

FARMING WITH TRANSGENICS

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Before I begin a brief discussion about transgenics, I would like to remind you that there were numerous papers presented dealing with this subject. I am not going to get into a discussion about performance of the different transgenics on the market. I suggest that you read and review the numerous papers contained within this proceeding. I especially encourage you to focus on data and papers presented from your area. It is always good to look at information from across the cotton belt. However, information and recommendations developed close to your home is generally better suited to your needs.

I would like to begin by saying that transgenic varieties are valuable tools and definite have a place in cotton production systems. You will be more prepared to make decisions by learning as much as you can about the options available. Transgenic varieties may not fit every farm or every situation. In order to properly utilize this technology, you will have to have a good understanding of your problems and your needs. Not only must you have a firm handle on your needs but you must study all options from an economic standpoint.

The 1996 season brought many new challenges to cotton growers. "Freedom to Farm" opened new doors for many growers. For the first time, growers could shift crops to take advantage of commodity prices. This could be done without jeopardizing his cotton support. This allowed growers in the mid-south to trade cotton acreage for corn and other crops. This will be beneficial from a crop rotational standpoint. However, it complicates the farm operation. Now a grower must farm almost three years ahead. Careful consideration of all production practices must now be done with the next crop in mind. Be it cotton or be it corn, growers must plan ahead. Freedom to Farm has also complicated farm booking. Closer attention must now be paid to equipment needs, finance and overhead distribution. While some crops may at times be very attractive on the futures board, not many crops will pay cotton overhead better than cotton.

The 1996 year was the first time a variety of cotton genetically engineered to express the Bt toxin was offered commercially to growers. A transgenic variety tolerant to the herbicide Buctril has been on the market for a couple of years, but 1996 brought the first Bt cotton variety. Also, it was the first year a grower had to enter into a licence agreement before seed could be bought. This licence

agreement was new and different and received mixed reviews from growers. The licence agreement was entered into with a company other than the one supplying the seed. There indeed were many new develops and new concepts delivered to growers in 1996.

This is an indication that times are indeed changing. For many years growers have used conventional means to deliver pest control to his crop. Now it appears that the cotton seed itself will play a role in crop protection. Traditionally, we have depended on the cotton seed to deliver a stand of cotton plants. Now via seed treatments and genetic engineering, the seed has the potential to deliver cotton plants, systemic insecticides, fungicides, tolerance to selected herbicides, expression of Bt toxin and others. The cotton seed should now be considered as more than just a seed but a planting unit. As transgenic varieties become more common and more available, cotton seed quality will be a significant concern. A concern to the seedsman as he is attempting to deliver a new level of technology to the fields and performance is critical and a concern to the grower because his cost per acre is going up. If you add the per acre cost of the technology and the seed and convert that to a per bag cost, the number is very large. Some argue that the technology cost is for the value added technology and not seed cost. If the technology is on the seed coat or contained within the seed itself, then it is seed cost. Growers will expect and deserve the highest quality planting seed possible. Seed quality and stand establishment is critical to this new form of technology delivery.

Transgenic cotton has been tested for several years. Most of these test were either in-house industry test, test comparing the transgenic line to it's parent line or test of the value added trait itself. In other words, tested to see if they would yield as well as the line from which they were developed or tested to see if the added trait worked. 1996 was the first year transgenic lines were entered into University Variety Trials. I encourage each of you to get copies of your state variety trial results and see how these varieties performed in your area. As a general statement, the transgenic cotton varieties, Bt, Roundup Ready and BXN, did quite well.

As you, the cotton grower decide what varieties to plant , and whether or not to plant a transgenic line, you must consider all factors. I encourage you, and I know you will, look at all angles before a decision is reached. The confines of this small paper will not allow me to discuss the possible combinations of factors which must be considered. These factors will vary from farm to farm and especially from growing area to growing area. For instance, if you are a producer in an area where the tobacco budworm has not been a pest, the decision regarding Bt cotton is different from growers who have experienced the devastation of this pest. If you are a grower who is doing a good job controlling weeds with the current tools, you will have to search for the inducement to plant a herbicide tolerant

variety. In general, for you to change what you are doing you must have reason. That reason is generally associated with increased profits. Increased profits occur either by increasing your yield while controlling cost, reducing cost while maintaining production or by reducing risk which stabilizes production and cost. All factors must be considered and weighed. If there is a transgenic variety that provides you a trait you need or want, a comparable cost, will produce comparable yields and is adapted to your area, you should give it a look. If on the other hand, after a through study of the alternatives, you feel there is no advantage for you changing I advise to stay with what is proven.

Bt cotton definitely has a place in the cotton belt, however it fits some areas better than others. An example of where the fit may be different is before and after Boll Weevil Eradication. There is definitely a different need for and utilization of Bt cotton in an active eradication zone as compared to an area declared weevil free. Management of the Bt cotton will also be different. There are also classes of insecticides being developed which will compete with and perhaps compliment Bt. Resistance management will prevent all the acreage being planted to Bt varieties. There will always be a great need for high yielding conventional varieties and conventional chemistry to aid in pest control.

BXN and Roundup Ready varieties also have a place in

cotton production. The appearances of more and more cases of herbicide resistance will give this technology a fit. This technology allows a grower to rotate chemistry reducing the incidence of resistance. This technology may allow growers to reduce the rates, or perhaps not apply, certain preemergence herbicides in sandy, low organic matter soils. This may reduce potential for herbicide injury to seedlings and result in better early season growth. As with any system, there will be risk associated with this technology. Risk such as making applications of herbicides to non tolerant varieties, a fatal mistake, or drift of herbicides to non tolerant varieties or crops. Also, the risk associated with the relatively narrow window of opportunity for an over the top application of Roundup to Roundup Ready cotton.

While transgenic cotton definitely has a place in our production systems, their use may not be as simple as you may want to believe. Good management decisions must be made in order to reap any positive benefits. Whether or not to use transgenic cotton varieties must be a careful decision based on the bottom line of risk management and profits. Transgenics are good tools and do have a fit. Their profitable and sustained adaptation will require continued development, testing and intensive management.

