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RE: WHITE PAPER: Benefits of the Adoption of Structured Content and Digital Pesticide Labels; Docket ID: EPA-HQ-OPP-2023-0562.

The National Agricultural Aviation Association appreciates the opportunity to comment on EPA's WHITE PAPER: Benefits of the Adoption of Structured Content and Digital Pesticide Labels.

U.S. Aerial Application Industry Background: NAAA represents the interests of the 1,560 aerial application industry owner/operators and 2,028 non-operator agricultural pilots throughout the United States licensed as commercial applicators that use aircraft to enhance the production of food, fiber and bio-energy; protect forestry; protect waterways and ranchland from invasive species; and provide services to agencies and homeowner groups for the control of mosquitoes and other health-threatening pests.

Within agriculture and other pest control situations, manned aerial application is an important method for applying pesticides, for it permits large areas to be covered rapidly—by far the fastest application method of crop inputs—when it matters most. It takes advantage, more than any other form of application, of the often too-brief periods of acceptable weather for spraying and allows timely treatment of pests while they are in critical developmental stages, often over terrain that is too wet or otherwise inaccessible for terrestrial applications. It also treats above the crop canopy, thereby not disrupting the crop and damaging it. Aerial application has greater productivity, accuracy, speed, and lack of damage to the crop compared to ground application[1]. Although the average aerial application company is comprised of but six employees and two aircraft, as an industry these small businesses treat nearly 127 million acres of U.S. cropland each season, which is about 28% of all cropland used for crop production in the U.S. In addition to the cropland acres, aerial applicators annually apply to 5.1 million acres of forest land, 7.9 million acres of pasture and rangeland, and 4.8 million acres for mosquito control and other

[1] Kováčik, L., and A. Novák, 2020. "Comparison of Aerial Application vs. Ground Application." *Transportation Research Procedia* 44 (2020) 264–270.

public health concerns.

While there are alternatives to making aerial applications of pesticides, aerial application has several advantages. In addition to the speed and timeliness advantage aerial application has over other forms of application, there is also a yield difference. Driving a ground sprayer through a standing crop results in a significant yield loss. Research from Purdue University[2] found that yield loss from ground sprayer wheel tracks varied from 1.3% to 4.9% depending on boom width. While this study was conducted in soybeans, similar results could be expected in other crops as well. Data from a Texas A&M University economics study[3] and the 2019 NAAA industry survey[4] were used to calculate that the aerial application industry is directly responsible for the production of 1.69 billion bushels of corn, 199 million bushels of wheat, 548 million pounds of cotton, 295 million bushels of soybean, and 3.33 billion pounds of rice annually that would be lost every year without the aerial application of pesticides. The value in additional crop yield that the aerial application industry brings to farmers, input suppliers, processors, and agricultural transportation and storage industries for corn, wheat, cotton, soybean, and rice production in the U.S. is estimated to be about $37 billion[5].

Research summarized by the University of Minnesota[6] describes how soil compaction from ground rigs can negatively affect crop yields due to nitrogen loss, reduced potassium availability, inhibition of root respiration due to reduced soil aeration, decreased water infiltration and storage, and decreased root growth. Aerial application offers the only means of applying a crop protection product when the ground is wet and when time is crucial during a pest outbreak. A study on the application efficacy of fungicides on corn applied by ground, aerial, and chemigation applications[7] further demonstrates that aerial application exceeds ground and chemigation application methods in terms of yield response. The aerial application of crop protection products results in greater harvest yields of crops. This in turn results in less land being used for agricultural production, preserving more wetlands for natural water filtration, forest ecosystems for carbon sequestration and habitat for threatened and endangered species.

The Texas A&M[4] study revealed that the total area of cropland needed to replace the yield lost if aerial application was not available for corn, wheat, soybean, cotton, and rice production is 27.4 million acres, an area roughly the size of Tennessee. Aerial applicators seed 3.8 million acres of cover crops annually[5]. This means that aerial applicators are responsible for helping to sequester 1.9 million metric tons of CO2 equivalent annually, which according to the EPA would be the equivalent of removing approximately 412,000 cars with carbon-combustion engines from the roads each year.

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[2] Hanna, S., S. Conley, J. Santini, and G. Shaner. 2007. "Managing Fungicide Applications in Soybean." Purdue University Extension Soybean Production Systems SPS-103-W. https://www.extension.purdue.edu/extmedia/sps/sps-103-w.pdf
[3] Dharmasena, S. 2020. "How Much is the Aerial Application Industry Worth in the United States?" Research presented at the 2020 Ag Aviation Expo, Savannah, GA. https://www.agaviation.org/2020aatresearchpapers
[4] National Agricultural Aviation Association. May 2019. "2019 NAAA Aerial Application Industry Survey: Operators." https://www.agaviation.org//Files/Comments/NAAA%202019%20Operator%20Survey.pdf
[5] Dharmasena, S. 2021. "Value of the Agricultural Aerial Application Industry in the United States" Research presented at the 2021 Ag Aviation Expo, Savannah, GA. https://www.agaviation.org/2021aatresearchpapers
[6] University of Minnesota. "Soil Compaction." Accessed April 29, 2021. https://extension.umn.edu/soil-management-and-health/soil-compaction
[7] Thomas, D. 2009. Unpublished research results submitted to EPA. https://www.agaviation.org//Files/Comments/Fungicide%20efficacy%20results.pdf

The aerial application industry is also actively involved in education and research efforts to improve the accuracy and safety of aerial applications. The National Agricultural Aviation Research and Education Foundation (NAAREF) is a non-profit organization dedicated to promoting research, technology transfer and advanced education among aerial applicators, allied industries, government agencies and academic institutions. NAAREF's Professional Aerial Applicators' Support System (PAASS) program is a four-hour course offered annually at all state and regional agricultural aviation association conventions. The curriculum is brand new every year and a minimum of one hour of PAASS is focused on environmental professionalism. This ensures aerial applicators are kept up to date on the latest information related to making accurate applications and drift mitigation. Nozzle selection, buffer zones, inversions, precision application technology, dissection of real-life drift incidents, and proper spray boom setup are some of the environmental professionalism topics that have been covered in PAASS.

Five years after PAASS became part of the aerial application annual curriculum in 1999, there was a 26% drop in drift incidents according to Association of American Pest Control Officials drift surveys. In addition, ag aircraft accidents have also significantly declined. From 1999 to 2010, the accident rate per 100,000 hours flown dropped by 21.6% compared to pre-PAASS accident rates. From 2011 to 2019, the accident rate dropped even more—30.8%—compared to pre-PAASS accident rates. Each year we continue to see a drop in our accident rate since pre-PAASS days, but now it declines more incrementally. While aviation safety is the domain of the FAA and not the EPA, the reduction in accidents proves PAASS has had, and continues to have, a significant positive impact on the aerial application industry.

Another NAAREF program is Operation S.A.F.E. (Self-regulating Application & Flight Efficiency). The primary component of Operation S.A.F.E. is a fly-in clinic. At a S.A.F.E. fly-in, aerial applicators can have their aircraft calibrated and application patterns (both liquid and dry) measured and evaluated for accuracy and uniformity. Spray droplet size is also measured at a fly-in to ensure the agricultural aircraft is creating the droplet size required by the labels for products to be applied by the aircraft. Many of the concepts used mitigate the risk of drift from agricultural aircraft have originated from ideas first tested at Operation S.A.F.E. fly-ins.

Just last year, NAAA created a professional certification program for the aerial application industry named C-PAASS for Certified Professional Aerial Application Safety Steward. To be certified under C-PAASS aerial applicators must take the PAASS program annually and Operation S.A.F.E. biennially, in addition to belonging as a member to their state/regional agricultural aviation association and the NAAA. C-PAASS professionals are also required to take and be tested on additional aviation safety and environmental stewardship curriculum offered on-line through a learning management system software NAAA installed. The purpose of C-PAASS is to enhance professionalism in the aerial application industry as our statistics show that those that participate in our educational programs are safer from both an aviation and environmental perspective.

Comments

NAAA supports both the concepts of structured content and structured digital content for pesticide labels. Having label information in a consistent order among all pesticide products will be incredibly beneficial to aerial applicators. An aerial application business can apply hundreds of different products to numerous crops during a single season. Having to seek out specific details, that are scattered throughout numerous sections with differing titles located on different parts of a label depending on the registrant and product, can be a daunting task. It can be easy to miss critical information on labels, particularly when an aerial applicator is working with a product new to them. Structured content that would be consistent no matter the registrant or the product would save aerial applicators a great deal of time and resources every season and dramatically reduce the risk of an unintentional label violation.

NAAA also strongly supports the use of consistent label language. An excellent example of this are the new mandatory spray drift statements in numerous recent proposed interim decisions (PID). Ensuring instructions that are intended to be consistent in purpose among all products are also consistently worded reduces confusion and uncertainty. The benefits of the combination of having things always worded the same and always in the same place for all pesticide labels cannot be overstated.

The ability to customize digital labels specific to the crop, application method, and targeted pest will also prove to be beneficial to all applicators. As the white paper notes, some labels can be quite lengthy, particularly when they can be used on numerous crops. The ability for an applicator to reduce a lengthy label to only the information they need for their current use would further reduce the time and resources spent reviewing labels. And similar to the structured and consistent label content proposed in the white paper, it would reduce the likelihood of errors associated with missing critical details or selecting those details from the wrong section of the label.

NAAA is also encouraged by the sections in the white paper that discuss the ability of equipment manufacturers and third-party developers to develop software that integrates with digital label content, as well as the potential to include spatial data. This fits well with a long-term project NAAA is currently exploring - the development of software to perform site specific risk assessments. This concept is essentially a combination of the PULAs and ESA and ecological risk assessments, except the risk assessments are carried out based on the exact application setup used to treat the site, with future assessments for the same site conducted using weather data from prior applications to estimate actual deposition.

The software will work in the background of job dispatch software utilized by the aerial application industry to assign and track pesticide application work orders. The user will input variables such as aircraft, spray system setup, etc. The application site will be defined geographically with all adjacent sensitive sites clearly delineated. The original concept called for the pesticide being applied to be input into the software, which would then require its level of concern (LOC) to be located from a yet to be created database that contains all active ingredients. The ability to access label and registration information from the digital label content would simplify this process. The software will conduct a site-specific risk assessment using all the data, with the resulting drift mitigations output to the work order. Because it would access digitized label content, these mitigations would be enforceable as label language.

The software would adjust subsequent future applications by using environmental conditions recorded by the applicator during the prior application and application equipment information to estimate downwind deposits made towards a sensitive area. When another application of the same pesticides is to be made to the same area, a new site-specific risk assessment is conducted using the deposition estimates from the first application to guide potential restrictions for the second application. These new restrictions could include a further reduction in acceptable wind directions, an even shorter boom length, even larger droplets, or an additional rate restriction.

Another future technology being explored by NAAA is an autonomous spray system. The autonomous spray system will combine GPS, an updated version of AGDISP running real time on the GPS, an onboard meteorological measurement system, and individual electronic nozzle control into a single system. Among many things, the autonomous spray system will be able to turn nozzles on an off individually as they enter an application area, allow for instant changes in droplet size during the application, and adjust boom configuration to compensate for changes in wind speed and direction. With the integration of digitized label data, the autonomous spray system could automatically adjust for label compliance. For instance, if a label requires a reduction in boom length when applying at a higher wind speed, the autonomous sprayer can reduce the boom length in flight if and when the wind speed increases to the pre-determined level on the digital label.

NAAA does have two suggestions on the concept of digital labels. The first is that the digital label data packets need to be of a size and format that permits for a quick and easy transfer over the internet. The vast majority of both commercial and grower agricultural pesticide applicators live and work in rural areas. While internet access is constantly improving, there are still many parts of the country with poor mobile phone reception and limited options for high-speed broadband internet access. For aerial applicators to truly benefit from all that digitized label content has to offer, they need to be able to access it both at an operation and in the aircraft.

The second point is that EPA will need to be clear on how digital label content available online will be treated compared to the label physically accompanying the pesticide when it comes to enforcement actions. Currently the label that came with the pesticide when it was purchased is considered the label applicators are legally required to follow. This is the case even if a newer version of the label is available online. The ability to instantly access a label, for applicators, registrants, and the EPA alike, will mean that a label can be updated more frequently and that applicators can instantly access the latest version. NAAA recommends EPA continue the policy that the label that is attached to a pesticide is the version to which applicators will be legally held to in the event of a complaint or investigation. This will prevent aerial applicators with poor internet access from being punished because they cannot check for updated digital label content as frequently or easily. In addition, there needs to be an established period for which a digital label is good for. NAAA suggests a six-month period to be consistent with ESA bulletins from BLT. Prior versions of labels should be archived by date of issuance and made available digitally as well in case of a dispute over which label an applicator was legally required to follow.

Conclusion

NAAA supports the concepts of structured labeled content and digital label content, as well the use of consistent label language. If done correctly, they will increase the accuracy and safety of pesticide applications while also reducing applicator time and resources spent on reviewing labels for important instructions.

Thank you for this opportunity to comment.

Sincerely,

Andrew D. Moore
Chief Executive Officer