July 25, 2019

SFIREG Dicamba Work Group

Guidance Document

Definitions of terms; label language interpretations; and related Q&A

*This **guidance** document is provided by the State FIFRA Issues Research and Evaluation Group (SFIREG) EPA Dicamba Ad Hoc Work Group as a resource for lead pesticide regulatory agencies (State Lead Agencies or SLAs; Tribes; and Territories) and may be revised in the future. Given the breadth and scope of the subject matter covered, section headings have been added including: General, Certification & Training, Record Keeping, Application Restrictions, Sensitive Crops & Areas, Buffers, Spray Drift Management, and Spray Tank.*

*The information contained in this guidance is based upon the collective experience of the state lead agencies represented on the Work Group. While participating on the Work Group, the Environmental Protection Agency (EPA) has not provided comments on the content of the guidance instead only providing information related to the intent of the pesticide labels. This guidance does **not** in any way supersede or otherwise replace current State/Tribal/Territorial laws and regulations or other policies or procedures related to the use of Dicamba or any other pesticides.*

(PLEASE NOTE THAT MENTION OF ANY SPECIFIC PESTICIDE PRODUCT, EQUIPMENT, OR DATA SOURCE IN THIS DOCUMENT IS FOR REFERENCE ONLY AND DOES NOT SUGGEST ENDORSEMENT OR APPROVAL BY SFIREG.)

GENERAL

1. What are the new dicamba products and why are they used?

Dicamba has long been used in agricultural and nonagricultural herbicide products. In 2016, EPA registered three products, XtendiMax® with VaporGrip® Technology (EPA Reg. No. 524-617, Monsanto), Engenia® (EPA Reg. No. 7969-345, BASF), and FeXapan® with VaporGrip® Technology (EPA Reg. No. 352-913, DowDuPont) with a dicamba active ingredient. In 2019, the EPA registered another dicamba product, Tavium® plus VaporGrip® Technology (EPA Reg. No. 100-1623). Tavium is a premix of dicamba and S-metolachlor. The EPA conditionally registered the post emergence use of these three new dicamba products on dicamba-tolerant (DT) soybeans and cotton until the end of 2018. On October 31, 2018, EPA extended the conditional registration of these product uses, with a few label changes, until the end of 2020. Other names of DT soybeans are Roundup Ready 2 Xtend® and XtendFlex® soybeans. Other names of cotton are Bollgard II® XtendFlex®, Bollgard® 3 XtendFlex®, and XtendFlex® cotton.

2. What are major label revisions for these dicamba products for 2019?

These label changes for 2019 are referenced at https://www.epa.gov/pesticides/epa-announces-changes-dicamba-registration and include:

- Two-year registration (until December 20, 2020)
- Only applicators certified per 40 CFR Part 171 may apply dicamba over the top (those working under the supervision of a certified applicator may no longer make applications)
- Prohibit over-the-top application of dicamba on soybeans 45 days after planting and cotton 60 days after planting
- For cotton, limit the number of over-the-top applications from 4 to 2 (soybeans remain at 2 over-the-top applications)
- Applications will be allowed only from 1 hour after sunrise to 2 hours before sunset
- In counties where endangered species may exist, the downwind buffer will remain at 110 feet and there will be a **new 57-foot buffer** around the other sides of the field (the 110-foot downwind buffer applies to all applications, not just in counties where endangered species may exist)
- Clarify training period for 2019 and beyond is required annually, ensuring consistency across all three products
- Enhanced tank clean out instructions for the entire system
- Enhanced label to improve applicator awareness on the impact of low pH's on the potential volatility of dicamba
- Label clean up and consistency to improve compliance and enforceability

CERTIFICATION & TRAINING

1. Who can purchase and use Engenia, FeXapan, and XtendiMax Herbicides in 2019?

Only these three dicamba herbicides are currently registered for post-emergence use on dicamba-tolerant soybeans/cotton in 2019. The 2019 labels state, "**RESTRICTED USE PESTICIDE** for retail sale to and use only by Certified Applicators." This is a change from the 2018 labels. This means that only **Private Applicators** (farmers) and **Commercial Applicators certified and licensed in accordance with 40 CFR Part 171** can purchase OR use these products during 2019. Registered Technicians and other non-certified applicators working under the supervision of a certified applicator may no longer purchase or use these products. However, a non-certified person may pick-up and transport these products on behalf of the certified applicator if the RUP dealer has written authorization from the certified applicator granting such permission to that non-certified individual.

2. Do mixers, loaders, handlers, and spray equipment cleaners need to be certified applicators in 2019?

Yes, anyone who is responsible for any part of the use and application process, which includes mixing, loading, application, or cleaning dicamba application equipment, must become a certified and licensed private applicator or a commercial applicator. Workers are not required to be certified and licensed if they are involved in nothing more than transportation of unopened dicamba containers, transportation of "hot loads" that were mixed by a certified and licensed applicator, or unloading of a pre-mixed "hot load" directly from the transportation vehicle into a spray rig. Details on becoming certified and licensed are available at your state pesticide regulatory agency's website.

3. Does the training requirement reference to "before applying this product in-crop" suggest that the Conservation Reserve Program (CRP) and noncropland uses are not covered by the training requirements?

Training requirements apply to any use of the product, not just in-crop use. The mandatory training requirement should be a reflection that these products are very challenging to both use effectively and keep on the target field or target site. Although this label statement, as currently written, may suggest otherwise, the label restrictions and training requirements apply to all approved label use sites.

4. If an applicator attended dicamba/auxin-specific training in 2018, does he/she need to attend this training again in 2019 to use these products?

Yes, the 2019 labels require that prior to applying this product in the 2019 growing season and each growing season thereafter, all applicators applying this product must complete dicamba or auxin-specific training. This training is required on an annual calendar basis before the product is applied. This is a mandatory training that is separate, distinct, and in addition to your applicator certification. Starting in 2019, you must also be a fully certified and licensed commercial applicator or a private applicator to purchase or use these products.

5. Who can provide dicamba or auxin-specific training?

If training is available and required by the state where the applicator intends to apply these products, the applicator must complete state required training before applying these products. If your state does not require dicamba or auxin-specific training, then the applicator must complete dicamba or auxin-specific training provided by one of the following sources: a) a registrant of a dicamba product registered for over-the-top use in DT soybeans/cotton (BASF, Bayer/Monsanto, Corteva/DowDuPont, or Syngenta), or b) a state or state-authorized provider. Details will be posted by registrants on their respective web sites, including, https://www.engeniastewardship.com/#/; www.FeXapanApplicationRequirements.DuPont.com; and http://www.roundupreadyxtend.com/stewardship/education/Pages/default.aspx; https://syngentaus.docebosaas.com/dicamba/learn .

6. If a state will not be providing or coordinating the mandatory dicamba or auxin-specific training this year, where can an applicator find details on available training?

If a state in which an applicator intends to purchase or use one of these products is not providing dicamba or auxin-specific training, check with the product registrants or the target state pesticide regulatory agency. Monsanto (XtendiMax) – 1-844-RRXTEND (779-8363); BASF (Engenia) – 1-800-832-HELP (4357); DuPont (FeXapan) – 1-888-6-DUPONT (38-7668); Syngenta (Tavium)-1-866-Syngent(a) (866-796-4368).

7. Will the applicator receive a certificate after completing the training?

Documentation (evidence) of training will be provided, however, it may not be referred to as a "certificate" of training. Whatever evidence of completing the MANDATORY DICAMBA OR AUXIN-SPECIFIC TRAINING that the registrants or the states choose to provide to the trainee will be the evidence of training recognized by the state pesticide regulatory agency. When conducting dicamba compliance inspections and investigations, state inspectors will ask for evidence of training provided to the applicator. States may or may not keep dicamba training records. The applicator will be ultimately responsible for keeping that proof of training.

8. Will dicamba or auxin-specific training from another state satisfy the label requirement?

Check with your state pesticide regulatory agency. However, it will be the responsibility of the applicator to provide proof of training, if requested.

9. Will dicamba or auxin-specific training satisfy requirements in other states?

The applicator should contact directly the other state pesticide regulatory agencies to see what training they require or will accept. Contact information for those states is available at https://aapco.org/2015/07/28/resources-2/.

10. Will State pesticide inspectors check application and training records?

Yes, State pesticide inspectors have the authority to inspect pesticide purchase and application records. In addition, the labels for these products instruct, "records must be made available to State Pesticide Control Officials." The practice of checking these records is normally associated with a misuse investigation, but State inspectors may also do some routine purchase or application record checks. Please note that for any dicamba applicator who is unable or unwilling to provide proof of having completed the MANDATORY DICAMBA or AUXIN-SPECIFIC TRAINING the State may impose a variety of compliance responses including warnings, citations, administrative penalties, and certification and license actions.

RECORD KEEPING

1. Have the dicamba record keeping requirements changed for 2019?

Yes, in 2019, the applicator must create the required records within 72 hours (three days) of the application, unlike 2018 where the applicator had at least 14 days to create application records. In addition, the 2019 records must also include the target crop planting date, the buffer requirement (distance and any areas included within the buffer), and documentation on sensitive areas and crops. Check with state pesticide regulatory agencies for any other record keeping requirements.

2. The label requires that before making any application, applicators must consult a sensitive crop registry, such as FieldWatch, and survey adjacent fields and confirm the

crops/areas surrounding the field prior to applications. If the state participates in FieldWatch, can that sensitive crop registry also be used to check for the presence of nearby non-DT soybeans? If the state does not utilize FieldWatch or a sensitive crop registry, what should an applicator do?

For those states that participate in FieldWatch, as of January 1, 2019, a new FieldWatch feature called CropCheck will allow growers to map row crops like non-DT soybeans, cotton, and other crops that may be sensitive to some nearby pesticide applications. As not all states are participating in CropCheck, applicators should check the FieldWatch website, or contact your state pesticide regulatory agency for details. Access CropCheck through www.driftwatch.org. In states that do not participate in FieldWatch or do not have a sensitive crop registry, applicators should indicate in their records that no registry exists and document that they surveyed the adjacent filed and confirm the crops/areas surrounding the field prior to application.

3. The Engenia label states, "If wind direction shifts such that the wind is blowing toward neighboring sensitive crops or residential areas, STOP the application." What evidence will the compliance agency recognize as evidence that the applicator has met this requirement?

The label requires record keeping of wind direction at the start and finish of the application. However, the applicator must also constantly monitor wind speed and direction throughout the entire application and include a notation in the application records documenting the time-period that the application was stopped due to a change in wind speed or direction. Otherwise, the assumption will be that the application was continuous, without stopping.

4. Application records must include start and stop times. If the wind direction shifts toward neighboring sensitive crops or residential areas, and the applicator stops the application, but does not pick up the application until the following day, is that a separate application or the same one?

Stopping an application and resuming it on a following day will be considered a separate application. Accurate records must be maintained. Each time the certified applicator starts or stops an application it needs to be recorded, regardless of which applicator is performing the application or which day. Certified applicators must comply with the requirements of the states who certify them, and some states may require separate records be completed for each day of application to the same field. At a minimum, all start and stop times along with corresponding temperatures, wind directions, and wind speeds must be included as part of the record. It is also important to note the potential impacts to the tank mix that could occur while sitting for extended periods.

APPLICATION RESTRICTIONS

1. Are there any "federal" application timing restrictions on the use of these products?

Yes, the three products may be applied pre-plant, at-planting, pre-emergence, and post-emergence (in-crop) in DT soybeans or cotton. However, for post-emergence use in DT

soybeans, the 2019 labels prohibit application after 45 days after planting or on the onset of the R1 growth stage, whichever comes first for the target soybean crop. For post emergence use in DT cotton, the 2019 labels prohibit application later than 60 days after planting or up to mid-bloom stage, whichever occurs first. The 2019 federal label of Tavium prohibits application 45 days after planting or after V4 growth stage, whichever comes first for the target soybean crop. For post emergence use in DT cotton, the 2019 Tavium label prohibits application after the 6-leaf stage of cotton or later than 60 days after planting, whichever comes first for the target cotton crop. Additionally, no applications are permitted during the period two hours before sunset through one hour after sunrise.

2. Are there any state-specific restrictions on the use of these three dicamba products?

Based on off-target movement concerns encountered in 2017 and 2018, a number of states have implemented state-specific restrictions above and beyond the current federal label requirements for the legal use of these products. Check with individual state pesticide regulatory agencies for state-specific dicamba use restrictions for the 2019 and 2020 growing season.

3. Where can I find details of the state-specific requirements, if they are not on the container label for Engenia, FeXapan, XtendiMax, or Tavium?

If a state has state-specific restrictions, they may appear as a state regulation or on FIFRA Sec. 24(c) Special Local Need (SLN) labels distributed with these three products. These SLN labels are separate documents intended for applications within the individual state but are enforceable like all other labeling. SLN labels for these products will also be posted at the state pesticide regulatory agency's website. Some states may have regulations that do not appear on product labeling. Contact information for states is available at https://aapco.org/2015/07/28/resources-2/.

4. In 2019, are there still prohibitions against spraying when wind is blowing toward sensitive crops and plants?

Yes, and in 2019 these prohibitions are slightly different on the Engenia label than they are on the FeXapan and XtendiMax labels. The 2019 Engenia label states, "**DO NOT** apply when wind is blowing in the direction of neighboring sensitive crops or residential areas." The 2019 labels for FeXapan and XtendiMax both state, "**DO NOT APPLY** this product when the wind is blowing toward adjacent non-dicamba tolerant sensitive crops; this includes Non-Dicamba Tolerant Soybean and Cotton." Although the Engenia label specifies the need to protect residential areas while the FeXapan and XtendiMax labels do not, the label-posted list of sensitive crops subject to this wind-direction application restriction includes the catchall term "other broadleaf plants." Therefore, these downwind protections apply to both sensitive plants and crops on both agricultural and residential properties, regardless of which product is being applied.

5. What does "neighboring" and "adjacent" mean?

As with most terms and phrases used on pesticide labels, it is the responsibility of the applicator and the state pesticide regulatory agency to determine how the label will be interpreted in each state. The interpretation of the terms "neighboring" and "adjacent" are particularly critical because of the extreme sensitivity of many plants to dicamba, and the likelihood that off-target exposure symptomology will occur on sensitive plants located near the target field. It can be noted that EPA believes the mandatory 110' and 220' downwind buffers provide adequate protection of downwind sensitive crops, plants, and sites. However, to avoid confusion and for purposes of consistent guidance and compliance response, the following explanations will be used to define the terms "neighboring" and "adjacent":

a) Abutting, adjoining, bordering, contiguous, flanking, juxtaposed, skirting, touching. *It should be noted that while a fencerow, hedgerow, or right-of-way may physically separate fields so they do not technically touch, most regulators would* <u>*not*</u> *consider these barriers as adequate to ensure compliance with this downwind application restriction on the label.*

b) Sensitive plants located in close enough proximity to result in off-target exposure symptoms. *Practical experience in dicamba-impacted states has demonstrated that off-target exposure symptoms are most prevalent in non-DT soybeans within ¼ mile and any other sensitive crop or sensitive residential area plant within ½ mile downwind of the target treatment field.*

6. The Engenia label states, "DO NOT apply when wind is blowing in the direction of neighboring sensitive crops or residential areas. The appropriate distance must be determined by the applicator relative to where the application is being made, the environmental conditions, and the potential risk to downwind sensitive crops and residential areas." Both of these sentences have imperative verbs. Are both sentences meant to be mandatory and enforceable?

The first sentence is definitely enforceable. The only vague term used in the first sentence is "neighboring". An explanation of that term is provided in the previous question and answer. However, the language in the second sentence is vague and cannot be quantified for compliance purposes. Therefore, the second sentence should be considered advisory. At a <u>minimum</u>, certified applicators must not use the product when the wind is blowing toward sensitive crops that are directly "adjacent" to the treated field.

7. If an applicator has a container of Engenia, FeXapan, or XtendiMax left over from 2017 or 2018, can he/she follow the 2017 or 2018 label directions to apply it in 2019?

No, 2017 or 2018 labeled product cannot be used. The applicator must follow the 2019 label directions. The previously accepted labeling contains an expiration date of November 9, 2018 and the product in that container cannot be used after that date unless the applicator is in possession of the new labeling. New labeling is required on the product beyond that date. Beginning November 10, 2018, before using any product with expired labeling, users must first access a website maintained by the product registrant/manufacturer to review 2019 directions for

use and obtain a copy of the current final printed label, and must have that label in their possession at the time of use.

8. The Engenia label states, "DO NOT apply under conditions, which favor runoff." It further states, "DO NOT apply Engenia if expected rainfall amount may exceed soil field capacity and result in soil runoff in the next 24 hours." If the label is not specific as to what these conditions mean, are these restrictions enforceable?

Heavy rainfall soon after an application can often result in herbicide runoff. However, specifically defining what heavy rainfall and soon after application may mean is unclear. Therefore, because a specific compliance standard has not been established, EPA intended this first label statement to be advisory for states to apply their judgement in training certified applicators and providing oversight on this label section. Regarding the second label prohibition, determining if and when a field soil rainfall holding capacity may be exceeded is largely subjective without careful and continuous environmental measurements. These environmental measurements currently exceed the capabilities of most applicators and most regulatory compliance officials. Therefore, applicators should be mindful of the possibilities of runoff, but these label statements should be considered advisory.

9. The Engenia label states, "DO NOT apply to soils classified as sand with less than 3% organic matter and where groundwater depth is shallow." Because the label is not specific on the definition of shallow, is this enforceable?

Soils classified as sand with less than 3% organic matter can be defined. However, there is no FIFRA-determined universal definition of "shallow groundwater". Because both parts of this statement must be definitively determined to assess compliance, the statement is too vague to be enforceable as written. It should be noted, however, that dicamba is considered a leachable herbicide, and that labels for other leachable herbicides indicate the term shallow to mean where the groundwater depth is 30 feet or less. For purposes of this guidance, it is recommended that shallow groundwater be considered less than 30 feet deep.

10. The Engenia label has a "Resistance Management" section that includes, "To aid in the prevention of developing weeds resistant to this product, the following steps should be followed where practical." One of the following steps includes, "DO NOT rely on a single herbicide site of action for weed control during the growing season." If the steps listed in this section of the label were meant to be advisory only, why does this step include the bolded, "DO NOT?"

By using this language, both EPA and the registrant wanted to impress upon the applicator the extreme importance of implementing resistance management practices to maintain the effectiveness of these herbicides for as long as possible. In spite of the seemingly enforceable language used, this should **not** be considered enforceable as currently written.

11. The Engenia label "Application Instructions" state: "Use extreme care when applying Engenia to prevent injury to desirable plants." Because "extreme care" does not appear to be defined on the label, would injury to desirable plants be a good indication that extreme care was not used and therefore enforceable?

No, not necessarily. While off-target injury could be a an indication that extreme care was not used when applying the product, the term/phrase is too vague and undefined to be considered enforceable, even though written with an imperative verb. However, off-target injury would more likely be enforceable under the label statement, "**DO NOT** allow herbicide solution to drip, physically drift, or splash onto desirable vegetation…" The extreme care reference should be considered advisory only.

12. The labels on XtendiMax, Engenia, and FeXapan prohibit post emergence in-crop application after the onset of R1 growth stage or 45 days after planting of DT soybeans and after mid-bloom or 60 days after planting of DT cotton.

a. Do the application restrictions apply to the target field where the dicamba application is going to be made or to other adjacent planted fields?

Application restrictions (growth stage or 45/60 days) apply to the target field of the DT crop where the application is going to occur. It should be noted, however, that to protect adjacent non-DT soybeans and other sensitive plants, the applicator should be aware of the growth stage of all of those non-target crops and plants. In addition, some states may have instituted seasonal application cut-off dates for post-emergent in-crop use in their state. Check with the state regulatory agency for possible application date restrictions.

b. On the Engenia label, it states "*…applications may be made from soybean emergence through 45 days after planting or R1, whichever comes first*". The other two dicamba products state "*Do not make in-crop applications of this product during and after beginning bloom (R1 growth stage of soybeans) or more than 45 days after planting*". Is Engenia allowed to be used through R1?

No. While the Engenia label language differs from both FeXapan and XtendiMax, post-emergent applications may be made up to 45 days after planting OR the onset of R1 (beginning bloom). No applications may be made once R1 begins.

13. The labels on these products restrict application only to the period one hour after sunrise through two hours before sunset. If an application is started more than two hours before sunset but cannot be completed by that time, is the applicator required to suspend the application?

Yes, the application must be completed by the two hours before sunset deadline, regardless of the start time. The application may be resumed the next day, one hour after sunrise, if conditions permit at that time.

14. The labels for these products state, "Spray Boom Height. Do not exceed a boom height of 24 inches above target pest or crop canopy," and "Spray Boom Height – Spray at the appropriate boom height based on nozzle selection and nozzle spacing, but DO NOT exceed a boom height of 24 inches above the target pest or crop canopy." Does this mean if some target weeds are 4 feet tall, the boom height can be extended up to 6 feet?

No, this restriction does not allow the applicator to raise the boom height to an unsafe application height just because some weeds have grown above the optimal height/growth stage for the most effective control. The intent of this restriction is to limit the boom to 24 inches above the crop canopy for post-emergent applications and 24 inches above weed height for pre-emergent uses.

15. Are there other significant differences between the 2019 Tavium label and the other three dicamba products?

1. Tavium can only be used on conventional and dicamba-tolerant soybeans and cotton. Other three dicamba products, XtendiMax, Engenia, and FeXapan, can be used on several other crops including conventional and dicamba-tolerant soybeans.
2. The label allows only one postemergence application of 0.5 lb. of dicamba unlike the other three dicamba products, which allow two postemergence applications (**see use restrictions section 9.2.1 under DT soybeans**).
3. Tavium is a first premix product of new dicamba formulations. It is premixed with *S*-metolachlor. This product has capsule in suspension (CS) formulation.
4. Postemergence applications can be made to dicamba-tolerant soybeans through V4 stage of soybeans. For the other three products, postemergence applications are prohibited at the onset of R1 growth stage (beginning bloom).
5. Tavium pre-harvest interval in soybeans is 90 days due to food safety requirements. In case, V4 growth stage of soybeans delays due to certain reasons it may delay harvest of certain varieties of soybeans.

SENSITIVE CROPS & AREAS

1. Is there a list of sensitive crops and plants?

Yes, the labels provide a partial list of these sensitive crops and plants. Sensitive plants include, but are not limited to, plants in both agricultural and residential areas such as non-DT soybeans and cotton, cucumber and melons (EPA crop group 9), flowers, fruit trees, grapes, ornamentals including greenhouse-grown and shade house-grown broadleaf plants, peanuts, peas and beans (EPA crop group 6), peppers, tomatoes, and other fruiting vegetables (EPA crop group 8), potato, sweet potato, tobacco, other broadleaf plants, and including plants in a greenhouse..

2. Do sensitive crops include adjacent or neighboring organic crops?

Yes, although certified organic crops are not listed on the label as an example of a sensitive crop, the fact remains that any pesticide residues in these crops, whether damaging or not, might make these crops unfit for sale, use, or consumption as organic. Therefore, certified organics are sensitive crops. The restriction prohibiting application when wind is blowing toward the certified organic crop does apply.

3. The term "sensitive areas" appears on these labels. What are sensitive areas?

Sensitive areas are different from sensitive crops or sensitive residential areas. Sensitive areas include bodies of water and nonresidential, uncultivated areas that may harbor sensitive plant species. Sensitive areas also include endangered species protection areas. Applicators are required to consult http://www.epa.gov/espp/ to determine if they intend to apply in a county of their state with dicamba-protected endangered species.

BUFFERS

1. The 2019 labels still have mandatory buffer requirements. Non-sensitive crops and areas are important because they are acceptable for use as part of the calculation for the out-of-field buffer area. What are non-sensitive crops and areas?

Non-sensitive crops and areas include the following: paved or gravel surfaces; roads; mowed and/or managed areas adjacent to fields, such as roadside rights-of-way; areas covered by the footprint of a building, silo, shade house, feed crib, or other manmade structure with walls and a roof; agricultural fields that have been prepared for planting; and planted agricultural fields containing asparagus, corn, DT cotton, DT soybeans, sorghum, proso millet, small grains, and sugarcane. (Remember! *The applicator is responsible for ensuring that the adjacent, nearby or neighboring crops are dicamba-tolerant.*)

2. Are the 2019 buffer requirements the same as on the 2018 labels?

No, there are several significant changes. First, mowed and/or managed areas adjacent to the field, such as roadside rights-of-way, may now be included as part of the buffer calculation. Second, in 2019, it is specifically the applicator's responsibility to confirm that the neighboring/adjacent crops are, in fact, dicamba-tolerant before considering them as non-sensitive crops. Lastly, a 57-foot omnidirectional (all sides) buffer must be maintained in counties of the target state where dicamba-sensitive endangered species are present. This 57-foot buffer can be part of the 110-foot buffer required for downwind sensitive crops and sensitive areas.

3. Are the sizes of the downwind buffers the same in 2019 as they were in 2018?

Yes, the applicator must always maintain a 110-foot (or 220-foot for high rates of XtendiMax and FeXapan) downwind buffer between the last treated row and the nearest downwind field/area edge (in the direction the wind is blowing). The 110-foot downwind buffer is not intended to protect downwind sensitive crops and plants from off-target dicamba exposure. It is intended to protect other sensitive areas (i.e. water bodies and potential endangered species habitat). The protection of downwind application prohibition and the 110-foot downwind buffer requirement should not be confused with one another when the concern is protection of downwind sensitive crops and plants.

4. Is a buffer required on just one side of a dicamba-treated field?

Sometimes yes, but often times buffers are required on several sides. Applicators should remember that buffers will often be required on two or more downwind sides of a target field if wind direction is not constant and non-target sites are not positioned completely perpendicular to one another. A diagonal wind direction would require a buffer on at least two downwind sides. The applicator may have to change the buffer location if the wind changes direction during the application.

5. Are downwind buffers required next to in-field grass/vegetative waterways?

No, downwind dicamba buffers would not be required next to these in-field areas. U.S. EPA has concluded that grass waterways should be treated the same as Conservation Reserve Program (CRP) areas. Both CRP and grass waterways include voluntary conservation agricultural areas that could be used for cropland production. Therefore, buffers are not required to protect these voluntary conservation practice areas.

6. If an applicator owns a wooded lot downwind of his/her target field, is a downwind buffer required?

Yes, regardless of who owns the wooded lot, it is label-defined as a sensitive uncultivated area that may harbor a sensitive plant species or endangered species. Therefore, even an adjacent wooded lot that you own or control is required to have a downwind spray buffer.

7. Do applicators that use hooded sprayers still have to comply with the buffer zone requirements?

Yes, they need to comply with buffer zone requirements for both sensitive areas (110 feet) and endangered species (57 feet omnidirectional and 110 feet downwind, depending on the location of the field in the state). While hooded sprayers may be somewhat useful in reducing the incidence of off-target movement during the application, they have not been fully evaluated and accounted for on these labels as a drift reduction technology.

8. Do the endangered species and corresponding buffer zones apply to all endangered species or just endangered terrestrial dicot plant species?

The buffer requirement was made after EPA assessed potential risk to both animals and plants that are federally listed as endangered or threatened species. For the full list of species that were assessed in the effects determination document, see the recent and previous assessments: https://www.regulations.gov/document?D=EPA-HQ-OPP-2016-0187-0967 . Growers should refer to Bulletins Live! Two for a listing of Pesticide Use Limitation Areas (PULAs) for endangered species, as it relates to dicamba. If a county is listed in the Bulletins Live! Two system, growers in that county must follow the restrictions on the bulletin.

9. Parts of these labels allow for downwind buffer distance calculations, when sensitive crops and plants are directly adjacent to the treated field edges, to include: 1) roads, paved or gravel surfaces, mowed and/or managed areas adjacent to field such as rights of way; 2) planted agricultural fields containing: corn, cotton, and soybeans; and 3) areas covered by the footprint of a building, silo, or other man-made structure with walls and or roof. Do the same buffer calculation allowances apply to mandatory buffers under the Endangered Species Act.

Yes, the same downwind buffer calculations permitted for sensitive plants and crops are also permitted for protection of endangered species in the Pesticide Use Limitation Area (PULA), as identified on EPA Bulletin Live! Two.

SPRAY DRIFT MANAGEMENT

1. The new dicamba labels prohibit application during a temperature inversion. How can an applicator determine if a temperature inversion exists in or near the target field prior to application?

Just like other weather measurements, there is no single official method to determine if temperature inversion conditions exist in a field. However, temperature inversion indicators can include nights with limited cloud cover and light-to-no wind, ground fog, smoke not rising, dust hanging over a road, or the presence of dew or frost. Just like other weather data documentation, a time, date, and GPS-stamped photograph taken in the field from the applicator's smartphone can serve to supplement and support the determination that an inversion did not exist at the time of application. In addition, tools to help the applicator identify the likelihood of a temperature inversion can include smoke generators in the target field, phone apps, and the Inversion Tester by Spoton ®. Evolving technical information about inversion research, as it applies to dicamba application, can be found at https://ipm.missouri.edu/IPCM/2019/4/inversion/ .

2. Weather apps are now available to help an applicator predict and measure weather. Are these apps certified or official-enough for weather measurement compliance purposes?

It is important to understand that these apps rely on weather data collected at weather stations that may or may not be close to the target application field. Most of these apps use computer software to estimate the weather conditions at the target location. Therefore, there will be some

margin of error or inaccuracy. While not perfect, these weather-predicting apps are usually better than an applicator's guess or estimate made without measuring equipment. Additionally, it is important to remember that the applicator is to measure wind speed, wind direction and air temperature *at boom height*, which means the applicator would need a hand-held or boom-mounted device that measures real-time data in the field at the time of the application, not data displayed on a weather app.

3. These labels state, "DO NOT allow herbicide solution to drip, physically drift, or splash onto desirable vegetation…" Is off-target movement to desirable vegetation resulting from suspected application during an inversion included in the definition of physical drift?

Yes, meteorological research has shown that fog, dust or spray particles suspended in air during an inversion are different than volatility. Off-target movement of spray particles from the influences of an inversion, therefore, meet the definition of physical spray drift, even if the actual spray particles remain suspended in the air and move off-target at some point after the application has ended. It is also important to note that many state regulations and requirements currently hold applicators responsible for the results of off-target movement, regardless of the mechanism by which the off-target movement actually occurred.

4. The Engenia label has a "Wind Speed and Direction Requirements" section that states, "Every applicator must be familiar with local wind patterns and how they affect drift." The "must" language is apparently meant to be enforceable. What does it mean and how might a regulator document failure to comply?

Although this label statement is written as an imperative statement, neither the label, regulations, universally recognized guidance, nor common practice can clearly delineate all of the specifics being referenced here. Therefore, this statement is too vague to be considered instructive or enforceable, as written. Therefore, this statement should be considered advisory only.

SPRAY TANK

1. **If an applicator has a spray injection system that allows application of dicamba and other on-sprayer herbicides and adjuvants to remain in separate tanks via a point of injection at the spray boom system, can the same spray system be used to legally apply other products not listed on registrant's web site of label-approved tank mixes?**

No, an applicator cannot use the injection spray system to circumvent the tank mix restrictions. The labels of these products require that the entire spray system, including tanks, pumps, booms, lines, screens, and nozzles be cleaned according to label directions, both before and after application. Therefore, since it is impossible to clean the spray booms before or after injection of these dicamba products, this type of application is prohibited. Even very small amounts of dicamba left in spraying systems have caused significant cross contamination and non-target impact issues.

2. For the injection spray system described above, with the point of injection for each tank at the spray boom, if the other tank mix partners (both herbicides and adjuvants) are approved for tank mixing on the dicamba label, can the applicator turn off the dicamba flow to the spray boom and be legal while spraying the non-dicamba components of the tank mix to the required downwind buffer area?

Yes. If tank mix partners on the spray rig are label-approved for use with the new dicamba products and if the flow of dicamba can successfully be turned off before getting to the buffer area, the applicator can spray the buffer without first cleaning out the spraying system. However, it is highly recommended that the applicator turn off the flow of dicamba before actually getting to the downwind buffer area to allow the dicamba left in the spray boom to purge itself from the spray system.

3. The Engenia label states, "Avoid allowing the spray solution to remain in the spray boom lines overnight or for extended periods of time." Since EPA guidance suggests that the term "avoid" essentially means "do not", is this provision enforceable?

The first part of this requirement is enforceable, as written. If an applicator leaves a spray solution in the sprayer overnight and then uses it the following day or later, that subsequent application will be in violation of the label. However, because the phrase "extended periods of time" have not been identified or defined, this restriction is too vague to be considered enforceable, other than "overnight."