



# New Mexico State University Extension Plant Sciences

Cotton Newsletter: Volume 5, Number 2 (August 2014)

## Cotton Season

The cotton season has continued to progress very well across New Mexico after the initial setback due to prolonged cold and hails during the early part of the season. Most cotton fields in the State are already at the cutout stage and bolls are setting rapidly. The relatively more frequent rains that we have experienced across the cotton growing areas of New Mexico have been very beneficial to cotton. In absence of any late season problem, we are expecting an average cotton yield for this season.

Please, send your comments and contributions to John Idowu (email: [jidowu@nmsu.edu](mailto:jidowu@nmsu.edu); phone: 575-646-2571. Previous editions of the Cotton Newsletter are posted on <http://aces.nmsu.edu/ces/ifcpm/cotton-production.html>

## Pink Bollworm Resistance to Bt Cotton\*

### NEWS FROM INDIA

India leads the world in production of Bt cotton, a crop genetically engineered to produce caterpillar-killing toxins from the bacterium *Bacillus thuringiensis*. Highly productive Bt cotton varieties also are widely grown in the U.S. While pink bollworm (PBW) eradication has been a highly successful, major cooperative program for U.S. producers, growers in India planted their cotton without incorporating any strategies (e.g. mass releases of sterile moths, planting non-Bt cotton as PBW 'refuges') to combat the development of Bt resistance in this or other caterpillar pests.

In the U.S. researchers from the University of Arizona and USDA screened 10,000+ PBW over 17 years in the laboratory to find four mutations in one PBW gene that encoded a protein called cadherin. The binding of Bt toxin to cadherin is essential to killing PBW. Any mutations that disrupt cadherin blocks the binding, so the pest survives. The situation in India allowed these U.S. researchers to determine if the same mechanisms and mutations in PBW were involved in the field. They were astounded to find 19 different cadherin variants that conferred Bt resistance after screening just 8 PBW!

The mechanism that allowed this great variation in India occurs by 'alternative splicing' which allows a single DNA sequence to code for many variants of a protein---a 'first.' These results suggest that DNA screening would not be efficient for monitoring resistance of PBW populations to Bt toxins.

\*A research summary was first reported in the Ag Professional newsletter for 05/27/2014. The entire article was published in the May 19 issue of the journal PLOS ONE.

~Contribution by Carol Sutherland (Extension Entomology Specialist, NMSU)

## NEWSLETTER HIGHLIGHTS

COTTON SEASON

PINK BOLLWORM  
RESISTANCE

COTTON  
INCORPORATED  
STATE SUPPORT

COTTON BREEDING  
UPDATE

COTTON PRICES

## Cotton Incorporated State Support Meeting

The Cotton Incorporated State Support Committee, chaired by Morgan Nelson, met in Cloudcroft on June 3<sup>rd</sup>, to discuss all things cotton for New Mexico and decide on a project for funding in 2015. The glandless cottonseed project is making progress in leaps and bounds and has caught the attention of Cotton Incorporated as a food source. The New Yorker has even done print and videos on the food value of cotton. Glandless cottonseed is being fed to shrimp by an NMSU student run business that can be found at [www.NMShrimp.com](http://www.NMShrimp.com). Flavored oils are also being created by Acala Farms with oil from glandless cottonseed. A recent taste test by the Yucca Cowbells found the roasted garlic flavor their favorite but all the other flavors were great too! To help with this glandless cottonseed endeavor the state support committee elected to support Dr. Jinfa Zhang and his cooperators on a project that will evaluate the field performance of new glandless cotton lines for the suitability of commercial production in New Mexico during 2015 growing season. Unfortunately, the current season has been difficult for cotton grown in Tucumcari, Clovis, and Artesia. Cotton research plots established at these sites experienced severe hail damage at a most inopportune time of cotton development. The plots in the Las Cruces area, however, are doing very well.

*~Contribution by Robert Flynn (Extension Agronomist, NMSU)*

## Cotton Breeding Update

- Several glandless lines have been developed that showed promising yield potential from the 2013 test. Figure 1 (on the right hand side) shows an example of a glandless breeding line.
- A promising Sea-island/Pima line has been developed that showed high yield potential when tested at Keith Deputy's Farm in 2013.
- These lines are under seed increase in 2014 and there should be limited amount of seed available for growers in 2015.
- Acala 1517-08 is also under seed increase in 2014. A limited amount of seed should be available for growers in 2015.



*~Contribution by Jinfa Zhang, Professor, Cotton Breeding*

**New High Residue Farming website** has been created for the western region through a Western SARE grant by Andrew McGuire (Washington State University). The link to this website is <http://westernhrf.wsu.edu/>. "High residue farming" is an umbrella term that covers cropping systems in which the volume of the soil that is tilled is reduced in order to maintain residue cover of the soil. Please visit this website for more information on current and past activities in sustainable farming practices and workshops. As field days and conferences are developed they should be posted on this website.

## Cotton Prices: 2013/2014

	2013		2014	
	Upland Cotton "A" Index*	ELS (Pima) Spot Price*	Upland Cotton "A" Index*	ELS (Pima) Spot Price*
January	85.51	102.00	90.96	161.0
February	89.71	104.00	94.05	161.0
March	94.45	106.60	96.95	161.8
April	92.68	111.50	94.20	163.6
May	92.74	128.00	92.71	
June	93.08	128.00	90.90	166.5
July	92.62	128.00	83.84	166.5
August	92.71	128.00		
September	90.09	129.00		
October	89.35			
November	84.65	159.10		
December				
<b>Average</b>	<b>90.69</b>	<b>122.40</b>	<b>91.94</b>	<b>163.4</b>

\*Source: National Cotton Council of America and prices in (cents/pound).

**Publication Team:** John Idowu (jidowu@nmsu.edu); Tracey Carrillo (tcarrill@nmsu.edu);  
Jinfa Zhang (jinzhang@nmsu.edu); Robert Flynn (rflynn@nmsu.edu); and Jane Pierce (japierce@nmsu.edu).



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