitive advantages based on the PAM matrix, the formulation is as follows:

1. **The Domestic Resource Cost Ratios (DRC)** (Elsedig, Mohd, & Fatimah, 2015)**:**

The Domestic Resource Cost Ratios (DRC) provides a measure of the level of comparative advantage achieved by the selected system:

$$DRC = \frac{Social\ Cost\ of\ Non\ Tradable\ Inputs\ (G)}{Social\ Revenue\ (E) - Social\ Cost\ of\ Tradable\ Inputs\ (F)}$$

Decision criteria:

- DRC <1 means that economic activity is economically efficient in the use of domestic resources or that economic activity has a comparative advantage so that domestic fulfilment is more profitable with an increase in domestic production. Domestic resource investment is beneficial to agricultural production's contribution to international revenue and comparative advantage;
- DRC> 1 means that economic activity is not economically efficient in the use of domestic resources or that economic activity causes comparative losses.

2. **The Financial Cost Benefit ratio (FCB)** (Mustafa & Quddus, 2012)**:**

The Financial Cost Benefit ratio (FCB) is the value of the domestic factors against the difference between the revenue minus tradable input:

$$FCB = \frac{Private\ Cost\ of\ Non\ tradable\ Inputs\ (C)}{Private\ Revenue\ (A) - Private\ Cost\ of\ Tradable\ Input\ (B)}$$

Decision criteria:

- FCB <1 it means that the system is profitable;
- FCB > 1 it means that the systems utilize more value of Domestic factors than the Value added, then the system is not profitable;
- FCB = 1 means that the economic activity provides a normal profit or the activity

is at a break-even point.

3. **The Nominal Protection Coefficient (NPC)** (Quddus & Mustafa, 2011):

The Nominal Protection Coefficient (NPC) measures the level of protection for the tradable output by looking at the ratio of revenue at private prices to revenue at social prices:

$$\text{NPC} = \frac{Private\ Revenue\ (A)}{Social\ Revenue\ (E)}$$

Decision criteria:

- NPC <1 it indicates that the main output is undervalued at its private price, resulting in a transfer of wealth from the production system to the economy;
- NPC > 1 it indicates that the system benefits from protection.

4. **The Effective Protection Coefficient (EPC)** (Zheng, Lambert, Wang, & Wang, 2013)**:**

The Effective Protection Coefficient (EPC) compares the value added at private prices to value added at social prices. This gives us a combined index of the level of trade distortion on both tradable inputs and outputs, and provides a more accurate measure of the level of protection than the NPC:

$$\text{NPC} = \frac{Private\ Revenue\ (A) - Private\ Cost\ of\ Tradable\ Input\ (B)}{Social\ Revenue\ (E) - Social\ Cost\ of\ Tradable\ Inputs\ (F)}$$

Decision criteria:

- EPC <1 it means that the system generates less value added at market prices than it would at social prices, i.e. government does not provide effective protection.;
- EPC > 1 it means that the selected system is protected.

5. **The Profitability coefficient (PC)** (Souza, Revillion, Waquil, Belarmino, & Lanfranco, 2017)**:**

The Profitability coefficient (PC) measure policy reflection on the profitability of the system:

$$\text{PC} = \frac{Private\ Profits\ (D)}{Social\ Profits\ (H)}$$

Decision criteria:

- PC <1 it means that the economy benefits from net transfers from the system;
- PC > 1 it means that the system benefits from net transfers from the economy.

II. Methodology and Materials:

This section presents the method used in the economic analysis of peanut production systems in Oued Souf using the Policy Analysis matrix (PAM) and the data collection and analysis procedures adopted in this research. The variables and data collected were defined based on the definition of the accounting analysis categories and indicators that the Policy Analysis Matrix (PAM) allows, in accordance with the procedures suggested by (Monke & Pearson, 1989), and (Santos Alves, Belarminob, & Padula, 2017).

1. Data collection:

Primary and secondary data were used for this study. The primary data were obtained from different processors through observation and interview using a structured questionnaire (see Appendix 1). Data collected included inputs requirements, market prices for inputs and outputs, transportation cost and returns.

The secondary data were sourced from Food and agricultural organisation FAO, the World Bank and the United Nations Conference on Trade and Development UNCTAD, the data included production subsidy, import and export tariff and the exchange rate.

Agriculture in El Oued despite its desert character, and Oued Souf region in particular, witnessed an expansion of cultivated areas and a historic intensification of some crops, which made El Oued a pioneer at the national level in the production of several plant crops, such as potatoes, dates, tobacco and peanut, in addition to a promising future in the cultivation and production of olives and the production of grain. El Oued is characterized by the production of two industrial crops, tobacco, and peanuts. As the peanut production season exceeded 40% of the national production in recent years (2016 ،مخزومي).

Since the study population, represented by the farmers of the Oued Souf area for peanut crop, is characterized by a great degree of homogeneity because it contains the same natural and demographic characteristics, in addition to the fact that most of the areas and holdings are classified within the category of smallholdings (less than 50 hectares), which made researchers mainly based on primary data that was collected through a simple random sample of 120 peanut farmers in the 2019/2020 agricultural season.

2. Peanut technical coefficients in Oued Souf:

After sorting and classifying the data contained in the questionnaire for this study, it was possible to develop Table 2, which shows the technical coefficients of the peanut crop, i.e. the need per hectare of production requirements, and the achieved productivity.

Table 2: Peanut technical coefficients 2019/2020

Input	Production factors	Quantity / ha
Tradable	Seeds (kg)	218
	Chemical fertilizer (kg)	287
	Pesticides (liters)	3
Domestic factors	Land preparation	12
	Irrigation	60
	Crop care	9
	Manual harvesting	12
	Working capital	22500
	Ground Preparation (Machine Hour)	9
	Mechanical harvesting (Machine Hour)	4
	Electricity	26000
	Windbreaks	600
	Manure	450
Productivity (kg)		5980

Source: authors calculation based on questionnaire data

Due to government intervention policies in support of some crops, the prevailing market prices do not represent social prices (shadow prices), and since social prices cannot be found directly from the local market, border prices have been reported to, which are the prices of imported goods converted into local currency, which gives approximate numbers of social prices, by calculating Farm gate Import Parity Prices, according to the equation:

$$FIPP = BP_{cif} \times ER + HCP + TCBM + IC - TCFM - TPC$$

BP_{cif}: Border import price / ER: exchange rate / HCP: handling costs
TCBM: Transport costs from the border to the market / IC: Insurance costs
TCFM: Transport costs from the farm to the market / TPC: Total Processing costs

Table 3: Farm gate Import Parity Prices of Peanut in Oued Souf 2019/2020

Export price per ton, fob	1590
Transport and insurance Costs up to the port (borders)	128
Import price, CIF	1718
Equilibrium exchange rate (DZ / USD)	120
Import price in dinars, CIF	206160
Handling costs from the port to the main warehouses	2250
Total Processing costs	41232
Import Parity Prices	167178
Transport costs from the farm gate to the main warehouses	900
Farm gate Import Parity Prices	166278

Source: authors calculation based on questionnaire data

The export price per ton was determined according to the statistics of the Food and Agriculture Organization (FAOSTAT, 2020). While the transport and insurance cost up to the port, was determined depending on the data of the World Bank (World Bank, 2020), and (United Nations Conference on Trade and Development, 2020). Transport costs from the port to the main warehouses, and transport costs from the farm gate to the main warehouses, were based on the average costs prevailing with the transporters in the region.

3. PAM calculation of Peanut in Oued Souf:

Table 4. shows the elements of the first row of the policy analysis matrix for the peanut crop, that is, cost, revenue and profit calculated in private prices (market prices).

Table 4. Peanut production factors and revenue at private prices

Input	Production factors	Quantity/ha	Unit price	Production factor cost
Tradable	Seeds	218	380	82840
	Chemical fertilizer	287	70	20090
	Pesticides	3	6500	19500
Total cost of tradable inputs at private prices				122430
Domestic factors	Land preparation	12	1200	14400
	Irrigation	60	600	36000
	Crop care	9	1200	10800
	Manual harvesting	12	1500	18000
	Working capital	22500	/	22500
	Ground Preparation	9	1500	13500
	Mechanical harvesting	4	1500	6000
	Electricity	26000	/	26000
	Windbreaks	600	15	9000
	Manure	450	45	20250
	Land	1	80000	80000
Total cost of domestic inputs at private prices				256450
Private revenue (A)		5980	215	1285700
private profitability (D)				906820

Source: authors calculation based on questionnaire data

Table 5. shows the elements of the second row of the policy analysis matrix for the peanut crop, that is, cost, revenue and profit calculated in social prices.

Table 5. Peanut production factors and revenue at social prices

Input	Production factors	Quantity/ha	Unit price	Production factor cost
Tradable	Seeds	218	325	70850
	Chemical fertilizer	287	56.4	16186.8
	Pesticides	3	7200	21600
Total cost of tradable inputs at social prices				108636.8
Domestic factors	Land preparation	12	1200	14400
	Irrigation	60	600	36000
	Crop care	9	1200	10800
	Manual harvesting	12	1500	18000
	Working capital	22500	/	22500
	Ground Preparation	9	1500	13500
	Mechanical harvesting	4	1500	6000
	Electricity	69380	/	69380
	Windbreaks	600	15	9000
	Manure	450	45	20250
	Land	1	80000	80000
Total cost of domestic inputs at social prices				299830
Social revenue (E)		5980	166.278	994342.44
Social profitability (H)				585875.64

If the markets are in perfect competition and the economy is in general equilibrium, then prevailing prices represent social prices. Because these conditions are not available in the market and the Algerian economy due to the government's intervention policy in supporting the agricultural sector, market prices do not represent equilibrium prices, and since social prices cannot be found directly from the local market, which gives approximate figures for social prices, border prices have been used. The social prices of seeds were based on the Farm gate Import Parity Prices of Chinese peanut seeds, while the social prices for fertilizers, medicines and pesticides were based on World Bank data.

As for the prices of local resources, the same special prices were adopted for work due to the difficulty of moving labour in agriculture to an alternative activity in the short term. The same operating hours for mechanization were also adopted as a shadow price, and private prices were adopted as social prices for both land, manure, and windbreaks due to the availability of large areas that could be agricultural reclamation in the region, whose poor sandy land relies heavily on manure from animal and poultry waste. As for electricity, the average price of the International Energy Agency was adopted in its statistics on energy fees and prices for the Organization for Economic Cooperation and Development (OECD) countries (International Energy Agency, 2019).

Based on the results of Table 4. and Table 5. we can construct Table 6. which represents the Policy Analysis Matrix per hectare of the peanut crop calculated in dinars / hectare.

Table 6. Policy Analysis Matrix of Peanut in Oued Souf 2019/2020

	Revenue	Costs		Profit
		Tradable Inputs	Domestic Factors	
Private Price	1285700	122430	256450	906820
Social Price	994342.44	108636.8	299830	585875.64
Divergence	291357.56	13793.2	-43380	320944.36

Source: authors calculation based on questionnaire data

The policy analysis matrix provides a direct set of indicators to assess the efficiency and comparative advantages of the system, and it can be summarized in Table 7.

Table 7. Policy Analysis Matrix Indicators of Peanut in Oued Souf 2019/2020

Indicator	Equation	Value
Financial Profitability (FP)	[D = A - B - C]	906820
Financial Cost-Benefit Ratio (FCB)	[C / (A - B)]	0.22
Social Profitability (SP)	[H = E - F - G]	585875.64
Domestic Resource Cost (DRC)	[G / (E - F)]	0.34
Social Cost-Benefit Ratio (SCB)	[(F + G) / E]	0.41
Transfers	[L = I- J - K]	320944.36
Nominal Protection Coefficient (NPC)	[A / E]	1.29
Effective Protection Coefficient (EPC)	[(A - B) / (E - F)]	1.26
Profitability Coefficient (PC)	[D / H]	1.55
Producers Subsidy Ratio (PSR)	[L / E]	0.32
Equiv. Producer Subsidy (EPS)	[L / A]	0.25

Source: authors calculation based on questionnaire data

We can summarize the most important results of Table 7. in the following points:

- The results indicate that the value of the Financial Cost-Benefit Ratio (FCB) at private prices is equal to 0.22, which is smaller than one. This indicates that the peanut production system in Oued Souf is considered competitive;
- The value of the Domestic Resource Cost (DRC) is 0.34, which is smaller than one, which indicates that the peanut production system in Oued Souf has a comparative advantage, that is, it uses fewer local resources than the added value;
- The value of the Social Cost-Benefit Ratio (SCB) at social prices equals 0.41, which is smaller than one, indicates that the peanut production system in Oued Souf has a comparative advantage, and it is a more appropriate indicator since it takes into account the full cost of production instead of only local factors;
- The Nominal Protection Coefficient (NPC) of 1.29, which is greater than 1, indicates that the system is benefiting from protection. Also, the value of Effective Protection Coefficient (EPC) equals 1.26, which is greater than one, indicates that the system benefits from the total level of protection, taking into account the impact of policies on the private value of tradable products and supplies;
- The Profitability Coefficient (PC) equals 1.55, which is greater than one, indicates that the system benefits by net transfers from the economy. Also, the value of transfers is positive (320944.36DZD), which means that there are transfers from the economy to the system with this absolute value;
- The value of the Producers Subsidy Ratio (PSR) equals 0.32, and since this value is positive, this means that both the production and the production factors of the

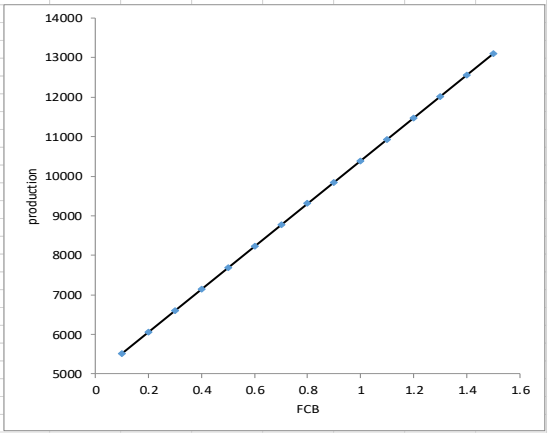
peanut in the Oued Souf enjoy real support. Also, the value of the Equiv. Producer Subsidy (EPS) is equal to 0.25, which means that there is no support for the consumer but rather a support for the producer with this amount.

4. Sensitivity analysis of Peanut productivity in Oued Souf:

Sensitivity analysis aims to determine the relationship between the various indicators of the policy analysis matrix and a selected number of different variables to study the role of these variables on the results of the policy analysis matrix and that the results are based on an accurate scientific basis (Mamza, Salman , & Adeoye, 2014). The indicators that can be taken as a reference in the sensitivity analysis of peanut are the Financial Cost-Benefit Ratio (FCB), the Domestic Resource Cost (DRC), the Effective Protection Coefficient (EPC), and the Producers Subsidy Ratio (PSR).

Fig.1. Sensitivity analysis of peanut based on FCB

SensIt 1.51 Trial Version	
One Input, One Output	
Date	27-11-2020
Time	12:20:10 ص
Workbook	Sensitivity analysis of Peanut productivity in Oued Souf.xlsx
Input Cell	ورقة1!$B$2
Output Cell	ورقة1!$B$16
FCB	production
0.1	5520.303958
0.2	6061.359772
0.3	6602.415586
0.4	7143.4714
0.5	7684.527214
0.6	8225.583028
0.7	8766.638842
0.8	9307.694656
0.9	9848.75047
1	10389.80628
1.1	10930.8621
1.2	11471.91791
1.3	12012.97373
1.4	12554.02954
1.5	13095.08535

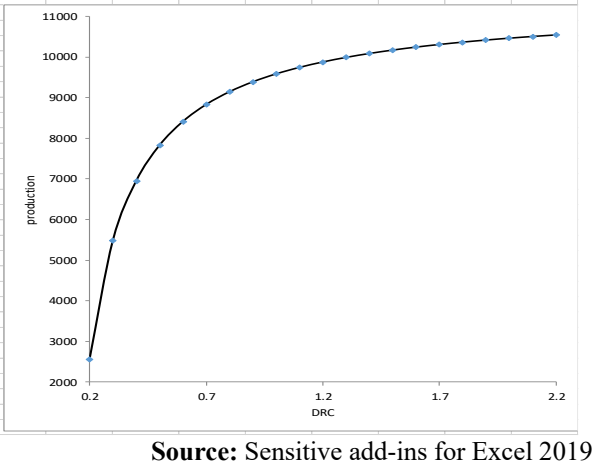


Source: Sensitive add-ins for Excel 2019

There is a positive linear relationship between productivity and the Financial Cost-Benefit Ratio (FCB). The increase in FCB by 0.1, leads to increasing productivity by more than 540 kg/hectare. When FCB reaches 1, the production records 10389.8, after that the system becomes uncompetitive.

Fig.2. Sensitivity analysis of peanut based on DRC

SensIt 1.51 Trial Version	
One Input, One Output	
Date	27-11-2020
Time	11:20:44 ص
Workbook	Sensitivity analysis of Peanut productivity in Oued Souf.xlsx
Input Cell	ورقة1!$B$3
Output Cell	ورقة1!$B$16
DRC	production
0.2	2551.923055
0.3	5480.495148
0.4	6944.781195
0.5	7823.352823
0.6	8409.067241
0.7	8827.434683
0.8	9141.210265
0.9	9385.257939
1	9580.496079
1.1	9740.236375
1.2	9873.353288
1.3	9985.990676
1.4	10082.53701
1.5	10166.2105
1.6	10239.4248
1.7	10304.02565
1.8	10361.44864
1.9	10412.82709
2	10459.06771
2.1	10500.90445
2.2	10538.93785

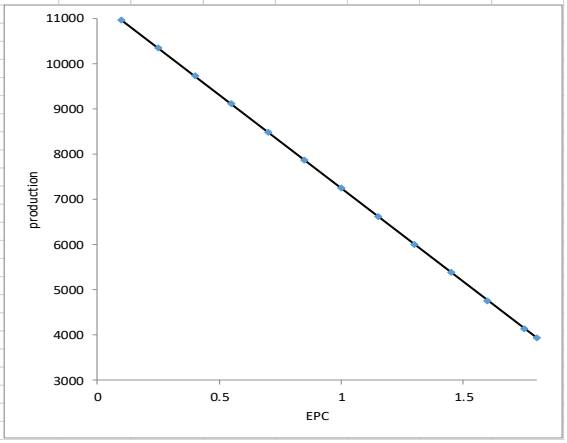


Source: Sensitive add-ins for Excel 2019

Note that the relationship between productivity and the Domestic Resource Cost (DRC) is non-linear. Whereas, the percentage change in productivity resulting from the increase in DRC between 0.2 and 0.6 is more than the percentage change in productivity resulting from the increase in DRC between 0.7 and 1, after that the system loses comparative advantage, and the production increase weakens until it is almost non-existent whenever the value of the indicator increases and the trend becomes horizontal.

Fig.3. Sensitivity analysis of peanut based on EPC

SensIt 1.51 Trial Version	
One Input, One Output	
Date	27-11-2020
Time	12:30:15 ص
Workbook	Sensitivity analysis of Peanut productivity in Oued Souf.xlsx
Input Cell	ورقة1!$B$4
Output Cell	ورقة1!$B$16
EPC	production
0.1	10973.92203
0.25	10352.66974
0.4	9731.41744
0.55	9110.165142
0.7	8488.912845
0.85	7867.660548
1	7246.40825
1.15	6625.155953
1.3	6003.903656
1.45	5382.651358
1.6	4761.399061
1.75	4140.146764
1.8	3933.062665

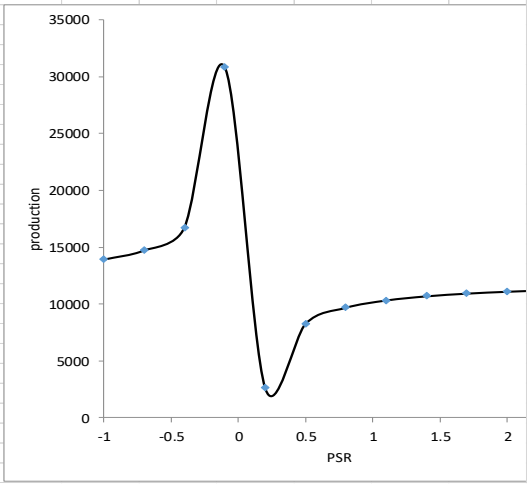


Source: Sensitive add-ins for Excel 2019

There is an inverse linear relationship between productivity and the Effective Protection Coefficient, so that when the value of the coefficient increased by 0.15, the productivity decreased by about 620 kg/ha. In order to achieve greater productivity, the level of protection should be lowered as little as possible.

Fig.4. Sensitivity analysis of peanut based on PSR

SensIt 1.51 Trial Version	
One Input, One Output	
Date	27-11-2020
Time	12:45:51 ص
Workbook	Sensitivity analysis of Peanut productivity in Oued Souf.xlsx
Input Cell	ورقة1!$B$5
Output Cell	ورقة1!$B$16
PSR	production
-1	13928.21424
-0.7	14734.30705
-0.4	16749.53908
-0.1	30856.16328
0.2	2642.914886
0.5	8285.564564
0.8	9696.226984
1.1	10337.43717
1.4	10703.843
1.7	10940.92912
2	11106.8894
2.3	11229.5557
2.5	11294.97773



Source: Sensitive add-ins for Excel 2019

There is a non-linear relationship between productivity and the Producers Subsidy Ratio (PSR). When the Producer Subsidy (EPS) is less than zero, which means that there is no support for the producer but for the consumer, and here we record the highest productivity when the Producer Subsidy (EPS) reaches a value of

-0.1. Whereas when the Producer Subsidy (EPS) is greater than zero, which means that there is protection for the consumer and there is no protection for the producer, and here we record the lowest productivity when the Producer Subsidy (EPS) reaches a value of 0.2.

Conclusion:

Agriculture in El-Oued, and Oued Souf in particular, witnessed an expansion of cultivated areas and a Historic intensification of some crops, making El-Oued a leading region at the national level in the production of several plant crops, such as potatoes, dates, tobacco, and peanut, in addition to a promising future in the cultivation and production of olives and cereal production in two periods. Where El-Oued ranks second nationally in the production of dates, and its production of both peanut and tobacco is within 40% of the national production, and the national leadership with a large difference in the production of potatoes. This agricultural boom in the region has prompted researchers to try to diagnose and analyse it. In this context, this study comes as an attempt to the quantitative economic analysis of peanut production in Oued souf region, using the Policy Analysis Matrix, one of the most important quantitative tools applied in this field, so that the study reached a set of results that can be summarized as follows:

- The peanut production system in Oued Souf region is competitive and has a comparative advantage;
- The peanut production system in Oued Souf region benefits from the total level of protection, taking into account the impact of policies on the private value of tradable products and supplies;
- The peanut production system benefits from net transfers from the national economy in Oued Souf region;
- The peanut production and production factors in Oued Souf enjoy real support. Support is given to the producer, but not to the consumer in this situation.

Based on these results, the following can be recommended:

- Due to its comparative competitive advantage, the government should work to encourage and expand peanut cultivation in the region, by facilitating administrative procedures for obtaining agricultural reclamation lands, constructing agricultural paths and connecting electricity, and providing financial support and technical follow-up;
- Based on the findings of the policy analysis matrix, the recommendation is to offer real subsidies to peanut farmers in the region in order to carry production to the maximum value;
- The sustainability of the agricultural expansion of the peanut crop in Oued Souf requires the creation of sustainable policy, legal and regulatory frameworks for real estate and agricultural tenure issues;
- Exploiting and employing government intervention and support to direct and encourage farmers in the region on sustainable agricultural practices and the rational and sustainable exploitation of natural resources, especially groundwater.

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Appendices:

Appendix 1. Questionnaire: Peanut production in Oued Souf region

الجمهورية الجزائرية الديمقراطية الشعبية

استمارة استبيان

"التحليل الاقتصادي لإنتاج الفول السوداني (الكاوكاو) بمنطقة وادي سُوف"

الباحثان: د/لطفي مخزومي ود/نجوى حرنان

أخي الفلاح /

إن الغرض من هذا البحث هو التحليل الاقتصادي لعمليات إنتاج الفول السوداني (الكاو كاو) بمنطقة وادي سُوف، قصد الوصول إلى نتائج يأمل الباحث أن تخدم الفلاح والزراعة بصفة عامة، وأن تعاونكم في إعطاء المعطيات الصحيحة يساهم في تحقيق هذا الهدف، علما أن المعطيات ستستخدم حصرا للأغراض العلمية ولا حاجة لذكر الاسم، وشكرا لتعاونكم.

I. بيانات عامة:

1. عمر المزارع (سنة):

أقل من 30		40-31		50-41		أكثر من 50	

2. المهنة الرئيسية للمزارع:

زراعة		زراعة وظيفة		زراعة تجارة		زراعة تربية مواشي	

3. المستوى التعليمي للمزارع:

ابتدائي أو أقل		متوسط		ثانوي		جامعي	

4. عدد أفراد الأسرة:

أقل من 5		6-5		8-7		9 وأكثر	

5. عدد سنوات العمل في الزراعة:

أقل من 5		10-6		15-11		16 فأكثر	

II. بيانات حول زراعة الفول السوداني (الكاو كاو)

6. مساحة الأرض الزراعية (هكتار): .....

7. نوع حيازة الأرض:

ملك		إيجار		ورث		مشاركة	

8. قيمة إيجار الأرض للهكتار (دج): .....

9. كمية بذور الفول السوداني (الكاو كاو) المزروعة في كل هكتار(قنطار): .....

10. سعر بذور الفول السوداني (الكاو كاو) المزروعة في كل هكتار(دج): .....

11. طريقة جني الفول السوداني (الكاو كاو):

اليد	.....	الآلة	.....

12. كمية وقيمة السماد الطبيعي المستخدم في الهكتار:

كمية (كغ)	.....	قيمة(دج)	.....

13. كمية وقيمة السماد الكيماوي المستخدم في الهكتار:

كمية (كغ)	.....	قيمة(دج)	.....

14. كمية إنتاج الهكتار من الفول السوداني (الكاو كاو) (قنطار): .....

15. معدل سعر بيع الكيلوغرام من الفول السوداني (الكاو كاو) (دج): .....

16. وسيلة السقي المستخدمة:

المحور		التقطير		العمر		أخرى(حددها)	.....

17. تكلفة وسيلة السقي المستخدمة (دج): .....

18. تكلفة مضخة السقي (دج): .....

19. تكلفة أنابيب وقنوات السقي (دج): .....

20. تكلفة البئر وخزان الماء (دج): .....

21. كلفة الكهرباء الموسمية (دج): .....

22. تستعين بالمرشد الزراعي:

نعم		لا	

23. إذا كانت الإجابة " نعم " قيمة الخدمات الارشادية (دج): .....

24. تؤمن على محصول الفول السوداني (الكاو كاو):

نعم		لا	

25. إذا كانت الإجابة " نعم " قيمة التأمين الموسمي(دج): .....

26. قيمة الأدوية، المبيدات والمخصبات المستخدمة في الهكتار(دج): .....

27. تكلفة "الجريد" ومستلزمات مصدات الرياح في الموسم (دج): .....

III. بياناته حول تكاليف العمل الإنتاجية:

	عمل بشري			عمل آلي	
	عدد العمال	أيام العمل	أجرة اليوم للعامل	ساعات التشغيل	أجرة الساعة
وضع الجريد ومصدات الرياح					
تحضير وتهيئة الأرض					
حرث الأرض					
بذر(زراعة)					
تسميد (وضع السماد الكيميائي)					
وضع السماد الطبيعي (العبار)					
سقي					
عزق، تحمير					
معالجة ووقاية					
إزالة الأعشاب الضارة					
جني (حصاد)					
نقل وتفريغ					