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The Optimum Distribution of Potatoes Crop between Egypt's Governorates: Transportation Model Approach

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Introduction:

The transportation cost is one of the basic elements of the marketing expenses that affect both the consumer price and the price of the product. Researchers try to find out methods in order to reduce the value of transportation cost, to increase the share of farmers from the price paid by the consumer or lowering the consumer price, or both, which leads to raising the level of economic welfare for society as a whole.

Research Problem:

The research explores the problem of unbalanced distribution of potatoes crop between Egypt's governorates and the wholesale market, and transferring of the crop from production areas to consumption areas, the imbalance as a result farmers to sell the crop in the areas close to the the areas of production and to avoid increasing the cost of transport.

Aim of the research:

The main purpose of this paper is to minimize transport distances of potatoes crop, between Egypt's governorates,

Research methodology:

Transportation model as one of the basic applications of linear programming has been used to achieve the aim of this research. Secondary data has been obtained from the Egyptian ministry of agriculture and reclamation, and the central Agency for public Mobilization and Statistics.
The transportation model addresses the concept of moving a thing from one place to another without change. It assumes that any damage en route has negative consequences, and so it's used to analyze transportation systems and find the most efficient route for resource allocation. The model requires only a few data elements:

- Origin of supply
- Destination
- Unit cost of shipping (per-unit cost), or distance between origin and destination.

The point is to develop an optimized shipping plan that comes with a minimum of cost; in other words, the path of least resistance. The model is used to determine the minimum cost to ship from several sources to several destinations.

Results:

1. Potatoes Production in Egypt

Table (1) shows the production of potatoes crop in Egypt's governorates during the period 2017 – 2013. It is clear from the table that

2. Potatoes Consumption in Egypt

during the period 2017-2013. Beheira governorate in the top of Egypt's governorates in terms of production surplus of potatoes crop by a percentage of 44.9 % of the total surplus, followed by New valley governorate, Monufia governorate, Gharbia governorate , Dakahlia governorate , and Ismailia governorate by a percentage of 5.31 ,% 5.57 ,% 6.79 ,% 11.28 , %16.93 % , respectively.

3. The Optimum Distribution for potatoes crop in Egypt's governorates:

the results showed that Beheira governorate ranked in the first position in terms of average production (1.24 million tons) and surplus in consumption with 1 million tons. Regarding the optimum distribution of potatoes crop betw¬een Egypt's governorates, the transportation model indicated that Damietta governorate has a surplus that can be allocated to Port Said governorate. Dakahlia governorate has a surplus that can be allocated to Sharqia governorate. Gharbia governorate has a surplus that can be allocated to Cairo governorate, Sharqia governorate, Qalyubia governorate and Asyut governorate. Monufia governorate has a surplus that can be allocated to Cairo governorate. Beheira governorate has a surplus that can be allocated to Cairo governorate, Alexandria governorate, Kafr Elsheikh governorate, Giza governorate and Fayum governorate. Ismailia governorate has a surplus that can be allocated to Suez governorate, Port Said governorate, Sharqia governorate, Red Sea governorate, North Sinai governorate and South Sinai governorate. Beni Suif governorate has a surplus that can be allocated to Asyut governorate and Sohag governorate. Minya governorate has a surplus that can be allocated to Asyut governorate. New Valley governorate has a surplus that can be allocated to Sohag governorate, Qena governorate, Aswan governorate and Luxor governorate.

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