

# Breeding program making peanuts healthier for consumers

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2010-03-01 18:12:38

The New Mexico peanut breeding program has initiated an effort to breed for high-oleic acid Valencia peanuts, a trait that is gaining importance in the present U.S. domestic market to keep consumers "healthy."

There are two major advantages of including this trait in the breeding program. It reduces the level of blood LDL (low-density lipoprotein), also known as the "bad" cholesterol. At the same time, it lowers your total cholesterol levels and raises your HDL (high-density lipoprotein) — the "good" cholesterol. The second main advantage of this is it increases the shelf life by eight times compared to normal peanuts.

High-oleic acid are fatty acids that are comparable to olive oil that are as high as 70 percent to 80 percent oleic acid. In peanuts, high-oleic peanut lines contain 76 percent oleic and five percent linoleic acids compared to 56 percent oleic and 24 percent linoleic in normal lines.

Food companies, like Hershey Foods and M&M, are more interested in high-oleic peanuts in their candy confections mainly to extend the shelf life of the product. The high-oleic peanut has longer desirable flavor and shelf life during storage due to a slower decline in roasted flavor and less off-flavor development than normal-oleic peanut.

The first high-oleic peanut variety was SunOleic 95R, developed by the University of Florida in 1997. High-oleic acid peanuts produce oil with more stability and they eliminate the need for transesterification (hydrogenation) of oils, making them healthier for consumers. At present, more states and cities are banning trans fats so high-oleic oils will be becoming more popular.

The New Mexico peanut breeding program has developed a high-oleic Valencia by crossing a female parent of "Valencia – A," a variety developed by the New Mexico Agricultural Experiment Station in 1972, with a male parent "Brantley," developed by North Carolina State University, that has high oleic acid. The crossing was done by Shyamal Tallury, a breeder from North Carolina State University at Raleigh, North Carolina in 2008. The F1 material was grown at our winter nursery in Puerto Rico and F1 harvested material was grown as F2's at Dee Brown Farm in Portales in 2009.

Out of 245 seeds, we were able to identify 22 seeds that had high-oleic acid. Screening for high-oleic acid by any breeding programs was done by measuring fatty acid content of the seeds by using gas chromatography, which is a destructive method. At present, researchers are using a nondestructive single-kernel method to identify a single seed from a cross that is high in oleic acid by using a Near-Infrared Reflectance Spectroscopy (NIR). This allows the breeder to save their efforts in selecting breeding material for high oleic trait; more over, it is rapid and nondestructive. With the advances in technology, we were able to identify high-oleic peanuts from our crossed material in the early generation. Now, the question is after all this, will we be able to maintain the agronomic characteristics, especially high yield and disease resistance and the flavor of Valencia:

Nothing is predictable with regards to yield and it all goes with the year and how Mother Nature behaves. Generally, newly introduced high-oleic crops typically see a 10 percent to 15 percent reduction in yield compared to conventional crops, but that is well taken care when you contract and a premium is paid for high-oleic crop. The ultimate goal of our breeding program is to provide healthier options for today's consumers by providing food companies with reduced amounts of trans fat in the foods they produce and benefit customers to meet their saturated fat goals.

High-oleic acid peanuts benefit the growers as it pays a premium compared to regular peanuts and usually these peanuts are contracted in order to avoid the fluctuation of price at harvest.

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