SUMMARY

The economic importance of the horticultural crops in the Egyptian agriculture has increased during the last years. Promoting the production of these crops is considered one of the most important pillars of the Egyptian contemporary agricultural policy .Therefore, the intensification of agriculture, which depends mainly on the protected cultivation ,is an inevitable solution due to the limited resources of land and water and also the continuous increase of the local food demand as a result of rapid growth of population . The modern trends of the Egyptian policy go for expanding the protected cultivation either through the greenhouses or the tunnels in both the new reclaimed lands or the old ones on the expense of the traditional cultivation , especially when applying the economic reform programs in the agricultural sector and setting free the agricultural price policy.

This research aims at studying the economies of the horticultural crops production in the greenhouses and the tunnels compared with the traditional cultivation . This is through a study of the economic efficiency of the agricultural resources used for the three kinds of cultivations . This study aims also at estimating the production functions and studying the optimal size which minimizes the average costs for each produced unit and theoptimal size which maximizes the producers's profits . It helps to estimate the elasticity of production to determine the economic optimal mixtures of the production elements and the elasticity of costs. This reaearch determines also the value functions of the output, the capacity revenue and finally the possiblity of expanding the yield capacity . This will lead to upgrade the production efficiency and the economies of such crops . Therefore, digital indicators and economic criteria can be estimated to support the decision-makers in planning for a successful and advanced policy for agriculture.

The research depends mainly on deduction and induction to draw up conclusions . It used the descriptive and quantitive analysis for the statistical data and expressing the relations among all variables . It used many analytical tools and many mathematical methods in estimating and measuring . It included tests for the significance of the slope coefficients and forms used in measuring .

The statistical data necessary for the research were obtained in the form of time series for the economic variables during the period from 1979 to 1993 and also in the form of sectional data for the agricultural season 1993 / 1994 . This has been attained through the field study questionaires that were designed especially for this purpose and filled out during the personal interviews for the subjects of a random sample of the growers of horticultural crops being studied in the protected and traditional cultivations (tomatoes, cucmbers, pepper, cantaloups and ornamental plants) distributed among the governorates of the sample during the summer of 1994 . These governorates were Ismalia, Behira, Giza and Qualyobia .

The research icludes 5 main chapters and an intoduction which includes the problem of the research, the objectives of the research, the tools and methods and the information sources. Here is a summary of these chapters and the results of the analytical processes .

THE FIRST CHAPTER

This chapter deals with the situation of the protected cultivation in the Egyptian agricultural system .It contains 3 sections .

The first section deals with the protected cultivation technology . It explains fully the concept of the protected cultivation , the greenhouses, the kinds of the protected houses and their geometrical shapes either individually or collectively . This section deals with the general specifications that should be observed in constructing the greenhouses, selecting their positions and the suitable direction and preparing the location of the greenhouses and the material used in their construction .

This section also shows the concept of the tunnels ,their kinds, usages and the shapes of the arches used in constructing the tunnels and the way to cover them .

The second section explains the relative importance of the protected cultivation for the national agricultural production. It shows the development of the national agricultural production in the traditional fields of the horticultural crops being studied at the republic level and the most important producing governorates from 1979 to 1993 . It also shows that the greenhouses came into use in Egypt since 1977 for research purposes . In 1979, the protected cultivation has been initiated at Quaha ,Qualyobia supported by the International Bank on an area of 1 feddan. This program has been expanded to cover an area of 5 fd in 1980. Then, the protected cultivation has spreed and reached 4879 greenhouses in 1987 and then to 8731 in 1993 . The total area of the greenhouses was 4422 m^2 and total production reached 40000 tons of crops and 5759 seedlings in 1993 .Regarding the relative importance of the tunnels for the agricultural production, it has been shown that its total area was 163.7 fd in 1988 and then reached 32498 fd in 1993 at the republic level . Most of the tunnels have been concentrated in Ismallia(73.03% of the total area in the whole Egypt in the same year).

The third section reviews the most important studies related to the subject of the protected cultivation in the Egyptian agricultural system . These studies showed that vegetable production is seasonal and this leads to a shortage in the supply for local consumption in certain seasons . The production of cucumber and pepper in the traditional fields decreases in the period from Jan. to Apr. Such periods in which the traditional production decline is the most suitable periods for the protected cultivation.Similarly, these studies shows that the best months for exporting thecucumber ar the months of Dec., Feb.,and Apr.,for Tomatoes,Dec. and Jan. and for pepper the months of Dec.and Mar,.These are the most suitable periods for the protected cultivation . Therefore, we can depend on the protected cultivation not only in filling the gap in the local production in the decline periods of the traditional cultivation,but also in increasing the exports to the Arab countries during winter months of Dec.,Jan.,Feb. and March .

THE SECOND CHAPTER

This chapter deals with the field research sample . It displays the main steps to select the research sample in both the protected and traditional cultivations . Also, it shows the methods of collecting the data from the sample individuals . On selecting the research sample, certain imprtant bases were put into consideration to represent the community well . The most important basis was to specify the framework of the research area at the republic level . The greenhouses were 8731 with total area of 4421594 m^2 in 1993 and the total area cultivated with the crops in question (tomatoes, cucumber, pepper and cantaloup) in the traditional cultivation was 350923, 44623, 43954 and 29129 fd,respectively in the same year at the republic level . The governorates of Egypt have been divided.into 2 groups : the Upper Egypt group and the Lower Egypt group in order to reflect the differentiation of the production factors like temperature ,soil and moisture . The production units in both the protected and traditional cultivations were divided according to their management teams whether public or private sector to study the effect of the management on the economies of both protected and traditional cultivations. Then, the governorates were selected to be Ismalia, Behira, and Qualyobia for the Lower Egypt and Giza for Upper Egypt . The sample included 247 landowners , of which 91 possess 658 green houses of which 287 are public sector and 371 private sector . The tunnel sample,owned wholly by the private sector,included 60 landowners cultivating an area of 33.21 fds. The sample of the traditional cultivation included 96 landowners (private sector) cultivating an area of 116.2 fds. and 10 landowner (public sector) cultivating ornamental plants on an area of 19.20 fds.

THE THIRD CHAPTER

The study of the production costs is the cornerstone in determining the production efficiency . Therefore, this chapter deals with estimating the production costs functions for the crops in question and this makes us aware if the resources employed in producing the sample crops during the season

1993 /1994 were used to obtain the optimal production of such crops or not . The functional relations were calculated between the total production costs ,including rent , as a subordinate variable and the feddan yield as a main variable according to the data collected from the sample units . The average and minimal functions were derived and the production costs elasticity were estimated for each crop in the three kinds of cultivations : the greenhouses , the tunnels and the traditionall cultivation either for the public or the private sector . The results shows that all the growers of the crops in question,except the tunnel cucumber growers and the private sector pepper greenhouses, haven't reached yet the most efficient production and the most economically-feasible production . In other words, the haven't entered the economic production stage yet . This indicates that the production functions for these crops either in the protected or traditional cultivations are still passing the non-economic stage . This gives the opportunity for the growers to expand their investments to increase their production and double their profits through rechannelling their agricultural resources to upgrade their economic and production efficiency .

THE FOURTH CHAPTER

This section concerns with estimating the production functions for the horticultural crops of the research sample for the agricultural season 1993/1994 to measure the relation between the inputs and outputs which contributed in this function . It deals with the factors affecting production which means the economic efficiency of using resources and the relation between revenue and capacity . The well-known statistical technique called the multiple slope was used to represent these relations. The study deals with estimating two mathematical figures for production functions and they are the linear model and the double logarithmic model which can be transferred to Cup-Douglas function that is known in the economic usages .

The step-wise analysis results showed that some inputs have positive effect on production while others have a negative one and this indicates that thier minimal productivity exceeded the stage of the economic production as a result of overusing it . Undoubtedly, determining the optimal economic mixtures of the production elements under the conditions of the protected cultivation and the traditional one to produce the crops in question by the public and private sectors necessitates refering to the production functions for each case and balancing the production elements .

THE FIFTH CHAPTER

This chapter deals with the economies of producing the horticultural crops in the research sample . It contains 2 main sections .The first section concerns with the economic efficiency for using the land for producing the horticultural crops in the selected sample in both protected and traditional cultivations . Increasing the production efficiency is a main factor in the economic development plan . Five criteria were used for measuring the efficiency and they are as follows : The average productivity, the Average production costs, the Average total revenue,, the Average net revenue and the Proportion of the average net revenue to the total costs for the most important crops of the research sample and this is called the investment coefficient or the profitability of the Egyptian Pound .

The productivity per feddan in the greenhouses is four to five times the quantity of its counterpart in the traditional cultivation and 2 to 2.25 times of that of the tunnels . This indicates that the production of the tunnels is 2 times of that of the traditional cultivation(open land). Also, it is clear now that the revenue of the tunnels crops exceed its counterpart in both the greenhouses and the open land by more than twice . This indicates that investment in the tunnels is much better from the investor's or the ordinary grower's point of view .

The second section concerns with the feasibility study of investment in the projects of the protected cultivation of the horticultural crops in the research sample . This aims at contri-

to rechannelling using resources towards the best use . The green houses and the tunnels represent integerated production units that are characterized by rapid capital turnover . The study shows that the tunnels exceed the greenhouses concerning their feasibility study for the investor . However, from a nationalistic point of view , there is a bad need for the greenhouses for the little space they occupy and their ample production which means saving a plenty of lands for growing many other crops in the traditional cultivation.

RECOMMENDATIONS

In the light of the conclusions reached by the research, the study recommends the following :-

1-Encouraging the private sector and supporting it in the processes of using and cultivating the greenhouses and the tunnels in the reclaimed lands as it has proven its efficiency in managing such kinds of production units .

2-Depending on the protected cultivation in increasing the exports of cucumbers, tomatoes, and pepper to the Arab countries in winter as the production of the open fields decreases .

3-Adopting the protected cultivation for the exports which means it aims essentially at exporting most of production . This will be possible through establishing a special association for this purpose .

4-Upgrading the economic efficiency for the protected cultivation through decreasing the costs and increasing production.

5-Encouraging the private investment in the protected cultivation as it excels the governmental investment .

6-Making use of the protected cultivation for a longer period all over the year .

****

****

An Economic Study of Production For Some Egyptian Hortieultural Crops in Protected and Open Lands

By

Medhat Ahmed Ali Enebar

Thesis

For Degree of Doctor of Philosophy

In

Agric. Sciences (Agric. Economics)

1995

Approved by:-

Dr. Saad Zaki Nassar:
Professor of Agricultural Economics and Dean of Faculty of Agriculture, El-Fayoum, Cairo University

.....

Dr. Yahia A.El-Mageed Mohieldin
Professor of Agricultural Economics, and consultant of Ministry of Agriculture for Economics Affairs

...Y.A...Mohieldin.....

Dr. Saber S.A. Yaseen:
Professor of Agricultural Economics, Faculty of Agriculture, Moshtohor, Zagazig University, Benha Branch (Supervisor).

...Saber...S.A..Ya

Deposited in the University Library Under No.

Date: 28 / 9 / 1995

An Economic Study of Production For Some Egyptian Horticultural Crops in Protected and Open Lands

By

Medhat Ahmed Ali Enebar

M.Sc. (Agric. Economics), Zagazig University., 1991

Thesis

Submitted in partial Fulfillment of

The Requirements for The Degree of

Doctor of Philosophy

In

Agricultural Scienes

(Agricultural Economics)

Department of Agricultural Economics & Extension

Faculty of Agriculture

Moshtohor

Zagazig University

1995