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Cotton Farming in Greece and Practical Experiences Arising from the Dissemination of Innovations

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Introduction

Cotton farming in Greece actually covers an area of more than 3,000,000 km², which makes Greece the top cotton producers within the EEC.

The Greek cotton industry, which represents 6% of the total farming area and 25% of the total irrigated area, plays an important role in the national economy on account of the following facts:

- ❑ it secures full-time employment and a satisfactory income for more than 70,000 rural families;
- ❑ it contributes greatly to the development of industries and of the economy;
- ❑ it provides occupation for 100,000 families engaged in the various processing stages of the secondary and tertiary sectors (distribution, trading, ginning, spinning, seed-oil mills, small industries, etc.);
- ❑ exports of the various cotton products constitute one of the main sources of currency inflow, reinforcing greatly the national economy.

I – The evolution of cotton farming in Greece during the last 15 years

The evolution of cotton farming in Greece has gone through various stages and difficulties with regard to its development and modernization. More specifically, by the end of the 1970s and in the beginning of the 1980s, cotton farming dropped down to its lowest level of 1,260,000 km², directly facing desertion and extinction.

The most important reasons that led cotton farming to this critical point were:

- ❑ the precipitous fall in competition affecting this dynamic product due to the low cotton prices prevailing in the market at that time (cotton could not even compete grain);
- ❑ the important fall in cotton productivity due to the serious attack of the sensitive variety 4æ by *Verticillium* wilt);
- ❑ the lack of organization concerning exploitation and modernization at the various farming phases, more specifically during cotton harvesting which used to be an uneasy task because of the lack of cotton-pickers on one hand and, on the other hand, of the scarce and expensive labour as a result of the movement towards industrial areas causing production costs to increase greatly.

These reasons led the responsible authorities of the Ministry of Agriculture to examine seriously the situation of cotton farming. More specifically, the Greek Cotton Organization proposed special programmes in support of Agriculture and of the development of cotton farming mainly designed to overcome the above mentioned difficulties.

During the 1980s, these problems were tackled with positively and successfully through special national programmes as well as EC programmes that followed. More particularly:

- ❑ Resistant and productive varieties of the Acala type were imported from abroad (USA & Israel) while, at the same time, the Greek varieties ZETA-2 and ZETA-5, resistant to *Verticillium* wilt, very productive and fully adapted to Greek conditions, were produced.
- ❑ Intensive programmes of cotton farming modernization, both at national and EC levels, and in particular programmes stressing the use of machinery, were adopted at all stages but mainly at the harvesting stage. Thus we had 900 cotton-pickers at the beginning of the 1980s for 2,200 at present. Consequently, more than 90% of the total cotton production is harvested with machines and the cotton-picking problem seems to be successfully resolved.
- ❑ The various EC financial aids guarantee satisfactory primary prices and serve to support the producers' income.

The solution to the above as well as the gradual development of the techniques used during the various phases of cotton farming (e.g., sowing, irrigation, plant protection, collection) resulted in the dynamic progress of cotton farming and its production of the 1980s (*Table 1*).

Table 1. Farming Areas and Cotton Production in Greece

Year	km ²	Seed-cotton Production (in tons)
1980	1,410,000	360,000
1981	1,260,000	350,835
1982	1,380,000	315,869
1983	1,680,000	402,545
1984	1,920,000	452,370
1985	2,090,000	526,045
1986	2,100,000	623,592
1987	2,020,000	571,052
1988	2,200,000	749,807
1989	2,800,000	786,295
1990	2,838,000	677,251
1991	2,330,000	650,000
1992*	3,100,000	870,000

* These data result from the development of cotton farming, modernization through the dissemination of innovations, as well as the use of cotton-pickers, of the acid delinted (naked) cotton seed, of various irrigation techniques for the new cotton varieties, etc.

II – Practical experiences arising from the dissemination of innovations in cotton farming

The dissemination and application of an innovation (which means improvement of the technique and modernization of cotton farming in practice) is not a simple case, but it is one that demands tough, insistent efforts and, in many cases, a specific diplomatic ability.

Trying to introduce innovations leads one to face various problems and difficulties, especially due to traditions, customs and mentality prevailing mainly among the older producers, since the young modern producers are more receptive to the dissemination of new techniques and innovations.

- ❑ In 1975–76, we planned, for the area of Farsala, to proceed with a general inventory of the existing mechanical equipment used for cotton farming. The aim of this inventory was to collect the whole range of machinery required—from tractors to cotton-pickers—in order to study the shortages and carry out a

statistical analysis and evaluation of the machinery, as well as to propose an adequate programme of the utilization of the necessary machinery through the State's agricultural policy.

Obviously, the producers could not easily understand the importance of our efforts.

A questionnaire including all the machines for cotton farming (from tractors to cotton-pickers) was sent to agricultural unions who were asked to distribute it among cotton producers who were to fill the questionnaire and send it back. We knew in advance that the cotton producers would refuse to do what we asked because they were ignorant of the importance of our research.

But we had to insist in order to obtain positive responses and collect the necessary and useful information. We knew that the producers would answer almost collectively if some kind of financial support (*epidotissi*) of their production or machinery was proposed to them. So, our proposals were made known to them by means of announcements through co-operatives. When they were gathered together to get the information on the financial support, we managed to have the questionnaire on the cotton farming machinery successfully filled in.

❑ In 1976–1977, we attempted to make the use of the cotton-pickers in the area of Farsala widely known. The producers' attitude towards this new technique and innovation was one of reservation and doubt and they strictly adhered to the traditional manual collection.

The most important difficulties met concerned: the machines, the picking method, the cotton wasted, and the consequences for the quality. Moreover many producers had their own preference concerning the type of machine, namely its colour (red or green).

Two types of cotton-pickers were proposed: the red international McCormick and the green John Deer. The producers' opinions were divided as to what type of machine to choose. Some supported that the red type was better, others the green type. Making no significant differences between the two types, in order to convince the producers that both were equally efficient, we tested them simultaneously on the cotton farms around.

❑ In 1987, in the area of Palamas, Prefecture of Karditsa, an attempt was made for the dissemination and use of the acid delinted cotton seed. This newly introduced technique constituted a great improvement in cotton sowing and growth, as it presented major advantages in comparison with the mechanically linted fuzzy seed used by the producers.

The principal advantages of using naked seeds were the following:

- savings in seeds, about 2–4 kg per km² instead of 5–7 kg for fuzzy seeds,
- uniform depth during sowing,
- uniform distribution of the seeds along lines,
- faster and uniform growth,
- possibility of belated sowing with no loss of the precociousness,
- avoiding spacing out,
- increased resistance to unfavourable weather changes,
- less losses (as a result of the fast rooting of healthier plants),
- faster growth of the naked seed.

Consequently, naked seeds allow to achieve the desirable and uniform population of plants, a faster and uniform development and the elementary conditions for a more precocious and larger production. This method progressed very successfully (60–70%) in the neighbouring areas of Larissa and Farsala.

Before the sowing took place, a large meeting was held at Palamas of Karditsa where cotton producers were informed of the new method for the use and dissemination of naked seeds. They reacted sharply to this new method as they traditionally believed that fuzzy seeds were better than naked ones. They believed that, protected by their fuzz, seeds are more resistant to bad weather conditions and considered the few kilograms of naked seeds we proposed inadequate. They thought that the naked seeds would not give enough plants, that they would require the use of automatic sowing machines, and that

all this would imply financial loss. During the meeting, despite our tough efforts, we were not able to convince the producers to adopt the new method. However, after some discussions with some modern, progressive and dynamic producers, we finally obtained positive results.

We proceeded further with the dissemination and gradually realized the acceptance of the new method which, within a period of one to two years, was finally adopted all over the Karditsa area.

