### PROSPECTS FOR EXPANSION OF COTTON PRODUCTION IN SOUTHEAST TURKEY: (GAP PROJECT) Joseph Dloomy Ozcot Agro-Development & Consultancy Israel

#### General

Cotton is one of the major agricultural commodities in Turkey. The cultivated area for the last season was close to 750,000 ha, producing nearly 800,000 tons of lint. All areas are irrigated. While export of lint is negligible, import is estimated as high as 300,000 tons for 1998.

The textile and apparel industry in Turkey is very significant and accounts for about one-fourth of the country's total export. Textile and apparel is 20% of industrial production and employs about 30% of the labor force. It is equally important as a vehicle to secure foreign exchange. Export of textiles and apparel is estimated to surpass 9 billion \$ for 1997.

#### **Regions**

Cotton in Turkey is grown in four main regions:

- 1. Cukurova in the south
- 2. Aegean region on the west coast
- 3. Antalya on the southwest coast
- 4. GAP region in southeast Anatolia.

The Cukurova (Adana cotton) region was the leading cotton producer in the past, but lately the area has been declining due to agronomic and economic reasons.

The Aegean region (Izmir cotton) is characterized by smaller farms, but higher cotton quality. The Antalya region is relatively small.

### **The GAP Region**

The GAP Project consists of 21 dams and 14 hydroelectric power stations on two major rivers, the Euphrates and the Tigris. The total land area is 74,000 sq. km. (nearly 10% of Turkey) while the population is only about 8%. At the final stage of the project, anticipated within approximately ten years, 1,700,000 hectares will be brought under irrigation. Power capacity will be 7460 megawatt, generating 27 billion kwh. The estimated cost of the project is 32 billion \$ and will generate additional employment for 3.5 million people.

#### **Cotton in the GAP Region**

As noted earlier, this project will bring 1.7 million hectares under irrigation. One quarter (25%) of this area will account for cotton production, with estimated output of 450,000 tons of lint.

The climate of this region is semi-arid, with an annual winter rainfall of

400-600 mm. (from south to north). Temperatures are quite extreme, reaching 40 C. in summer and below zero in winter. Daily evaporation in July and August reaches about 10 mm. due to the high temperatures and the low humidity.

### **The Farming System**

The farms are private (except for a very large state farm). The size may vary from a few hectares up to 2000 hectares. In some cases, farms are split into sub-divisions, operated individually by members of the same family.

## **Mechanization**

Cotton cultivation is semi-mechanized, using small tractors and simple machinery. Herbicides are not widely used; thus hand-weeding and thinning are still very common. The most surprising fact is that there is nearly 100% hand-picking. The relatively high yields (about 4000 kg. of seed cotton per hectare, equivalent to 2.25 bales/ha) and labor cost of 5-6 US\$ a day brings the cost up to \$300/ha. Many farmers contract hand-picking for 10-15% of the value of the crop. Picking is done 2-3 times.

The reasons for the delay of the advent mechanical picking are:

- 1. row intervals are 60-70 cm., which dictates large pickers (4-5 rows) which are considered as very expensive; and
- 2. fear of damage to the quality.

Most of the gins, either rollers or saws, are insufficiently equipped with cleaning systems. Hand-picking implies traditional transportation systems: large bags with an average weight of 80 kg. (200 lb.).

### **Varieties**

Turkey has been traditionally producing medium staple to medium long varieties, the latter usually in the west coast and southwest regions. In most of the GAP region, the season is quite short. During April and October low temperatures prevail and thus medium-long varieties 1 3/32-1 1/8 are the most suitable.

Plant breeding forms a major portion of the research program in Turkey, where emphasis has been based primarily on the selection of the most suitable varieties of upland cotton. Correspondingly, the breeding program involved the

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developing of new varieties where earliness and resistance to verticilium wilt played an important role.

Lately a considerable volume of seed has been directly imported, mainly from Australia and the United States. An important reason for using those varieties is the seed quality: delinted seed and germination rates which are far better than the local, enabling the reduction of seed rating from 70 kg/ha down to 18 kg/ha.

### Water Supply

Water is supplied mainly through the main and secondary canals. (Some underground water is also pumped.) The irrigation is exclusively open - flood or furrows with little efficiency. The major reason is the charges for the system. Based on the declared size of the irrigated area, the rate is \$20/ha regardless of the amount of water which is used, roughly 7000-8000 cu.m./ha. We should also mention that some cotton is grown on extremely slopy areas, where flood irrigation is very inefficient.

## **Insect Control**

Due to the climatic characteristics, but more likely because of short history of cotton in the area, insect infestation is very low. In most of the areas, there is no need for any insecticides to be used.

## **Yields**

Yields are relatively high, averaging 1.2 tons of lint/ha. However, many farmers easily reach 1.5 tons, which makes the crop very attractive.

## **Profitability**

In view of the existing management and agronomic practices which are not very advanced (weed problems, low quality of seed, poor irrigation), it seems that environmental factors are the main contributors to such a high yield level; i.e., favorable climate and scarcity of insects.

From an economic point of view, the low cost of water and minimal usage of insecticides makes the cost of production very cheap and competitive: about 45 cents per pound on average, and probably less that 40 cents among the efficient producers. Since the demand for cotton exceeds significantly the local production, additional supply will be even more competitive against imported cotton due to transportation differences. On the other hand, Turkey should consider the negative effects of its water-pricing policy. Underpricing of water tariffs necessarily causes inefficient allocation of water and this, in turn, usually causes salinity to develop in semiarid areas.

# Ginning

By and large, ginning capacity in the GAP area is sufficient. However, raw cotton is sometimes transported as far as 300 km. to the Cukurova area. Most of the gins are roller, locally produced, and not suitable for mechanically picked cotton. Recently, however, new high capacity modern saw gins have been introduced. The most well-known is "Pure Cotton" which belongs to a huge textile group, Sanko, in Gaziantep. Its capacity is 100,000 tons of seed cotton per year. Normally, the gins purchase raw cotton and pay according to the quality of a sample at the gate. The system of loading is still manual, and transportation in heavily loaded trucks is unsafe.

## **Conclusions**

- 1. Favorable policy and environmental conditions places the GAP region as one of the major suppliers of cotton in Turkey in the future.
- 2. This will greatly increase the position of Turkey in the total world production.
- 3. Similarly, the textile export from Turkey will keep its impressive place in the world market.
- 4 Three major factors should be seriously considered:
  - a. The price of water;
  - b. The fact that intensification of cotton production will ultimately increase the insect population and accordingly the protection costs;
  - c. Introduction of mechanization, especially in harvesting, and accordingly proper ginning and efficient transportation.

**OZCOT** Agro-Development and Consultancy specializes in feasibility studies, farm management and training programs in the areas of field crops, vegetables, horticulture, animal husbandry, marketing and economics. For the past two years, **OZCOT** has been very active in Turkey, primarily in cotton projects in the GAP region. Other countries where **OZCOT** is currently active are Egypt, India and Zimbabwe.