

An Analytical Study of the Production and Import Situation of Wheat Crop in Egypt

Enaam Abdel-Fattah Mohamed, Karima A. M. Awad and Heba Y. Abdel-Fattah

Department of Agricultural Economics, National Research Centre, 33 El-Bohouth St., (former El- Tahrir St.), Dokki, Giza, Egypt. Postal Code: 12622.

ABSTRACT

The study advised putting an importation plan or map containing several sources for supplying wheat instead of depending on a limited number of countries to reduce expected risks in addition to improve both quality and prices, where Egypt may face the problem of increasing the international prices of wheat to cover about half its needs. Also, Egypt may face the possibility of using wheat as a strategic tool by the exporting country and the quick decay for the foreign currency, which increases the pressure on the National Balance sheet. The study suggests a number of steps which must be taken to reduce the wheat gap, and consequently to reduce the imported amount, and to fulfill the food security of wheat by increasing its national production, controlling the consumption, reducing the waste and applying a free policy for importing wheat.

Key words: Egyptian Wheat, Egyptian imports, geographic distribution

Introduction

The wheat is the most important strategic food crop in Egypt. It consists the main source for bread production all over the country, in addition to its use in making pasts, sweets and different cookies. The byproducts of wheat in all these products are used in animal feeding.

Egypt gives great care for wheat cultivation by the use of the new technologies and finding new generations characterized by high productivity. However, the increasingly high production till now is not sufficient to cover all needs.

Egypt is considered one of the greatest countries in importing wheat in spite of the great increase in its notional production in the recent years, due to the continuous increase in the population and consequently the increase in its consumption. The national production of wheat in the year 2013 reached about 9.46 million tons while its consumption in the same year was about 16.68 million tons and the important wheat arrived at 6.78 million tons in the same year, its price reached about 17.2 million L.E p/t, Egypt has a wheat gap of about 7.22 million tons which equals about 56.7% in the year 2013.

The study Problem:

In spite of the great efforts done to increase both the cultivated area and its productivity of wheat to increase the self-satisfaction and to decrease the wheat gap and the imported wheat, Egypt is still one of the main countries in importing wheat where its total production covered only about 56.7% of the national needs in the year 2013.

Aim of the Study :

The study aims to focus light on the present situation of the wheat problem in Egypt through the study of each of production, consumption, importation, also , wheat gap and self-satisfaction through the period (2001-2013), beside the study of the geographical distribution of the imported wheat and giving the expected solution to reduce the wheat gap.

The methodology study and information source:

This subject of research depended for its objects on the qualitative analysis method for the means, percentages, and the tabular review in addition to the annual development for the economic variables under investigation.

The geographical concentration coefficient was used for the imported wheat according to the equation:

For calculation of geographical concentration and instability index Ginnig –Hirschman coefficient was derived from the following equation

Corresponding Author: Enaam A. Fattah Mohamed, Department of Agricultural Economics, National Research Centre, 33 El-Bohouth St., (former El- Tahrir St.), Dokki, Giza, Egypt. Postal Code: 12622.

$$C_{jx} = 100 \sqrt{\sum (x_{sj} / x_i)^2}$$

Where C_{jx} = Geographical concentration Factor of the quality of Egyptian imports of investigated crops.

X_{sj} = quantity of imports of study crops directed to particular market.

X_i = Total quantity of Egyptian imports of study crops.

The study depended on the published data in the reports and documents of several institution and foundation such as ministry of agriculture and land reclamation, central agency for public mobilization and statistics (A/MAS), and its computational center (unpublished data).

Analysis of the results:

The present situation of wheat crop in Egypt:

Table (1) indicates the increasingly wheat cultivated area from about 2.66 million feddan as an average in the period (2001-2007) to about 3.11 million feddan as a mean in the period (2008-2013) with extra 16.9% between periods, while the table revealed the fixed productivity the through the averages of the two periods which were about 2.69 tons/ feddan. The Table reveals also the increase of the total production from about 7.2 million tons to about 8.38 million tons through the two periods of study with increasing rate of about 16.4%, this increase is a result for the increase in the wheat cultivated area, beside the price increase, this encouraged the farmers for cultivating wheat. It is shown also that the wheat consumption has increased from about 13.32 million tons through the first period to about 15.58 million tons through the second period with increase of about 17%, which was reflected on the wheat gap. This gap was increased consequently from about 6.12 million tons to about 7.19 million tons through the two periods of study by an increase of about 17.5%. This increase is mainly due to the increase of population by about 14.8% in the two periods, in spite of the nearly constant personal rate of consumption. The shortage in production led to a gap with consumption. This gap has been overcome by importation which has increased from 4.73 million tons to about 6.32 million tons though the two periods with an increasing rate of about 33.6%. This led in turn to an increase in the (2007) to about 15.13 million L.E. in the second period (2008-2013) due to the increase in the importation quantity and the international wheat prices together with the increase in the price of dollar exchange with the Egyptian pound from 3.98 in the year 2001 to about 7.09 in the year 2014. This forms a pronounced load on the balance of payments.

Table 1: Development of production and Consumption Determinants for wheat crop in the period (2001-2013)

| Mean Item | Period mean | |
|-------------------------------------|-------------|-----------|
| | 2001-2007 | 2008-2013 |
| Area (million feddan) | 2.66 | 3.11 |
| Productivity (T/f) | 2.69 | 2.69 |
| Total production (million tons) | 7.20 | 8.38 |
| Farm price (LE/ Ardab) | 141.0 | 342.7 |
| National Consumption (million tons) | 11.32 | 15.58 |
| Personal consumption (KG./year) | 196.35 | 195.03 |
| Population (million) | 69.52 | 79.85 |
| Importation price (LE/ Tons) | 942.14 | 2452.67 |
| Egyptian imports (million Tons) | 4.73 | 6.32 |
| Wheat gap (million Tons) | 6.12 | 7.19 |
| Self-satisfaction ratio | 54% | 53.85 |
| Imports value | 4.55 | 15.13 |

Collected computed from:

- 1) Ministry of agriculture and land reclamation – the economic affairs sector –the central administration of agric. Economics, different issues.
- 2) Central agency for public mobilization and statistics (unpublished data)

Determinants of Production and Consumption Capacity for Wheat Crop in Egypt in the period (2001-2013):

The estimations of the directive models for the production and consumption capacity of wheat crop in the period (2001-2013) which were reflected in the cultivated area, total production, national consumption and the imported wheat indicated that the cultivated area and the total production take a general increasing direction statistically with differentiation in the annual rates of development as shown from table (2) where the estimations revealed an increase for the total production of wheat with an annual development rate of about 2.64% as a mean in the period of study. It achieved about 7.66 million tons. The increase in production is attributed to the increase in the cultivated area by an annual rate of about 2.4% from its mean area of about 2.83

million feddan through the period of study the directive models estimations pointed also to a general increasing significant statistical direction for the national consumption, wheat gap, amount and price of the imported wheat, price of importation for wheat as revealed from table (2) with difference in the annual rates of development. Also, the estimations pointed to an annual increase in the total consumption, wheat gap, amount and value of imports, and the import price for wheat the present annual increase were 2.53, 2.4, 4.97, 15.7, and 12.9, respectively from the averages which achieved 14.2 million tons, 6.54 million tons, 5.33 million tons, 8.9 million L.E., and 1557.4 L.E./tons, respectively (Table 2).

Table 2: Equation for the general direction of some productivity and consumption variables of wheat in Egypt in the period (2001-2013)

| | Item | Equation | R ² | % of annual variation | Significant |
|---|----------------------------|--------------------------------|----------------|-----------------------|-------------|
| 1 | area 1000 F. | $\hat{Y} = 2.324 + 0.068 x$ | 0.85 | 2.4 | ** |
| 2 | Productivity T.F. | $\hat{Y} = 2.652 - 0.005 x$ | 0.04 | 0.04 | - |
| 3 | Production M.T | $\hat{Y} = 6.142 + 0.202x$ | 0.73 | 2.64 | ** |
| 4 | Consumption M.T | $\hat{Y} = 11.52 + 0.359x$ | 0.91 | 2.53 | ** |
| 5 | Gap M.T. | $\hat{Y} = 5.359 + 0.157x$ | 0.52 | 2.40 | ** |
| 6 | Ratio of self-satisfaction | $\hat{Y} = 53.368 + 0.075x$ | 0.007 | 0.14 | - |
| 7 | Imports | $\hat{Y} = 3.345 + 0.265x$ | 0.79 | 4.97 | ** |
| 8 | Imports (milliard L.E.) | $\hat{Y} = -1.615 + 1.402 x$ | 0.90 | 15.7 | ** |
| 9 | Imports price (L.E./tons) | $\hat{Y} = 47.868 + 201.275 x$ | 0.91 | 12.9 | ** |

Where: \hat{Y}_n : the estimated value for the following variable in the year (n)

\hat{X}_{1n} : the time variable where h: 1, 2,14

** : Significant

- : Insignificant

Source : Collected and computed from table (1)

The factors influencing the imported amount from wheat crop:

The imported amount of wheat is affected by several factors, which has to be taken into consideration. These are the amount of production in the former year, the farm price, the total amount of consumption of wheat and the import price in the present year, where the study of the relation between the amount of wheat imports as a following variable and the factors which may have effects on this variable in the period (2001-2013) by the way of

$$\hat{Y} = -5.91 + 0.31 X_1 + 0.02 X_2 + 0.634 X_3 + 0.01 X_4$$

(-1.89) (3.04) (4.36) (3.69)

$$R^2 = 0.84, F = 11.61$$

Where:

\hat{Y}_n : The imported amount of wheat in the present year (million tons).

\hat{X}_{1n} : The national production of wheat in the former year (million tons).

\hat{X}_{2n} : The farm price in the present year (L.E./ Ardab).

\hat{X}_{3n} : The total consumption of wheat in the present year (million tons)

\hat{X}_{4n} : Import price of wheat in the present year (L.E./tons)

The results of this equation revealed that the value of the determinant coefficient was about 0.84. This mean that about 84% of the variation in the imported amount of wheat is attributed to the variation in the previous variables. The rest is due to other undeterminants factors.

Concentration and geographical distribution of Egyptian imports of wheat:

The study of the geographical distribution depends on the knowledge of the different wheat export markets to Egypt, the degree of imports concentration and the extent of the continuation of these markets. The geographical distribution of the Egyptian imported wheat revealed that the Russian Federation market is the most important exporting market for wheat. Egypt imported about 2019.85 thousand tons (Table 3) with a value of about 2288.9 million L.E., i.e. about 39.96% & 37.66% from the total amount and value of the imported wheat as an average in the period (2010-2014). The coefficient of the geographical concentration is about 40%. The Egyptian imports ranged between 419.25 thousand tons as a minimum in the year 2014, and 3777 thousand tons as a maximum in the year 2011.

Then, came the markets of France, U.S.A., Australia and Ukraina. The mean amount in the same period were about 821.88, 869.34, 370.74, and 538.74 thousand tons, respectively with a geographical coefficient of

concentration of about 4.24, 10.38%, 6.82% and 16.38%, respectively. These are stable markets for exporting wheat to Egypt, while the markets of Bella Russian, Argentine, Kazakhstan, and Canada are not in the period (2010-2014). The table revealed that the importing price from France is the higher by about 4064.4 L.E./ Tons followed by that of Argentine, Ukraine, U.S.A., Russian Federation and Australia by about 2809.1, 2805.5, 2702.6, 2426.2 & 2074.7 L.E./ tons, respectively as means in the same period.

Table 3: The Geographical concentration for Egyptian imports of wheat in the period (2010-2014)

| Country | Amount of imports (1000) tons | | | Coefficient of Geog. Concent. | The mean import price L.E./tons |
|--------------------|-------------------------------|---------|---------|-------------------------------|---------------------------------|
| | Minimum | Maximum | Mean | | |
| Russian Federation | 419.25 | 3777.0 | 2019.85 | 39.96 | 2426.24 |
| France | 58.39 | 2664.7 | 821.88 | 4.24 | 4064.4 |
| U.S.A. | 38.0 | 2759.2 | 869.34 | 10.38 | 2702.6 |
| Bella Russian | 4.30 | 439.3 | 100.27* | 1.84 | 1654.9 |
| Australia | 59.59 | 947.2 | 370.74 | 6.82 | 2074.7 |
| Argentina | 7.37 | 374.9 | 106.99* | 2.00 | 2809.1 |
| Ukraine | 209.9 | 998.92 | 538.74 | 16.38 | 2805.5 |
| Kazakhstan | 6.67 | 273.9 | 57.71* | - | 2032.3 |
| Canada | 20.8 | 250.6 | 101.98* | 1.08 | 2124.6 |

Origin: Collected and computed from the data of (CAMPMS – NIC), unpublished data.

*: Unstable markets (B. Russian, Argentine, Kazakhstan, Canada) in the period (2010-2014).

The relative importance for the Egyptian imports of wheat in the period (2010-2014)

Table (5) illustrates that Russian Federation is the most important country from which Egypt imported about 33%, 38.6%, 65%, 29.8% & 33.5% of its imports in the years from 2010 to 2014 by a mean of about 40% in the period (2010-2014), which is about 37.66% of the imports value in the same period, followed by, France, U.S.A., and Australia by about 16.38%, 12.7%, 10.38% & 6.82% from wheat imports, i.e. about 15.44%, 5.86%, 14.94% & 5.73% of the imports value as a mean in the same period (stable markets) while Bella Russian, Canada and Argentine constitute about 1.84%, 1.08% & 0.44% of the imported wheat, i.e. about 0.96%, 0.88% and 0.40% of the imports value (table 5), these are irregular markets in the period of study. The sum of all these markets constitutes about 90.32%, 81.9% of the amount and value of the imports in the period of study (2010-2014). Russian Federation

Table 4: The relative importance for the Egyptian imports of what crop in the period (2010-2014)

| | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | Average (2010-2012) | |
|--------------------|------|------|------|------|------|------|------|-------|------|-------|---------------------|-------|
| | %Q | %V | %Q | %V | %Q | %V | %Q | %V | %Q | %V | %Q | %V |
| Russian Federation | 32.9 | 33.3 | 38.6 | 38.9 | 65 | 53.9 | 29.8 | 25.3 | 33.5 | 37.2 | 39.96 | 37.66 |
| France | 27.6 | 27.4 | 10.5 | 11.1 | 4.2 | 5.0 | 2.2 | 1.4 | 19.0 | 10.8 | 12.7 | 5.86 |
| U.S.A | 14.2 | 14.9 | 28.2 | 27.9 | 3.1 | 9.5 | 3.4 | 18.7 | 3.0 | 3.8 | 10.38 | 14.94 |
| Bella Russian | 4.6 | 4.3 | - | - | - | - | - | - | 4.6 | 0.5 | 1.84 | 0.96 |
| Australia | 5.9 | 5.9 | 9.7 | 8.4 | 4.2 | 6.5 | 2.3 | 6.1 | 12.0 | 1.74 | 6.82 | 5.73 |
| Argentina | 0.4 | 0.4 | - | - | - | - | 0.01 | 0.74 | 1.8 | 0.84 | 0.44 | 0.40 |
| Ukraine | 6.2 | 6.2 | 4 | 3.8 | 16.4 | 17.1 | 38.5 | 26.3 | 16.8 | 23.8 | 16.38 | 15.44 |
| Kazakhstan | - | - | - | - | 0.3 | 0.2 | - | 0.12 | - | - | - | - |
| Canada | 1.2 | 1.0 | 2.6 | 2.8 | - | - | - | 0.42 | 1.6 | 0.25 | 1.08 | 0.88 |
| Total | 95.2 | 93.4 | 87.6 | 92.9 | 93.2 | 92.4 | 76.2 | 89.08 | 92.3 | 88.93 | 90.32 | 81.9 |

Source : Collected and computed from data of table (3), Q: Quantity (amount), v : value

Conclusion:

Egypt is considered one of the biggest importing countries for wheat, in spite of all the great efforts done to increase its cultivated area and productivity to increase the rate of self-satisfaction and to reduce the wheat gap and the imported amounts. However, Egypt is still one of the main wheat importing countries where its national production of this crop covers only about 56.7% from the needs in the year 2013.

The study aims at throwing light on the wheat problem in Egypt in the period (2001-2013). It is revealed what the most important affecting factors on the imported amount are the total consumption, importing price, form price, and the total production.

The study dealt with the geographic distribution and concentration of the imported wheat. This importation is concentrated mainly in the following countries: Russian Federation is the most important one (amount: 39.96%, value: 37.66%), followed by Ukraine, France, U.S.A., Australia, Bella Russian, Canada and Argentine by about (%): 16.38, 12.7, 10.38, 6.82, 1.84, 1.08, 0.44 for amount, and about (%): 15.44, 5.86, 14.94, 5.73, 0.96, 0.88, & 0.4 for value, i.e. Egypt imported 90.92% of the amount and 81.9% of the value from these countries, respectively in the period of study.

The study showed that the import price of France is the higher one (about 4064.4 L.E/tons) followed by that of Argentine, Ukraine, U.S.A., Russian Federation and Australia by about 2809.1, 2805.5, 2702.6, 2426.2 and 2074.7, respectively as means in the same period.

References

- Central agency for public mobilization and statistics- National information center- Unpublished data (2001-2014).
- Ministry of agriculture and land reclamation, economic affairs sector – central administration of agricultural economics-administration documents (2001-2014).
- Central agency for public mobilization and statistics (CAMPMS) –annual report for the motion of production and external trade which is available for consumption of agricultural goods (different issues).