



1521 New Hampshire Avenue, N.W.
Washington, DC 20036
(202) 745-7805 • FAX (202) 483-4040
www.cotton.org

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May 17, 2021

Review and Reregistration Division (7506P)
U.S. Environmental Protection Agency
Office of Pesticide Programs
1200 Pennsylvania Ave., NW
Washington, DC 20460-0001

Re: MSMA Proposed Interim Registration Review Decision Case Number 2395, December 2020

Dear Director Edwards:

The National Cotton Council of America (NCC) would like to be on record in strong support for the continued use of MSMA herbicide on cotton. As explained below, MSMA is essential to combat growing resistance in weed species to one or multiple herbicide Modes of Action (MOA), including glyphosate and ALS inhibitors. Mechanical cultivation is not an option, and the availability of MSMA, used alone and in combination with other weed control tools, is essential to cotton production.

Economic Importance of U.S. cotton

The NCC is the central organization of the United States cotton industry. Its members include producers, ginner, cottonseed processors and merchandizers, merchants, cooperatives, warehousemen and textile manufacturers. A majority of the industry is concentrated in 17 cotton-producing states stretching from California to Virginia. U.S. cotton producers cultivate between 10 and 14 million acres of cotton with production averaging 12 to 20 million 480-lb bales annually. The downstream manufacturers of cotton apparel and home furnishings are located in virtually every state. Farms and businesses directly involved in the production, distribution and processing of cotton employ more than 115,000 workers and produce direct business revenue of more than \$22 billion. Annual cotton production is valued at more than \$5.5 billion at the farm gate, the point at which the producer markets the crop. Accounting for the ripple effect of cotton through the broader economy, direct and indirect employment surpasses 265,000 workers with economic activity of almost \$75 billion. In addition to the cotton fiber, cottonseed products are used for livestock feed and cottonseed oil is used as an ingredient in food products as well as being a premium cooking oil.

Fiber Quality

The preservation of yield potential achieved by the MSMA mix is important to revenues in terms of total pounds of cotton available for sale. However, the fact that weed infestations also reduce the value of the cotton harvested may be overlooked. Cotton lint color and cleanliness are important economic traits for cotton. While difficult to quantify, weed leaves and stalks that contaminate cotton fiber during harvest lead to marketing loan value and market price discounts for stains and bark.

MSMA Cotton Use Profile

MSMA use on cotton is primarily a direct spray, post emergence herbicide that provides a unique alternate MOA that can be tank mixed with glyphosate and other post emergence herbicides for superior control of major cotton weed pests including, but not limited to pigweed, grasses, nutsedge, and morning glory.

According to 2004 data compiled by NCC on herbicide use across the U.S. Cotton Belt, MSMA is used on 2.1-3.5% of total acreage at pre-plant/burn-down period of the growing season, 13% of acreage in Texas and the Southeast region at pre-emergence, and 32-39% at post-emergence prior to first bloom stage of the season in the Southeast and Mid-south regions. The application rate averages 2 lbs. ai/A at pre-plant, .875 lbs. ai/A at pre-emergence, and 2 lbs ai/A post emergence.

Since then, EPA has limited the use of MSMA to over-the-top (OTT) applications to cotton three to six inches in height until first square and postemergence directed applications to cotton three inches until bloom. The current available uses shifts MSMA availability to more effectively utilize the alternative MOA to eliminate weeds that may be/are likely to be evolving in resistance to the remaining few herbicide MOAs such as glufosinate, glyphosate, and auxins, particularly in the problematic Palmer amaranth (pigweed) species.

It is estimated that 70+% of the 2021 cotton crop will be planted to cotton varieties containing auxin resistant traits (either 2,4-D tolerant or Dicamba tolerant traits). The majority of the market appears to be held by the Dicamba tolerant trait. Limitations placed on the Dicamba chemistry provides large buffer zones not eligible for Dicamba application as well as seasonal cut-off dates for application. In buffer areas and post auxin cut-off dates, few herbicide options remain. MSMA offers a particularly important MOA that meets the needs of the areas and time periods where auxins are removed from availability. The use in buffer zones is extremely important to provide an alternative to relying on glufosinate and glyphosate use as the only means to provide weed control.

EPA noted in the PID (Mary Elissa Reaves, 2020) that the maximum acreage of cotton with MSMA use between 2015-2019 was less than 5%. The NCC urges EPA to recognize that the use of MSMA is not extensive, but focused on critical niche situations with few, if any, other options.

University extension weed scientists have documented glyphosate resistance in horseweed in 14 states. Tropical spiderwort has a natural tolerance to glyphosate. Glyphosate resistance is also documented in pigweed in Georgia, South Carolina and North Carolina. Additionally, there is glyphosate resistance in cocklebur in South Carolina, common waterhemp in Missouri, and common ragweed in Arkansas, Missouri and North Carolina.¹ In Texas, weed specialists have documented resistance to ALS inhibitors in Italian ryegrass and johnsongrass, amide herbicide resistance in barnyard grass, and symmetrical triazine herbicide resistance in pigweed and kochia weed biotypes.²

¹ NC State University, York et al., Document ID: EPA-HQ-OPP-2006-0201-0190.1

² Texas A&M, Cooperative Extension, Document ID: EPA-HQ-OPP-2006-0201-0207.1

In light of growing glyphosate and ALS inhibitors resistance in significant weed pests in the Cotton Belt that have emerged over recent growing seasons, producers need MSMA for control of annual broadleaf weeds and grasses where alternative herbicides are no longer effective. MSMA can prolong the effectiveness of glyphosate and ALS inhibitors and forestall further glyphosate resistance. Glyphosate is no longer a stand-alone option.

In 2020, Palmer amaranth populations resistant to Dicamba were identified in Tennessee (<https://www.dtnpf.com/agriculture/web/ag/crops/article/2020/07/27/dicamba-resistant-palmer-amaranth>) while scientists in Arkansas confirmed Palmer amaranth populations resistant to glufosinate (<https://ocj.com/2021/02/glufosinate-resistant-pigweed/#:~:text=Palmer%20amaranth%20is%20only%20the%20second%20weed%20in,running%20out%20of%20herbicide%20options%20to%20control%20it.>) The growing challenge to manage Palmer amaranth with few herbicide MOAs stresses the need for new herbicide MOAs, while maintaining rotations of current MOAs until new products are discovered. MSMA is a critical MOA necessary to delay the loss of current alternative MOAs.

Mechanical Cultivation as an Alternative

There are significant environmental benefits from herbicide tolerant (HT) cotton. Producers have both an economic and environmental imperative to use and preserve best available technologies. Since the commercialization of HT cotton, growers have widely adopted agronomic practices of reduced tillage (no-tillage and strip-tillage) farming. Soil conservation practices save approximately 1 billion tons of soil per year in the U.S., 306 million gallons of tractor fuel, and reduce greenhouse gas emissions. According to *Cotton Incorporated* researchers, conservation tillage practices as adopted in the U.S. from 1996-2004 had the effect on carbon dioxide reduction equivalent to removing 27,111 cars from the road. The *Environmental Impact Quotient* (EIQ) developed at Cornell University can be used as a robust measure of environmental impact of technologies, as it incorporates key toxicity and environmental exposure data related to individual products. The EIQ has decreased by 17% in the U.S., largely due to advances in genetically modified cotton as it relates to pesticide use reduction and air, water, and soil conservation, while yields have increased 25% from 1994-2004.³

If glyphosate technology is further compromised, conservation tillage will be jeopardized if growers are forced to return to the previous practice of mechanical cultivation to control weeds that cannot be addressed if herbicide registrations such as MSMA are cancelled. Thus, environmental benefits of HT technology such as reductions in soil erosion, pesticide runoff, stream siltation, and fuel emissions would diminish should producers have to plow to control weeds. From an economic standpoint, cultivation increases equipment, labor, and fuel costs at a time when many input prices are the highest in history. Therefore, cultivation is not an economically feasible option, but instead a costly component of weed management systems. Furthermore, assuming that mechanical cultivation were an economically feasible option, cultivation is an early season option only, and untimely rainfall renders tillage options useless.

Also note that MSMA herbicide is needed in conjunction with glyphosate and the other chemicals proposed by EPA as alternatives. Its re-registration remains vital as an irreplaceable, economically

³ Cantrell, Roy...

feasible, and minor-use tool to control pests that would otherwise develop new or increased glyphosate resistance, in order to help preserve the future of cotton production.

Conclusion

MSMA is a critically important, irreplaceable weed pest control tool for America's cotton growers. MSMA is essential to combat growing glyphosate and ALS inhibitors resistance. Glyphosate is no longer a stand-alone option, and growing glyphosate and ALS inhibitors resistance is a significant and serious concern to cotton growers. MSMA is a pivotal component of cotton growers' response to these resistance problems, making MSMA an essential and irreplaceable weed control tool, whether used alone or in combination with other weed control strategies. For these reasons, the NCC strongly supports the continued used of MSMA herbicide on cotton.

The NCC appreciates this opportunity to provide these comments.

Sincerely,

A handwritten signature in black ink that reads "Steve Hensley". The signature is written in a cursive style with a large, sweeping initial "S".

Steve Hensley
Senior Scientist, Regulatory and Environmental Issues
National Cotton Council