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SUMMARY AND CONCLUSION

This dissertation is composed of four chapters, in addition to the introduction, definition of the problem of study, objectives, research methodology, data sources and study frame.

Chapter one presents the theoretical framework and the review of literature on the research point. The theoretical framework reviews the concept and components of expert systems, including their design, application and tabulation according to functionality. It also provides a definition of fertilizers and their various classifications (organic and inorganic), with particular reference to the purpose of use for each type.

From the review of literature, it becomes apparent that there exists a deviation in the application of nitrogenous (N) fertilizers, taking an upward or downward trend according to circumstances.

It also became evident that the expert system-based production of cucumber has led to a significant reduction in production cost by about L.E.171.0 under tunnel, with a net return of L.E. 1000 per tunnel.

Chapter two reviews the development of N – fertilizer industry in Egypt and the world. This chapter is divided into two subchapters, the first of which deals with Egypt's N-fertilizer production by each individual company, including design and used capacities, company's profile and development since inception of operation, storage capacities, problems encountered and customer base. The

second sub-chapter covers production of ammonia and the other forms of N – fertilizers in Egypt and worldwide. The study reveals that the construction of the High Dam in 1969 was one of the factors behind the increased use of N & P-fertilizers in particular. Other factors include horizontal expansion and agricultural intensification.

The study also denotes that N-fertilizer production is largely a function of the availability natural resources (inputs) of industry, market demand, capital invested and the rate of return on investment. World demand for N-fertilizers over the past 25 years has increased by 30 million tons of nitrogen.

This indicates that there is an upward trend in the production of urea in Egypt.

In 1993 through 1998, the total value of urea production was estimated at 30.27 tons, with an annual rate of increase of 30% of the average production during studied period, estimated at 1.008 million tons. Ammonium nitrate production has also shown an upward trend by 0.96%. The study also indicates that Egypt ranks first in the production of ammonium nitrates (33.5%) in the Arab world. Its relative importance in 1998 was estimated at 93% of the Arab world's production.

The study also denotes that Egypt is the only Arab country that produces ammonium sulphates. However, its production fluctuates; with no statistical significance confirmed.

Chapter Three deals with the domestic marketing and foreign trade in N-fertilizers during the pre-reform and post-reform periods. During the first period, PBDAC was in full control over the N-fertilizer marketing operation. In the second period, other intermediaries are involved, including large-scale traders, distribution companies, retailers, PBDAC, cooperatives (multipurpose/village and specialized). The market share of each of those actors in the fertilizer market varied over time. PBDAC'S share was about 10%, cooperatives 18.1% and other market actors (wholesalers, retailers and EMEPAC) 72.9%

Price levels and marketing margins also varied by the fertilizer distribution channel because the existing system ensures the companies full freedom to set their factory-gate prices, based on production cost, concentration of active ingredient and transport cost.

The study also indicates that there exists a variation in the per-ton profitability for all actors in the fertilizer market. For wholesalers and agents, this average ranged between L.E.12-36 and for retailers L.E.15-47. For PBDAC and cooperatives, profitability ranged between L.E. 8-33 and L.E. 5-40 respectively. This variation largely hinges on type of fertilizer distributed by each actor.

It worthy of note that the liberalization of trade in production inputs, especially fertilizers, has resulted in the 1994/95 fertilizer crisis MALR, represented in PBDAC, had to intervene to regulate the market and to break any monopoly in this important input to the Egyptian agriculture.

The foreign trade in N-fertilizers indicates that there is an active movement in both exports and imports and that Egypt has a competitive advantage in the world market of N- fertilizers. Export prices exceed those of imports, thus allowing for coverage of import substitution.

The study also indicates that Egypt's average exports of N-fertilizers reached about 78.9 metric tons (100% Nitrogen) during the period 1989-1998. Egypt imports about 75.8 metric ton (100%N). However, the average export price per ton (US\$433.79) and the average import price per ton (US\$ 311.47) achieve a price advantage for the Egypt N-fertilizer exports.

Exports, thus, cover about 93.5% of imports, with an export/import price ratio of 139.3%

Chapter Four presents an economic and statistical analysis of the agricultural expert systems, in relation to fertilizer use. Wheat has been selected as a major crop for the study of the relationship between the expert systems and N-fertilizer use. Qualiobia governorate has been particularly selected to assess the economic and production situation of wheat growers in 1998/99.

The economic efficiency of wheat production according to the expert systems, study sample and data published by MALR was studied. It became evident that the expert system – based production of wheat has far exceeded the other production patterns inasmuch as net return and return on investment is concerned. Under this system,