

EGYPTIAN COTTON TRACEABILITY

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INTRODUCTION

"Egyptian Cotton" is characterized by its superior quality. It gives Egypt a competitive advantage on which a comprehensive industry could be developed, to make Egypt the main producer of Extra Fine count yarns which could be processed and exported as the finest and highest quality cottons in the world. Such products need an identity that can be reliably traced and detected. It is now up to Egypt to develop a comprehensive program to establish 'competitive advantage' by developing a distinct brand, increased demand for new products, creating systems to ensure varietal purity associated with robust traceability technologies.

Unlike many other cotton-producing countries, Egypt exclusively produces *Gossypium barbadense*, a type of extra fine cotton endowed with a longer and finer staple than upland cotton. In Egypt, seed for planting has been strictly controlled by the government, which for many years operated as the sole supplier and distributor of cottonseeds.

TRACEABILITY OF SEED PURITY.

The Cotton Research Institute, (CRI), of the Ministry of Agriculture and Land Reclamation (MALR), continues to breed high quality cotton varieties. Each year new varieties emerge, and the most promising are submitted to a ten to fifteen year path towards the seed's progenies, through Foundation Seeds, Certified Seeds, and Registered Commercial Seeds, grown by 'seed multipliers'. After a few years (generally 2-3 at the Registered Commercial level), new seeds replace the old seeds and new varieties are promulgated.

There are three major components of the new traceability strategy that will depend on implementing information technology, throughout the process from distribution of seeds to the farmer, follow up on extension programs, agriculture practices, designated cotton production area by variety and yield, Cotton Arbitration & Testing General Organization "CATGO", inspection, and market place bidding.

TRACEABILITY OF VARIETAL PURITY

Geographically, the cotton cultivated area used to extend in the past from Alexandria in the north to Aswan in the south, about 8000 Km as the two farthest southern governorates of Quena and Aswan were excluded from growing cotton.

The marked climatic difference from north to south signified difficulties in finding a single variety that would be suitable for the whole range of conditions prevailing in Egypt. Therefore, a few varieties, up to ten, are usually grown at any time. Under such conditions, contamination by natural crossing is almost inevitable. Zoning and ginning control are the two main measures that have been taken to achieve the objective of varietal purity.

ZONING

Variety zoning has been adopted on two levels; the first category is of varieties zoning, i.e. ELS and LS zoning in Delta and Upper Egypt regions, and the second level is single variety zoning within each region. The country is divided into as many varietal zones as the number of varieties under cultivation. The area of each zone i.e. the area decided to be cultivated by a variety, is determined based on the expected total demand of the local industry and exports of the variety and the expected yield per Feddan (1 Hectare= 2.38 Feddan).

GINNING CONTROL

In accordance with single-variety zoning, the one-gin one-variety system was also applied. In this system, each gin was assigned one variety only for the whole season; in this way, any possibility of seed contamination with different varieties in ginneries is strictly avoided. Also, within each ginnery, precautions are taken to prevent mixing of strains of the same variety, as strains are ginned in consequence starting by the newest one, and thoroughly cleaning the gin-stands from seeds in between each of two consequent strains.

BALE TRACEABILITY

The Holding Company (HC) of cotton and textile Industry has an important part to play in achieving the policy objective. First, it is the HC's responsibility to provide the sector with ginning capacities that separate lint from the annual seed cotton output to the highest quality standards. Second, the HC has a role also to play in contributing with other responsible government agencies in the policy program to promote cotton agriculture and the enabling mechanisms to assist and incentivize farmers to grow more cotton.

The new ginning capacity will be set up to operate to efficient lint conversion rates and ginning outturn (GOT) to the highest quality standards

Those standards are critically important and refer to:

- Elimination of contamination
- Minimizing residual trash,
- HVI bale certification and traceability systems from field to bale with the following fiber quality and bale data:
- Cotton variety/Name of cotton ginnery and location/Lot number/Numbers of bales/Bale number/CATGO lot number/Cotton grade "GATGO"/Date of gin/HVI data results.

COTTON EGYPT ASSOCIATION AND THE EGYPTIAN COTTON LOGO TRADE MARK AND TRACEABILITY

The Cotton Egypt Association is a non-profit association established in 2005 with support from the Ministry of Industry and Foreign Trade. The association works closely with local and international companies involved in the Egyptian cotton supply chain.

COMPLETE TRACEABILITY OF PRODUCT IN SYSTEM AS WELL AS ON PRODUCTION FLOOR

Supplier should have robust system in place for identification and traceability of product in system as well physically on production floor

Products should have unique and independent material codification system for raw material, in-process material and final product of each stage which are well connected as per the process flow chart of each product.

SPINNING

Dedicated spinning line for special fiber mixing to prevent contamination and mixing of other fibers.

Complete traceability system must be in place connecting cotton lot with yarn lot number. Every spun yarn lot must be coded with unique number connected to the cotton lot number.

WEAVING

Unique specification sheet for warp/weft and fabric doffs should be made which has the details of yarn lot number.

Unique sort number should be provided to every doff which will be connected to yarn lot number.

DNA BASED TRACEABILITY METHOD

The authors developed a novel process of DNA analysis for Egyptian cotton. The testing relied on the innate genetic differences between different species of cotton, such as *G. barbadense* (i.e., Egyptian cotton) and *G. hirsutum* (Upland cotton), to determine the species from which the fibers are derived. The test can also differentiate between the Egyptian cotton Varieties, all commercial Giza Varieties and Pima cotton. The authors developed the CTAB extraction method to extract DNA from Egyptian cotton fibers throughout the supply chain, up to the finished product. The laboratory is already accredited with ISO 17025 from EGAC (Egyptian Accreditation Council), Accreditation Certificate No. 216031A, and approved from ILAC (International Laboratory Accreditation Cooperation).

