Monsanto, Old to New

**History...**

Founded in 1901 by John Francis Queeny, named after his wife’s maiden name. From 1901 to 1997, Manufactured:
- Food additives
- Industrial Chemicals
- Plastics
- Insecticides
- Pharmaceuticals

1982 – First time to successfully introduce a gene into a plant cell.

It took another 12 years to test, develop, and commercialize first product:
- Round-up Ready Soybeans

This success lead to a series of divestments:
- Pharmaceuticals, Industrial Chemicals, & Plastics

...And acquisitions:
- Asgrow, Dekalb, & Deltapine

2000 – Monsanto was spun out of Pharmacia Corporation.

**Discovery...**

**Fortune 500 Company**
- NYSE: MON.
- Headquarters: St. Louis.
- Products:
  - Biotechnology
  - Plant Breeding
  - Precision Agriculture
  - Crop Protection

**Globally (2015):**
- Approx. 22,500 emp.
- Approx. 500+ facilities
- Operations in 67 countries

**New Monsanto...**
In Short...

Monsanto is a technology-driven organization.

We are focused on sustainably intensifying farming with the goal of producing better harvests from every acre of land – with lower inputs.

That opportunity is driven by advances in biology, chemistry, data science and equipment automation.
Seed/Chem Manufacturing Sites

3 Chem

17 Corn

12 Soy

3 Cotton

3 Veg

1 Sorghum

1 Canola
Aiken Facility

Founded in 1928 by Plainview & Lockney Chambers of Commerce & operated by Anderson Clayton Co.

Plant sits on 47 acres and currently employs 26 full-time employees

2 cotton gins on site supplied seed for the delinting plant

Originally cotton was delinted mechanically, and by open flame. Converted to H2SO4 in the 1950’s and then to HCL in 1970

Hollandale Facility


1977 construction began on the sulfuric delinting plant and in 1978 when construction was complete this became the world’s largest capacity sulfuric delinting plant.

Today Monsanto/Deltapine Hollandale is one of the largest cotton treating and packaging facilities in the US.
Eloy Facility

In 1952 Miller Custom Delinting was established on the east end of the city Delta and Pine Land Company, one of their biggest customers acquired Millers Delinting in 1986

Originally a H2SO4 plant; D&PL converted that plant to HCL un 1990 and in the mid 90’s built a second “Foundation” H2SO4 delinting plant

The site sits on 33 acres of land and currently employs 30 full-time employees
Need For Change

Spend multiple $M’s over multiple years on all three sites, or 1 main hub?

Opportunity to take advantage of…

• New production technology
• Better data capture
• Better automation

Improve both our manufacturing effectiveness and safety of our personnel

Optimize operations by bringing people and processes together under one roof
Lubbock Facility

Primary US Hub for all commercial cotton seed processing operations

Estimated completion date of May ‘17

40 Full Time Employees

25 Part Time Employees

~80 Trucks in/out per day during peak operation (November - March)
Hub & Spoke
# Seed Cotton Process

## Field Operations (Planting & Spraying)
Planting occurs in early to mid-autumn. The cotton plant's potential and indeterminate growth habit is managed by spraying two to three applications of growth regulators throughout the season. Prior to harvest season, one to two additional defoliant sprays are performed to remove the leaves for a cleaner harvest.

## Harvesting
Harvest occurs throughout the fall, dependent on weather conditions. Cotton producers harvest as early as possible to minimize environmental risk without sacrificing lint yield or fiber quality.

## Ginning
Trucks transport the seed cotton to Gin facilities to separate the lint and seed. The ginning equipment utilizes a revolving circular saw to pull the lint through closely spaced ribs that prevent the seed from passing through. The lint is removed from the saw teeth with rotating brushes. The lint is compressed into bales, weighing approximately 500 pounds, which in turn produces approximately 700 pounds of fuzzy seed by-product.

## Delinting
Bulk fuzzy seed is purchased from the gins and is conveyed to the production facility. Delinting begins when fuzzy seed is metered into the Acid Application Chamber where a precise recipe of acid, water and surfactant are mixed with the fuzzy seed. Acidized seed continuously flows through a drying drum and then continues to a heated buffing drum to remove the lint from the seed.

## Cleaning
The cleaning process further removes all unwanted seeds by sorting by dimension (length and width). The seed then passes through densely-separating machines, which remove lighter seeds that do not meet quality standards.

## Color Sorting
An additional step in the cleaning process is color sorting. In this step, the seeds move over sensors that use high-resolution cameras to detect materials of different colors. If sensors detect an off-color, an actuator releases a small burst of compressed air to reject the defective seed.

## Treating
Next, the seed is coated with a treatment to protect it and enhance its ability to germinate when planted. Seed treatment can contain fungicides, insecticides, microelement and other potential chemicals. Additives and equipment are used to assure uniform treatment application to each seed. Different treatment colors are used to identify seed traits and treatment types. After treatment, the seed is stored awaiting packaging.

## Packaging, Warehousing & Logistics
Finally, the treated seed is packaged for sale. Package types can include paper bags and bulk boxes. Each package is labeled with details of the contents, as well as the required legal information. Finished packages are then moved to a warehouse, where optimal temperature and humidity levels help maintain germination quality. Then based on orders, the cotton is transported to customers to plant the following spring.
Location, location, location...

One of the largest cotton patches in the world:
- Texas accounts for 1/2 of all the cotton acres in the U.S.
- 85% of all cotton in Texas is raised in West Texas.
- 1/3 of the exported cotton crop is grown on the High Plains.

Central location in the Cotton Belt:
- Minimizes freight costs across belt.
- Able to meet customer demand in a more timely fashion.

Close to our Texas growing regions:
- Monsanto Texas Cotton Breeding and Technology Center.
- Opened in 2010 due in large part to LEDA and Lubbock.
- Proximity to Texas Tech University.

West Texas Hospitality!!!
Thank You