EFFORTS BY COTTON INCORPORATED TO IMPROVE THE PROFITABILITY OF COTTON BY INCREASING THE VALUE OF GIN BYPRODUCTS

Tom Wedegaertner
Cotton Incorporated
Cary, NC

Abstract

Improving the profitability of cotton production can only be accomplished by reducing input costs or by increasing the value of the outputs. The goal of the cottonseed program is to increase the value of the non-lint outputs of cotton ginning (seed, motes and waste). The value of cottonseed has been improved by increasing the demand for cottonseed. The increased demand for all fats and oils, for use in biodiesel, has also helped improve the value of cottonseed. The conversion of gin waste into value-added products is beginning to have a similar effect on the value of gin waste. The use of gin waste as a component in erosion control products, building products, composites and laminates represents an opportunity to dramatically increase the value of cotton gin waste.

Introduction

The 1991 cotton crop produced a record supply of cottonseed that exceeded 7.0 million tons. This was the largest supply of cottonseed that had been produced for several decades. The large cotton supply, combined with logistical and infrastructure issues, resulted in a record low price for cottonseed. In the southeastern United States cottonseed prices, at harvest, averaged only about $45 per ton. Cotton growers decided it was time to initiate a cottonseed research and promotion program at Cotton Incorporated. The goal of this program is to increase the value of cottonseed at the grower level. In addition to the marketing efforts of Cotton Incorporated, other factors have helped push the price of cottonseed to an all-time record level. Cottonseed prices currently exceed $200/ton throughout much of the Cotton Belt and have broken a new ceiling of $350/ton in markets such as California, Washington and New York. This Program recently has been expanded to also focus on other cotton gin byproducts, primarily cotton gin waste, in an effort to increase the value of all cotton gin byproducts and improve overall cotton profitability.

Cottonseed

Marketing research in the early 1990s determined that, in the short term, the value of cottonseed could be increased by expanding the demand for its use in dairy cattle rations. It also was determined that it would be easier to expand the demand for cottonseed among dairy producers in the Upper Midwest not currently using cottonseed, rather than convince large Western dairies to use more cottonseed. Marketing efforts over the past 15 years have focused considerable attention on this target, resulting in a loyal band of users who value the feed as a premium triple source of fiber, protein and energy. It also was determined that the major barrier to market penetration was the difficult handling characteristics of fuzzy cottonseed. To eliminate this barrier, EasiFlo™ cottonseed was developed. It offers the same nutritional benefits as fuzzy cottonseed, but is starch-coated to dramatically improve handling. Two commercial plants currently produce EasiFlo cottonseed, and demand remains steady.

The cornerstone of Cotton Incorporated's long-term research strategy has been the removal of gossypol from cottonseed. A major breakthrough occurred in 2006 when Texas A&M University researchers found a way to genetically reduce the amount of the natural toxin in the seed. While still several years away from commercial viability, gossypol removal will become closer to reality as researchers turn their efforts to investigating ways to fully exploit the gene technology, and maximize value at the gin level.

In other long-term research, a minor effort has focused on solving the aflatoxin problem in cottonseed. Significant progress recently has been made in this research area.

Cottonseed Oil

During the 1990s, Cotton Incorporated cooperated with the National Cottonseed Products Association (NCPA) to promote cottonseed oil in the restaurant and food trade in a three-year advertising campaign. Just last year, on the heels of New York City's ban of trans fats, NCPA reinitiated its effort to promote cottonseed oil to the food industry, leveraging the newfound opportunity to position cottonseed oil as a stable vegetable oil that does not require hydrogenation (the process that produces artificial trans fats). Cottonseed oil demand has effectively doubled, and the industry is enjoying unprecedented demand and record prices.

Biodiesel

Clemson University researchers are currently investigating the use of cottonseed oil as a fuel additive rather than a fuel substitute. Preliminary data show that cottonseed oil may offer two key advantages over other oils with its unique lubricity properties and as a low sulfur diesel pollutant. Unlike all other biodiesels that increase NOX emissions, cottonseed oil may actually *reduce* NOX emissions.

Cottonseed Meal

Cottonseed meal represents a relatively untapped marketing opportunity for ginners. It is an area that will require an investment in research and promotion to capture the full value of this byproduct. One company that has had great success with cottonseed meal is Hollybrook Cottonseed Processing. Formed in 2005 in response to the alternative-fuel boom, the Louisiana mini mill has developed an extrusion process that closely resembles the historical method of pressing oil from delinted whole cottonseed. The resulting mechanically expelled cottonseed meal, or "old-process cake," is beneficial to beef producers as it retains more of the oil, and all of the cottonseed hull for a cake that provides bypass protein, oil and fiber. Furst-McNess Company is the exclusive distributor for the cake. Hollybrook's investment introduced a new profit opportunity to the Mid South's cotton farmers and, in turn, provides a nutritious local feed supply for local cattle farmers.

Cotton Gin Waste

Each year, U.S. cotton gins produce more than 2 million tons of cotton gin waste. This represents a significant liability and disposal problem for the ginning industry. The most significant development, and a notable value-add success story, has been the creation of cotton-based erosion control products – the first of their kind in the erosion control industry. GeoSkin™ Cotton Hydromulch, developed as an alternative to wood and paper mulch products, was followed by the introduction of its premium counterpart, HydraCX$^{2™}$ Cotton Hydromulch (formerly Cotton Fiber Matrix™), for use on steep terrain. In both products, the naturally porous cotton fiber matrix contours to uneven surfaces to control erosion and establish grass on construction sites. A national network of 70 distributors markets these products.

The use of ground cotton gin waste as a substitute for wood products in composite resins, particle boards and thermal plastic decking boards also is being investigated. Ground cotton carpel (bur) has unique physical and chemical properties that give it a unique advantage over wood products in these applications.