AN ECONOMIC STUDY OF WHEAT PRODUCTION IN IRAQ FOR 2018
(AL-AZIZIYAH   CASE STUDY)

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Abstract

The aim of the present work is to study and analyze the costs of wheat production in Iraq for the agricultural season 2018, Aziziyah as a case of study. And analyze its costs and estimates the structure of production, finding the optimum output, maximizing profit. Furthermore, the research shows supply curve in light of the different prices of this crop. Starting from the problem of a low level of production, productivity and inability to achieve optimal level of output to reach economic efficiency. Moreover, the study achieved the most important results is to increase the optimum output to (16) tons and the maximum output volume of profit (24) tons at the level of agricultural output and in the light of the prevailing farm price. The net income of the farmer decreased to (1887) thousand dinars compared to the maximum output of the profit is (2537) thousand dinars, the price elasticity of supply was also estimated at (0.98). The research also showed that the price of the state (450) thousand dinars/ton is rewarding and that all the farmers of the sample have achieved economic profits. The researcher recommends do not increase the prices of purchase because of the negative effects of the policy of supporting the price of the product more than necessary.

Keywords: Optimum output, Maximum profit, Economic efficiency, Supply elasticity, Price support policy

Introduction

It has traditionally been believed that wheat is an important strategic crop in Iraq because it is used as the main food in the production of bread and represents the basic element in human food. Wheat cultivation in Iraq occupies the first class in production and area. This crop is grown by 44% of the average private land for agricultural exploitation of the country However, 51% of the total area planted with grain in the country. This crop is grown in various regions of Iraq because it stands the heat, cold and the high salinity in the soil. Additionally, Wheat is dependent on rain-fed agriculture in the northern regions instead of that on irrigation in the central and southern regions. In spite of the inability of local production from the deficit, the state seeks to increase production and reduce imports from abroad by adopting an agricultural policy to increase the expansion of wheat cultivation and increase subsidies. Purchase prices per ton are about 450 thousand dinars for 2018.

Materials and Methods

This paper attempts to provide more detailed investigations relies on primary data by preparing a questionnaire to collect data to accomplish its objectives. Accordingly, the number of farmers of wheat in Al-'Aziziyyah is 290. A random sample of (80) farmers have selected, which represent about (28%) of the total number of farmers in this district. To illustrate and present the cost items the research depends on the descriptive economic analysis and statistical of the standard methods, the most important cost items are fixed costs (13%) and variable costs (87%). Whereas quantitative analysis is limited to the quantitative cost function, then determine the optimal size for the use of the best economic materials, the maximum volume of profit and derivation of the supply curve in the light of the various prices of this crop. Furthermore, this study adopted several models for estimating cost functions, the cubic function was the best function using the least-squares that give the best linear estimates and indistinct.

$$Tc = a + b1y - b2y^2 + b3y^3$$

whereas:

TC= Total costs of wheat crop in dinars

Y = total production / ton

Results and Discussion

The overall measurement results are summarized:

First: It has been found that Statistical Estimation of the Functional Costs of Wheat Crop in Aziziyah district, Depending on the Data of the Sample Where the Cubic Cost Function was reached:

$$Tc = 115.96 + 39.42y - 8.71y^2 + 0.27y^3$$

$$T \quad (3.572) \quad (7.431) \quad (1.041) \quad (4.221)$$

$$R^2 = 0.92 \qquad F = 591 \qquad D.W = 1.85$$

It is clear that (R^2) reached (0.92) this means that 92% of the changes in production costs refer to input items in the function, while (8%) attributed to other factors not included in the sample. Moreover, the cost function was derived to obtain marginal and average cost function.

$$Mc = 393.42 - 17.42y + 0.81y^2$$

$$Ac = 393.42 - 8.71y + 0.27y^2$$

In light of the current average production of the sample farms were (7.75) tons. The marginal costs were estimated at (311.03) thousand. The average cost was (328.07) thousand, while the cost elasticity was (0.95). This means that the production of sample farms is subject to increasing yields corresponding minimum cost.

Second: On the topic of Estimate the optimal production rate of the wheat crop is the product at which the average total costs of the lowest possible value, i.e. the maximum possible

level at which the farm size efficiency reaches. The marginal output rate does not mean that production is making the largest profit because profit is not only determined by the cost of production but depends on the volume of output, the selling price of the unit of production. Subsequently, that can be reached through the necessary derivative first requirement for the average variable costs and make it equating zero.

$Vc = 393.42y – 8.71y^2 + 0.27y^3$

$Avc = \dfrac{vc}{Y} = 393.42 – 8.71y + 0.27y^3$

$\dfrac{d\,Avc}{dy} = -8.71 + 0.54y = 0$

$y = \dfrac{8.71}{0.54} = 16 \text{ (Tons)}$

Third: Estimation of maximum profit rate of the wheat crop. That happened through the output which achieves the maximum profit is obtained by equating the marginal cost function with the farm price, which amounted to 450 thousand dinars/ton.

$MC = PY$

$393.42 – 17.42\,Y + 0.81Y^2 = 450$

$-56.58 – 17.42Y + 0.81Y^2 = 0$

$Y = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$Y = \dfrac{-(-17.42) \pm \sqrt{(-17.42)^2 - 4(0.81)(-56.58)}}{2(0.81)}$

$Y = 24$ (Tons) quantity that maximize the profit

And after compensation for the quantity that minimizes the costs equals (16) tons and the amount that maximizes profit (24) tons, the profit function.

$\pi = TR - TC$

$= Y.PY - TC$

It is clear that the net farm income is at the level that minimizes costs to be (1887) thousand dinars, while at the level that maximizes profit is to (2537) thousand dinars.

Fourth: The minimum price the farmer accepts to offer his wheat production. It knows by splitting the average variable cost and equaling it to zero, then obtaining the size of the output at the lowest point of the average spread costs, which is (16) tons, and replacing it with the variable average function, it was possible to obtain the lowest value for the average variable costs, which amounted to (323) thousand dinars This is the lowest price the farmer accepts to offer his production.

$AVC = 393.42 – 8.71(16) + 0.27(16)^2 = 323$

Fifth: Elasticity of supply for wheat production. The supply curve represents the upward part of the marginal cost curve after it crosses the average variable cost curve at its lowest point. The ascending part represents the different quantities that the establishment puts on the market at different prices. The supply function is obtained when the marginal cost function equals the farm price

$393.42 – 17.42Y – 0.81Y^2 = PY$

$0.81Y^2 – 17.42Y + (393.42 – P) = 0$

$Y = \dfrac{-(-17.42) \pm \sqrt{(-17.42)2 - 4(0.81)(393.42 - P)}}{2(0.81)}$

It was possible to obtain the offered quantity at the minimum price that the farmer accepts (323) thousand dinars, reaching (15.5) tons. While the quantity supplied of wheat increases to (28) tons, when market prices rise to (34) tons, market supply elasticity can be obtained by using the formula:

$E = \dfrac{D(ATC)}{DQ} = \dfrac{Q}{ATC}$

$E = 393.42 – 17.42(16) + 0.81(16)^2$ after compensation for value $Q = 16^{tons}$

$393.42 – 8.71(16) + 0.27(16)^2$

$E = \dfrac{322.06}{323.18} = 0.98$

Using the price elasticity law, it is clear that the elasticity reached about 0,98 at the minimum price, which a farmer accepts it to offer his production, Consequently, this indicates that when farm prices increase at their minimum by 10%, the quantity that is supplied in the market increases by 9.8%. The supplied quantity is weak, the reason for this rather contradictory result is still not entirely clear, but maybe because of the quantity of the product wheat is one of the field crops that cannot be controlled, and storing part of their production for family consumption throughout the year.

Conclusions

A conclusion leading on from the information given in the body this study showed that the cost of the structure of the total production for the wheat crop is that the variable cost ratio is 87% of the total cost, while the fixed costs account for 13%. This is due to the high costs of fertilizers, seeds, and mechanical operations. Similarly, this study indicate that the volume of optimal size of production which minimize costs is (16) tons, whereas the largest production volume for profit is (24) tons, and in light of the prevailing farm price (450) thousand dinars, net income (1887) thousand dinars has been achieved compared to its most profitable output (2537) thousand dinars. An important implication of these findings is that the minimum price that farmers accept to display their products, it has reached (323) thousand dinars. At this price, the supplied quantity can be obtained by about (15.5) tons. The main concern of the paper was when the supplied quantity increases to (28) tons, the price of the farm market increases to (650) thousand dinars. Likewise, this paper proposes that the price of the state is rewarding so that all farmers have achieved economic profits.

The current findings add substantially to our understanding of that despite the weak elasticity of the supply, it was (98%) also reflected that there is a response to increasing their supply of production. The study also recommended that do not increase purchase prices by the state because of its negative effects on the state budget, as well as the high price encourages smuggling from neighbors countries and selling it to the state. Again, the research recommended that increasing production and productivity to

achieve the optimum size and increasing the use of modern devices and means to produce this important strategic crop.

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