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April 30, 2018

Office of Pesticide Programs
Regulatory Public Docket (7502P)
U.S. Environmental Protection Agency
One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

RE: Docket No. EPA-HQ-OPP-2012-0329

Dear Ms. Hathaway:

The National Cotton Council (NCC) appreciates this opportunity to provide comments on the Environmental Protection Agency's (EPA's) "Registration Review; Draft Human Health and/or Ecological Risk Assessments for Several Pesticides," in particular Acetamiprid. The NCC appreciates the EPA's compliance with the Food Quality Protection Act (FQPA) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and acknowledges the many accomplishments of the EPA that have resulted in enhancing the safety of U.S. food and fiber production for consumers. The NCC does not believe the general public fully understands the extreme measures employed by EPA to assure crop protection products, used as labeled, continue to provide the public with affordable, safe food and fiber. The NCC has reviewed the supporting documents EPA has drafted for Acetamiprid, and urges EPA to highlight the unique mode of action (MOA) with no issues or concerns for human health. The NCC urges EPA to recognize that since 2003 this unique MOA has provided cotton producers an additional tool to enhance Integrated Pest Management (IPM) programs, Insect Resistance Management (IRM) programs while preserving or enhancing human safety, a benefit that is seldom acknowledged.

The NCC is the central organization of the United States cotton industry. Its members include producers, ginners, cottonseed processors and merchandizers, merchants, cooperatives, warehousers 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 9 and 12 million acres of cotton, with production averaging 12 to 18 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 125,000 workers and produce direct business revenue of more than $21 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 280,000 workers with economic activity of almost $100 billion. In addition to the cotton fiber, cottonseed products are used for livestock feed and cottonseed oil are used as an ingredient in food products, as well as being a premium cooking oil.

The NCC believes the EPA's Human Health Risk Assessment, although overly rigorous, clearly shows the labeled uses of this product are safe. The NCC urges EPA to acknowledge the human health safety of this product in its benefits consideration. The NCC notes EPA's Draft Human Health Risk Assessment for Registration Review states "the existing toxicology database for Acetamiprid is complete and considered adequate for Food Quality Protection Act (FQPA) Safety Factor (SF) evaluation, including developmental and reproduction toxicity studies, acute, subchronic, and developmental Neurotoxicity studies and immunotoxicity studies…HED reduced the required FQPA SF for Acetamiprid from 10X to 1X based on the completeness of the toxicity data base, the selection of endpoints based upon the most sensitive effects of concern (i.e., developmental effects, for which a clear no observed adverse effects level (NOAEL) and lowest observed effects level (LOAEL) were identified, the lack of residential uncertainties for pre- and /or post-natal toxicity, and the complete exposure databases which account for all metabolites and/or degradates of concern and do not underestimate the potential exposure and risk for infants and children." With the completeness of the data, EPA concluded "Even though conservative assumptions were used, acute and chronic dietary risk estimates are not of concern for the general U.S. population or any of the population subgroups."

The NCC believes the EPA's Preliminary Environmental Fate and Ecological Risk Assessment is overly conservative and should be refined. The NCC notes EPA's "semi-field (tunnel) studies suggest that there are no detectable adverse colony-level effects" to bees, and further that EPA concluded "However, for Acetamiprid there is comparatively little apparent toxicity to bees (based on available data) relative to the nitroquanidine-substituted neonicotinoids, which are highly toxic to bees." The NCC continues to point out the tunnel studies represent force-feeding scenarios and overestimate exposure. However, even under such extremes, the safety to bees should be emphasized as a benefit component of the product.

The modeling scenario of 4 applications (seasonal max), each applied at the maximum single application rate, and applied with the minimum retreatment interval (7 days) does not appropriately reflect production practices nor IRM strategies. The NCC disagrees with EPA's assumption that Acetamiprid treated small and medium grasses are in treated cotton fields and available for avian diets. The assumption totally disregards weed management in cotton production. The combination of the assumptions greatly exaggerates avian risks.

The NCC urges EPA to more accurately reflect production practices and to recognize that the majority of the cotton fields of the U.S. are void of small grass seeds for birds, and certainly do not make up the entire diet source for birds. Emerging cotton seeds are not highly competitive, and weed control is essential to cotton production. A pre-plant weed control program removes weeds before planting, followed by at-planting or post planting residual herbicides and post emerge herbicides to maintain a weed free field. EPA is aware of these practices as recommended by the Weed Science Society of America (WSSA: https://www.cambridge.org/core/journals/weed-science/article/reducing-the-risks-of-herbicide-resistance-best-management-practices-and-recommendations/2E46792A8800CB7B292EB1AAAEA3ACE9).

The NCC reminds EPA that the benefits of this product are similar to the neonicotinoid products pre and post bloom. The NCC has commented on EPA's "Benefits of Neonicotinoid Insecticide Use in the Pre-Bloom and Bloom Periods of Cotton." NCC was appreciative that USDA/EPA recognized the weight of science that cotton pollen is not attractive to bees and nectar is attractive only under certain conditions (https://www.ars.usda.gov/ARSUserFiles/OPMP/Attractiveness%20of%20Agriculture%20Crops%20to%20Pollinating%20Bees%20Report-FINAL_Web%20Version_Jan%203_2018.pdf). The NCC appreciates that EPA's Biological and Economic Analysis Division (BEAD) recognizes the importance of neonicotinoids in cotton pest management programs stating, "*BEAD concludes that the benefits of neonicotinoids are high during the pre-bloom and bloom period for cotton*."

The NCC appreciates the EPA's recognition of the variability of insect pest pressure among cotton production regions of the U.S., and hopes EPA understands the variation between years within a region. The NCC notes an error in the EPA's use of the citation for cotton regions (Wrona et al., 1996) and notes that rather than identifying the "Plains: New Mexico, Kansas, Oklahoma, and Texas" the citation refers to the region as "Southwest: NM, OK, TX" with Kansas production being included.

The importance of variability of pest pressure between years directly impacts the number of crop protection treatments necessary and the assumptions EPA makes regarding alternatives. State university experts strive to address IRM with producers during a given crop year by attempting to limit repeated use of a single pesticide MOA while complying with maximum seasonal use requirements imposed on product labels. Every loss of a MOA combined with additional restrictions on the maximum seasonal use of other MOA's results in higher selection pressure for resistant pest development.

Similarly, the EPA stated a consideration of reducing the rate of the neonicotinoids as a potential mitigation solution. Science has clearly shown that reducing the rate of pesticides to the minimum efficacy results in more rapid selection for resistant genotypes by allowing higher survival of heterozygous resistant genotypes. The NCC urges EPA to avoid rate reductions that would result in inadequate efficacy and/or increased selection for resistant pest genotypes.
The NCC additionally urges EPA to recognize that aerial application is critical to IPM practices. Cotton producers and their independent crop consultants manage large acreages and monitor the density of the pest populations twice each week of the growing season as recommended by their state extension experts. Once the pest population exceeds the pest density threshold, it is imperative to be able to quickly treat the acreage to protect against economic losses. Aerial application is critical to the timely treatment of the large acreages. Today's aerial application equipment has adopted abundant technology to ensure safety of aerial applications that minimizes drift concerns of the past. The loss of aerial applications would likely force reevaluation of thresholds to account for timing delay of application, thus forcing producers to begin treatment at lower insect pest densities.

The NCC notes that Table 2, page 7, footnote 2 (Hutmacher et al. (2012)) is not an accurate statement for all gins, and suggests updating estimated value of cottonseed/acre. Given average yields, the USDA ginning cost per acre, and the current value of cottonseed, the shortfall is about $45 per acre. In some areas, the value of cottonseed is not enough to cover ginning charges.

Some producers are paying an additional $24 to $40 per bale for ginning. The 2010 – 2014 data does not reflect gross revenue and costs of production in the past few years. The gross revenue and cost of production data should be updated to included 2015 – 2017 data. Cotton prices were unusually high in 2010 – 2013 due to China's stocks policy. Prices from 2014 – 2017 have been much lower. Production costs are also higher than in 2010 – 2014. In Table 2, the data source is unclear for the Plains and the West since the USDA/ERS cost of production data is only provided for the Southern Seaboard, Mississippi Portal, Prairie Gateway, and Fruitful Rim.

Alternatives
EPA notes in the last paragraph on page 2, "Impacts arise due to growers using alternative insecticides for control of key cotton pests including plant bugs and stink bugs. BEAD concludes that most growers currently relying on neonicotinoids during the pre-bloom and bloom periods would switch to organophosphate and/or synthetic pyrethroid pesticides. These alternatives can likely be used in a manner to achieve similar control to neonicotinoids; thus, yield effects are not anticipated, but pest control costs are likely to increase. Given the capacity of synthetic pyrethroids to flare secondary pest outbreaks, the impacts of restricting neonicotinoids may be underestimated."

First, the NCC believes a critical flaw in the EPA's procedure to identify alternatives is the lack of transparency in reporting to the public EPA's current risk assessment of the identified alternatives. By stating one product has a risk of concern but that there is an alternative product, EPA implies that the alternative product will be available and that the alternative product has less risk of concern. The NCC does not believe it is appropriate to make a claim of an alternative product if that claimed alternative product is currently under registration review and has similar or greater risk concerns. The cascading effect results in sequential restrictions on MOA's until there is no alternative and no pest control available. The NCC requests that the EPA clarify if the stated alternatives have clearly demonstrated no concerns, including relative to honey bees, for use during pre-bloom and blooming periods of cotton production.

Second, the NCC believes EPA should evaluate alternatives based on the seasonal use for control of all pests, not just the target pest of the neonicotinoids. The flaw in the EPA's present approach ignores other pest uses of pyrethroids and organophosphates that reduce the amount available to replace neonicotinoid applications without exceeding the seasonal maximum use and without consideration of IRM recommendations for rotation of MOA. Management systems for the entire cotton pest spectrum are complex and IRM for other pests could be compromised.

Third, the NCC disagrees with the EPA's statement that "yield effects are not anticipated". The NCC notes that the pyrethroid and organophosphate chemistries have a long history of multiple agricultural and urban uses. Unfortunately, scientists have documented multiple pests (some in isolated areas, some across broad areas) that have evolved resistance to these chemistries (citations and additional discussion below). Due to the lack of new insecticidal MOA's being registered, university scientists often recommend application of two MOA's in a single application when cross resistance has not been identified. Based upon the supporting science, the loss of a MOA would result in less efficacy (i.e. fewer damaging pests controlled) which will inevitable result in yield reduction.

Fourth, the NCC agrees with the EPA that “Given the capacity of synthetic pyrethroids to flare secondary pest outbreaks, the impacts of restricting neonicotinoids may be underestimated”. University extension scientists monitor in-season pest pressure and, if needed, alter their recommendations to producers during a given production season. An example would be altering recommendations due to increased observations of a secondary pest with a goal to avoid flaring secondary pest outbreaks. Secondary pest outbreaks often result in costly repeated insecticide applications as well as yield impacts (Horton et al.2005, Dutcher 2007). Documentation of “flaring” secondary pest outbreaks is difficult (Hardin et al. 1995, Dutcher 2007), but has been demonstrated for mites and aphids (Hill et al. 2017), both pests of concern for cotton production. Gross and Rosenheim (2011) analyzed pest-control practices for 969 cotton fields spanning nine years and 11 private ranches in California. They reported early-season broad-spectrum insecticide treatments for plant bugs was attributable for secondary pest outbreaks, accounting for 20% of late-season pesticide costs (estimated in 2010 US Dollars to be an additional $6.00 per acre). These data would suggest that a reliance on the stated alternatives does underestimate the impact of restricting neonicotinoids because the evaluation does not account for flaring of secondary pests or the additional applications that are typically required to manage a scenario that has flared secondary pests.

Aphids and Whiteflies

The NCC disagrees with EPA’s interpretation of the UGA 2016 publication at the top of page 16. For the record, the entire context of the cited document states:

“Aphid Management
Cotton aphid is a consistent and predictable pest of cotton in Georgia. Aphids will typically build to moderate to high numbers and eventually crash due to a naturally occurring fungus. This fungal epizootic typically occurs in late June or early July depending on location. Once the aphid fungus is detected in a field (gray fuzzy aphid cadavers) we would expect the aphid population to crash within a week.

Aphids feed on plant juices and secrete large amounts of “honeydew”, a sugary liquid. The loss of moisture and nutrients by the plants has an adverse effect on growth and development. This stress factor can be reduced with the use of an aphid insecticide. However, research conducted in Georgia fails to consistently demonstrate a positive yield response to controlling aphids. Invariably, some fields probably would benefit from controlling aphids during some years. Prior to treatment, be sure there is no indication of the naturally occurring fungus in the field or immediate vicinity. Also consider the levels of stress plants are under, vigorous and healthy plants appear to tolerate more aphid damage than stressed plants.”

Additionally, on page 41 of the cited publication, aphids are listed as the pest in column one, with adjacent columns showing optional insecticides for aphid control, insecticide class for resistance management practices, and the last column states “*Apply when aphids are abundant and seedling leaves are severely curled or when “honeydew” is present in older cotton. A naturally occurring fungal disease often eliminates the need for sprays, but this epidemic occurs only after aphid population reach high levels and tends to be less effective late in the season.”* The EPA’s interpretation that the above citation indicates “Aphids are likely not primary targets of insecticide applications because aphids often build to moderate population size in cotton fields before crashing naturally due to a persistent fungal epizootic infection (UGA, 2016)" clearly is a misinterpretation of the publication.

The NCC would like to clarify that aphids and whiteflies are a concern in every cotton region, and are typically present but do not always reach treatment criteria. Many factors must be considered in aphid and whitefly management in each region. Drought stress, presence of honey dew, stage of the cotton crop, diversity and proximity of other crops (for example as row crops and vegetable crops in CA, AZ, and GA must consider resistance selection from each other) and many other factors (including reports of natural aphid fungus in some regions) complicate the decision to invest more money for aphid control and/or whitefly control. For aphids, producers can wait for the fungal epizootic too long and suffer yield loss. At times, producers make the aphid treatment and the epizootic occurs within a few days. The producer's treatment decision is complex. Tremendous research efforts have attempted to develop cost savings for cotton producers by monitoring and alerting growers of indications that the aphid fungal epizootic may occur (Steinkraus and Hollingsworth 1994, Hollingsworth et al. 1995, Steinkraus and Slaymaker 1994, Steinkraus et al. 2002). Unfortunately, aphid populations may occur at any stage of cotton production and the fungal epizootic is not always a reliable control, especially late season.

The NCC urges EPA to further understand the economic impact of honey dew and "sticky cotton" resulting from aphids and whiteflies. The potential occurrence of sticky cotton is a severe concern to the entire cotton industry production chain. The EPA commented that the silverleaf whitefly is a pest that only sporadically reaches damaging levels of concerns. The NCC believes the EPA does not recognize the potential impact of sticky cotton for producers who do not have the tools to manage aphids and whiteflies. The rapid population increase (sometimes at a field level or area level, sometimes at a larger level) and the stage of plant development can result in honeydew on lint, termed "sticky cotton". Henneberry et al. 2001 (http://arizona.openrepository.com/arizona/handle/10150/211301) showed the association of aphids and honeydew resulting in sticky lint. Hector and Hodkinson (1989) reported over 80% of sticky cotton at textile mills was associated with aphids and whiteflies.

The research literature has numerous papers discussing the challenges to control aphid and whitefly outbreaks, and the extreme need for multiple MOA's in rotation to avoid uncontrollable populations (Hequet et al., 2007, Sticky Cotton: Causes, Effects, and Prevention, USDA ARS Tech. Bull. No. 1915, 210pp; Nichols et. al. Management of White Fly Resistance to Key Insecticide in Arizona (http://www.cottoninc.com/fiber/AgriculturalDisciplines/Entomology/Whitefly/WhiteFlyResistance/;Whiteflies:%20Cotton%20Insect%20Management%20Guide)) , (https://cottonbugs.tamu.edu/foliage-feeding-pests/whiteflies/). The biology and rapid population growth of aphids and whiteflies requires the availability of critical IRM tools. The loss of neonicotinoids could force additional applications of other MOA's that would not provide the control benefits and would limit producer's availability to rotate MOA's. Ellsworth et al. (1999, The University of Arizona, Cooperative Extension IPM Series No. 13, Sticky Cotton Sources & Solutions) reported "*insecticide treatment to specifically prevent stickiness has cost Southwestern cotton growers $47 million for aphids and $154 million for whiteflies from 1994-1998.*" The development and implementation of a new integrated system of whitefly management greatly reduced the cost, but optional management tools must remain available to comply with IRM recommendations.

Aphids and whiteflies do more than just reduce yield. The sugars they excrete impact the entire cotton production chain – from producer yield losses, slowing ginning process by up to 25% (Ellsworth et al., 1999), lowering grade and value $0.03/lb – $0.05/lb (Ellsworth et al. 1999), requiring extra efforts to spin fibers, requiring frequent shutdown of processing equipment to clean gumming of sugars, and potential reduction in final product due to staining and fiber grade. The seriousness of sticky cotton can impact entire regions as textile mills attempt to avoid the purchase of sticky cotton.

Aphids also present a problem in scouting for caterpillar eggs and neonate larvae. When aphid populations reach a density that begins to show the shiny leaves (honeydew), it is difficult to determine the number of aphids present. A mere walk through the field will cover clothing with gummy residue from thousands of aphids brushed from the underside of leaves. The terminal of the cotton plant will most often be covered with aphids making it practically impossible for professional crop consultants to monitor for bollworm/budworm larvae. Often the producer/crop consultant will make a control treatment for aphids, not just for the concerns raised above, but also in fear of greater losses resulting from inability to monitor for bollworm/budworm eggs and larvae. Although the NCC does not agree that neonicotinoids have direct mortality for bollworms, the NCC believes the data confusion is likely due to premixes that are recommended when multiple pests are present in a cotton field (see premixes for multiple pests, page 16, https://extension.tennessee.edu/publications/Documents/PB1768.pdf).

Thrips, Lygus and Stinkbugs

In 2016, lygus, stink bugs, and thrips (Williams, 2016) were ranked the top three cotton insect pests in the U.S. Although there are geographical differences in species composition, collectively, these sucking insects have become the dominant pests of U.S. cotton for several years.

Thrips typically move into cotton fields early season, often shortly after germination of cotton seedlings. In general, neonicotinoid seed treatments have shown to greatly decrease the need for foliar control of thrips. Environmental factors (for example cool temperatures that delay the cotton plant growth thereby extending the period of time the plant remains susceptible to thrips injury) and some reports of thrips resistance to particular seed treatments require continued monitoring of seedling cotton for thrips and the ability, if needed, for foliar control applications. In the absence of effective at-plant systemic insecticides at planting, thrips would be a greater pest threat and more difficult to control.

Lygus (plant bugs) and stink bugs are highly mobile adults that feed on numerous alternative plant hosts and often move into fields from native vegetation near the cotton fields. The movement can occur throughout the cotton growing season, and may require multiple applications during one growing season. Selection of an insecticide product targeting these pests MUST consider species complex, previous history of the area and any previous MOA's application.

Lygus hesperus is more common in the western regions of the U.S. and Lygus lineolaris is more common in the midsouth and southeast. Leigh et al. (1977) documented organophosphate resistance in L. hesperus in California and Cleveland and Furr (1980) documented L. lineolaris resistant to organophosphates in Mississippi. During a similar time, Schuster et al. (1987) reported L. lineolaris control failures in Texas. Snodgrass and Scott (1988) documented variation in resistance levels to dimethoate based on time of year and location, but reported little tolerance of L. lineolaris to acephate. Studies have continued to monitor the development of Lygus resistance to organophosphates, pyrethroids and other chemistries with much documentation demonstrating Lygus tolerance to the multiple chemistries and with variation during a given year and/or location (Parys et al., 2017, Luttrell et al. 2018). Because of the variation of Lygus resistance to multiple MOA's, many university extension scientists recommend tank mixing of MOA's for resistance management purposes. However, each tank mixing application often increases the cost of the application and reduces the amount of two MOA's that can be used for the remainder of the season due to label restrictions. Luttrell et al. (2018) reported that total foliar sprays for plant bugs in the midsouth cotton region ranged from 3.4 to 5.8 applications per year (2008-2015). Considering that at least some of these applications were tank mixes with more than one MOA, this increases the cost per application. These points illustrate the importance of multiple MOA's for resistance management purposes and for control of damaging cotton pests. Additionally, the above points illustrate the critical importance of taking the entire growing season into account rather than a snap shot view in time. You cannot simply conclude pyrethroids and organophosphates are alternatives. The recommendations by local university extension specialists and the producer's pest management strategies must have flexibility to adapt to variation in effectiveness of control strategies and thereby must have multiple tools available to make necessary adjustments. However, the benefits analysis fails to incorporate the need for multiple MOA's and fails to recognize yield loss due to documented resistance of products the EPA has identified as alternatives. The identified alternatives are already incorporated into the seasonal management strategies. Restrictions on the neonicotinoids would result in a greater reliance on the organophosphates and pyrethroids which, based on history, would likely result in control failures due to rapid increase in resistant genotypes.
The NCC notes that while control of L. lineolaris populations has been a greater challenge in the midsouth, similar experiences have been reported in recent years for parts of the southeast, particularly North Carolina (Dominic Reisig, North Carolina Cooperative Extension Service Entomologist, personal communication).

There are multiple species of stink bugs that may infest cotton, and brown stink bugs require different management strategies than other stink bug species (https://cottonbugs.tamu.edu/fruit-feeding-pests/stinkbugs/). However, if you have more than one species present in the field, control product selection becomes more difficult. The presence of multiple pests (for example bollworms, moderate aphid pressure, and stink bugs) adds to the complexity of the producer's pest control decisions. Add to that pest control applications made previously during the growing season, and the producer is limited on remaining available pest control options (either due to IRM strategies or in compliance with label restrictions that limit amount of product per year or period).

The NCC believes that, although EPA BEAD "*concludes that the benefits of neonicotinoids are high during the pre-bloom and bloom period for cotton*", EPA has greatly underestimated the benefits, has not shown transparency regarding status of identified alternatives, and underestimated yield loss that would result from the restrictions (whether in rate, application method, or use period).

The NCC urges EPA to refine the benefits analysis, and make sure that stakeholders are engaged early in any discussions of mitigation in order to clearly identify effective and meaningful mitigation that is implementable at the field level without resulting in unintended outcomes.

The NCC appreciates the opportunity to provide these comments in response to EPA notice "Registration Review; Neonicotinoid Risk Assessments; Neonicotinoid Benefits Assessments; Notice of Availability."

Respectfully,

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