



Economic evaluation of propagation funds on stable yield of wheat and canola in parsabad moghan city

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ABSTRACT

This paper evaluates the economic impact of projects fund and personnel costs of propagation on operating performance of the country's two main products, namely wheat and canola, between the years 1997-2007, in Parsabad Moghan region. In this study, data is consisting of three sections: descriptive analysis, and regression relations. In regression analysis, "projects' fund and propagation of personnel costs" is the independent variable; and "wheat yield" as well as "canola yield" are dependent variables which are inserted into two separate equations, respectively. And given the significance of the value of F ($P = 0/0000$), in both equations, and also with regard to the high amount of R^2 , it can be concluded that propagation credits are the major role in increasing or reducing the performance of these two products. It can also be concluded that the effect of propagation in increasing the wheat is more than canola yield and it is able to explain 91% of the performance of this product. Also, given the amount of R^2 , the credits in the case of canola is able to explain 71% of the changes in performance of this product.

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Introduction

Parsabad Moghan City (Moghan region) is located by the Aras River in the northern most part of Iran. Cereals are always the most important part of food for humankind (Rafati, M. 1995). Wheat in agricultural section, national economy and supplying food security is of strategic importance and provide more than 40% of body energy (Bi Naam, 1996). And seed oil of canola is of good quality. Finally, after oil extraction, the residual meal is rich in protein and suitable to be used for animal feed (Afshari Azad, Homayoon, 2001) Ministry of Agriculture and Natural Resources and Agricultural Engineering Organization are working compatibly in order to achieve healthy food and sustainable agriculture (Moosa Nejad, M. Gh 1978). It is essential to propagate modern technology both in wheat and canola planting and harvesting to reach national self-sufficiency in producing these strategic products, this work needs for propagating investment (Bi Naam, 1996). Because farmers use water and land for agricultural production that are considered part of national resources, inappropriate utilization of them is not only harmful to themselves but also to the national resources and may result in serious dangerous for next generations. Therefore, such trifle funds on propagation can be resulted in less efficiency and more supports are needed (Mosher, A. T, 1976). Otherwise, not only we could not reach self-sufficiency in wheat and canola production but also we will be just a complete import-user (Kuroda, Y. 1997).

Materials and Methods

In order to evaluate the economic effects of propagation on agricultural productivity, namely wheat and canola in Parsabad Moghan City between the years 1997 to 2006 time series data was used for these two products (including area under cultivation, total production and yield) and the time series data was used for propagation funds (including funds for propagation research projects and personnel costs) (Ministry of Finance, 2008).

Results and Discussion

According to the following Table, descriptive analysis of data can be discussed in which the average and standard deviation of each variable is included, then by using changes coefficient its value is obtained.

Among the variables studied (including cultivation, total production and yield), four variables, "total production of wheat and canola, wheat and canola yield" showed significant positive relationship with the propagation funds.

And in the correlation analysis of variables (total production of wheat, propagation funds, and wheat and canola hectares under cultivation) have direct relationship and it was significant in 99%. In this analysis, the "projects' funds and propagation of personnel costs" as the independent variables, and "wheat yield" and "canola yield" as dependent variables are entered in two separate equations, respectively. In other words, given that in both analyzes, the variable "funds and propagation costs" integrated into the equation and were able to explain a lot of changes in the dependent variable, the impact of these funds to increase productivity of these two products is quite evident. Given the amount of R^2 , for wheat and canola 0.91 and 0.71, respectively, it can be concluded that the propagation effect in increasing wheat yield was more than yield of canola and it is able to explain 91% of the yield changes of this product. Also, regarding the amount of R^2 , these costs for canola is able to explain 71% of yield changes.

According to the table, the highest yield in 2004 and 2005 were 113710 and 136395 kg per hectare, respectively, while the highest yield of canola in 2004 and 2005 were 4766 and 3863 kg per hectare, respectively.

This issue represents a simultaneous increase in the yield of these two products for these years. Also, the minimum wheat was 4200 kg per hectare in 1996, while the minimum yield of canola was 2030 kg per hectare in 2003. Also, higher

Table 1. Cultivation and the yield per hectare and total production cost of the propagation costs in cultivation years (4)

Cultivation Year	Hectares under Cultivation	Yield per Hectare	The Total Production	Funds in Thousands Rls	Hectares under Cultivation	Yield per Hectare	Total Production in Tones	Funds in Thousands Rls
1997-1998	10900	4200	45780	1800	10	2510	2510	1000
1998-1999	13850	4900	67865	2000	10	2520	2520	1000
1999-2000	15312	5420	82991	3600	20	2520	504	1500
2000-2001	15611	5650	88202	2700	20	2540	508	2000
2001-2002	14552	5600	81491	4500	26	2730	709	3000
2002-2003	19550	5600	109480	8625	71	2600	1850	4300
2003-2004	19035	5710	108690	5600	602	2200	1324	3300
2004-2005	21447	4739	101638	6550	956	2030	1941	3700
2005-2006	21471	5296	113710	8360	1990	2395	4766	4800
2006-2007	26774	5100	136395	11650	1568	2464	3863	5800

Table 2. Comparison of standard deviation, minimum and maximum values of studied variables (4)

Variable	Average	Standard Deviation	Minimum	Maximum	Changes Coefficient
Hectares under Cultivation for Wheat	17850.2	4674	10900	26774	26.18
Hectares under Cultivation for Canola	527.3	739.46	10	1990	140.23
Total Wheat Production (Tones)	93624.2	25857.88	45780	136395	27.61
Total Canola Production (Tones)	11280	16885.09	50	50300	149.69
Wheat Yield (Kilogram per Hectares)	5221.5	488.54	4200	5710	9.35
Canola Yield (Kilogram per Hectares)	2448.4	200.17	2030	2730	8.17
Propagation Cost for Wheat (Thousands of Rls)	5538.5	3253.29	1800	11650	58.73
Propagation Cost for Canola (Thousands of Rls)	3040	1652.74	1000	5800	54.36

Table 3. Correlation coefficients between studied variables and propagation costs (4) between years 1996 to 2007 (Pearson test results)

Variable	R	P
Hectares under Cultivation for Wheat	-0.006	0.95
Hectares under Cultivation for Canola	-0.30	0.06
Total Wheat Production (Tones)	0.80	0.0001
Total Canola Production (Tones)	0.60	0.01
Wheat Yield (Kilogram per Hectares)	0.85	0.0001
Canola Yield (Kilogram per Hectares)	0.80	0.001

standard deviation of wheat yield compared to canola over the years, suggests further changes of that which it could be caused by political factors and organizations. Finally, the costs of propagation were analyzed descriptively.

According to Table 2, the average costs (including projects and credits) for the two products is 11841 thousand in Rls which its minimum amount occurred in 1996 about 1800 thousand Rls for wheat, in 1999 for canola about 2000 Rls.

From Table 3, among variables studied (including cultivation, total production and yield) four variables, i.e. "total production of wheat and canola, wheat yield and canola yield," showed significant positive relationship with the propagation costs. This means that according to the r value and its significance level (P), it can be expected that increased propagation spending, total production of these two main and strategic products are increased per hectares. Further, focusing on this table reveals that among mentioned variables, wheat yield per hectare has the most important correlation with propagation costs ($r=0.85$, $p=0.0001$). Therefore, it can be expected that increasing propagation budgets will result in more changes in wheat yield.

Conclusion

This study showed that the propagation costs have an effective role in increasing productivity and yield of two major products, i.e. wheat and canola. In other words, if in the process

of agricultural development, more attentions have been paid to propagating the research project and its personnel costs, not only it will be beneficent but also results in profit increase in the form of product increase of these two productions. And, increasing propagation cost is recommended at least for the promotion of educational services for these products. To be successful in this regard, it is essential to be supported by government and creating environments in which farmers are encouraged to refer it.

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