

AN UPDATE ON ROUNDUP READY® FLEX COTTON
J.A. Burns, R.E. Cerny, K.A. Croon, R.A. Ihrig, M.E. Oppenhuizen, B. Sammons, and R.D. Voth
Monsanto Company
St. Louis, MO

Abstract

Roundup Ready Flex cotton technology has been designed to provide an expanded window for over-the-top applications of Roundup® agricultural herbicides with greater herbicide rate flexibility. This is expected to result in increased grower convenience and potentially in the reduced need for specialized sprayer equipment currently in use with Roundup herbicides for cotton weed management.

Roundup Ready Flex cotton, event MON 88913, was created by transforming Coker 312 plant material using a disarmed *Agrobacterium tumefaciens* method and a novel CP4 EPSPS gene construct. The CP4 EPSPS protein as expressed in Roundup Ready Flex cotton, which imparts tolerance to glyphosate, is the same protein as contained in Monsanto's current Roundup Ready cotton product. The CP4 EPSPS protein is expressed in both vegetative as well as reproductive tissues necessary to provide tolerance to Roundup agricultural herbicides.

Roundup Ready Flex cotton has been tested to date in various tolerance, agronomic, regulatory and weed management systems trials by a variety of academic, crop consultant and Monsanto personnel. In multiple years of tolerance testing, Roundup Ready Flex cotton showed little or no effect from sequential over-the-top applications of glyphosate at high rates. Replicated trials were established in multiple sites across multiple geographies in the U.S. Cotton Belt.

In agronomic trials no negative transgene effects were detected when evaluating parameters such as yield, fiber quality and cotton growth (maturity & vigor) in Roundup Ready Flex cotton compared to its negative isoline. Testing was conducted in multiple years in replicated trials in the absence of Roundup herbicide. Field trials and regulatory studies have been established since 2000 which have provided the information necessary to support submissions to U.S. regulatory agencies in 2003 and 2004.

Weed management studies were established in 2003 with academics at fourteen universities across the U.S. Cotton Belt from the Carolinas to California. Research results have demonstrated good to excellent control of a number of annual and perennial grass and broadleaf weed species with Roundup agricultural herbicide applied alone and in combination with other products including diuron, fluometuron, pendimethalin and others. Timely applications of Roundup agricultural herbicides to Roundup Ready Flex cotton varieties will continue to be critical in order to avoid the negative impacts of weed/crop competition.

Monsanto Company has broadly licensed the Roundup Ready Flex cotton technology to seed company partners. Numerous seed companies are expected to release Roundup Ready Flex cotton in their product lines in 2006 contingent upon regulatory approval. Roundup Ready Flex cotton testing is expected to continue in 2004 with expanded testing in regulated trials across the Cotton Belt.