Agricultural Aviation

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Season's Greetings!

Advice for achieving a safe, prosperous and harmonious summer flying season

In This Issue:

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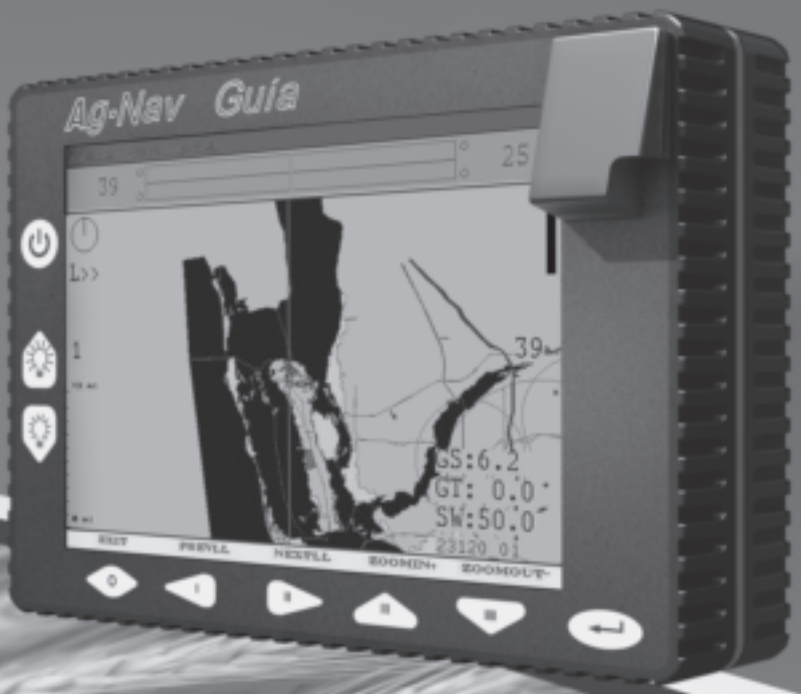

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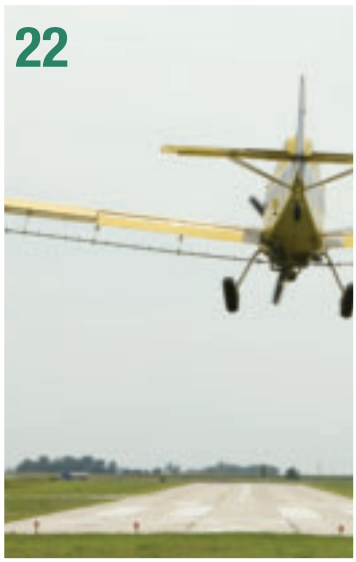
Contents



ON THE COVER

From cover to cover, this issue is packed with great advice for achieving a safe, prosperous and harmonious summer flying season

ALSO INSIDE:

Present in 34 states and counting, the brown marmorated stink bug is doing serious damage to a range of fruits and vegetables

COVER STORY

FEATURES

NOTES

DEPARTMENTS

Agricultural Aviation is the Official Publication of The National Agricultural Aviation Association

President's Message

Rick Richter

Common Courtesy and Safety Go Hand in Hand

The 2011 spray season should be well on its way for most of us by the time this issue reaches its readers. The cover story package pertains to airport operations and etiquette—subjects always important to consider. The manner in which we treat our fellow aviators, agricultural or otherwise, goes a long way toward better relations as seen through the eyes of John Q. Public. When using public-use airports we are most definitely in the spotlight. By putting our best foot forward we're able to convey a positive professional image to those who might be skeptical of our operations. It also shows we are responsible stewards of the airspace that we are all so privileged to share.

That being said, we can also maintain our professionalism by showing respect not only for those who are a part of our own operations, but for the people who are competing with us as well. The airspace we all occupy is a precious commodity during a busy spray season. I've found that it helps if you give your competitors a courtesy call before departing to a congested area. There's a good chance they won't have a problem working with you, but if you decide it would create a hazardous situation, you could always go in another direction for a few hours. It is just a common courtesy and one that works well for everyone involved.

In California, when we get busy during the rice-planting season, most of the local operators will try to schedule satellite airstrips throughout the day to avoid getting jammed-up and losing productivity. However, sometimes it can't be avoided, and strips are often shared with the idea of simply getting the work done as safely as possible. In this case it's always a good gesture to talk with the other pilot and crew prior to beginning your own work. I learned this from my mentors (I was fortunate to have two) and still try to practice it today.

By establishing good communications with the other crew you can learn where they're working and also get a good idea of how much of the job they have remaining. Once you do get started, you'll be able to get into the flow much easier and stay out of each others' way. One of my mentors referred to this synchronized ballet as "gelling." Once you became familiar with the other pilots' techniques, you adapted your own and thus were able to fit right in and "gel."

Another major concern of working multiple aircraft together from the same airstrip is that of situational awareness. Do you know for a fact where all the aircraft are at all times? Can you keep it in your head and still go about your own work? Well, my friends, if there's any doubt to these questions, you might want to work somewhere else for a while, returning when it's less congested. I've done that on more than one occasion myself. "Trading paint" will ruin everyone's day and certainly isn't worth the risk.

I regret to admit that just such a situation actually happened at our home base airport last year. To make a long story short, I'll just say we classified it as a "near miss." I became aware of it only through ensuing radio transmissions between the two pilots. Let me tell you, this had the potential to be a real tragedy, and only by the grace of God did we avoid a sure disaster.

As a responsible operator, and I believe I am, this was a real wake-up call, and I wasn't about to let it go unanswered. At the end of the day, when we all had a chance to discuss what had actually happened, only then were we able to propose a remedy to ensure it would never happen again. The solution was simple: better communications at all times between aircraft. Company radios are installed in our aircraft but we had not been using them to their full potential. One of our seasonal pilots (who was not involved in the situation) had developed a habit of calling out his position when approaching or departing the runway. We always knew where he was because of this practice, so from that point forward we adopted that policy for all aircraft. The tail number of the plane, its location and the pilot's intentions are now part of our standard operating procedure

at all times. Whether it be a half-mile final, left or right downwind, over the highway, one mile base leg or "coming out," it paints a picture of situational awareness in the minds of all who are listening. It's a valuable safety measure and a professional courtesy that was overlooked in all my years of flying. Not anymore.

When operating from a public-use airport, good practice calls for the use of aviation radios to announce your position to non-ag aircraft just as I described on company radios. Other good practices include running with your strobes and nav/position lights illuminated, and using your smoker when approaching another aircraft. A puff of smoke is always an attention-getter, and a much appreciated gesture.

In closing, let's do all we can this year to make a safer working environment so we can all do what we do best. Take care, and be safe. ■

The manner in which we treat our fellow aviators, agricultural or otherwise, goes a long way toward better relations as seen through the eyes of John Q. Public.

Executive Director's Message

Andrew Moore

In Pursuit of Perfection

When you closely scrutinize the professionalism of the agricultural aviation industry, it is hard not to be impressed with our environmental and safety record, our technological innovation and our willingness to take a hard look at ourselves to perfect the way we do business. Consider that our industry performs approximately 1,430,000[1] aerial application missions a year treating 7,150,000[2] fields with an average of 247[3] confirmed aerial drift complaints per year according to the latest regulatory survey done by the American Association of Pest Control Officials. That equates to a 0.017 of one percent chance that a confirmed drift complaint will occur on an agricultural aviation mission, or a 0.00345 of one percent chance that a confirmed drift complaint will occur near a field treated by air. In terms of our aviation safety record, in the past 13 years, our accident rate has dropped by more than 20 percent to a rate of 7.53 accidents per 100,000 hours flown.

Even with this impressive safety record we continue to make leaps and bounds in developing safer equipment and better targeting technologies. Seatbelt airbags are now available in some new agricultural aircraft produced in the U.S. and can be retrofitted into a number of older aircraft. Meteorological equipment can now run in sync with geographical information systems and flow control technology. This allows an ag pilot to precisely line up an aircraft taking into account wind speed and direction to mitigate drift while at the same time ensuring prescribed doses are allocated to a field depending on the plants' needs.

Our professionalism runs even deeper with over 1,700 ag pilots attending the PAASS program this past season and participating in a curriculum focusing on ethics. They were encouraged to analyze a deeper level of their own conscience such as their moral philosophy and whether they were consistently doing the right thing in their profession.

Aerial applicators may begin to ask themselves, "Is there anything else we can do?" They answer is a resounding, "Yes!" Even though we are both highly technical and self-reflective, we still have the occasional "mishaps" that weigh down our industry collectively.

I was recently visiting with a state pesticide regulatory control official and was told that expanding the number of herbicides for aerial use was a bad idea because of drift. I challenged this statement and informed the regulator that aerial application's average droplet size, in a number of drift studies, was larger than other forms of application and that droplet size determines drift. I followed this up with the question: Are you sure that your concern doesn't stem from an applicator causing drift, rather than a form of application causing drift? The regulator ultimately thought about this and shared that he was thinking about a particular applicator in his state who allegedly had a number of drift instances.

A single applicator was affecting a state regulator's opinion of an entire industry. That regulator, in turn, is a reputable state enforcement official who holds sway with his peers at other state pesticide control agencies, the EPA and even with the crop protection product manufacturing reps. From here we can begin to connect the dots. Regulations aren't formed in a vacuum; there is an action that causes them. It doesn't have to be multiple actions, sometimes it might be a

[1] 2.2 aircraft per aerial application business x 1,625 aerial application operations in the U.S. (from NAAA's 2004 Pesticide Use Survey) x 400 approximate missions or takeoffs per aerial application business in a year.

[2] 2.2 aircraft per aerial application business x 1,625 aerial application operations in the U.S. (from NAAA's 2004 Pesticide Use Survey) x 400 approximate missions or takeoffs per aerial application business in a year x 5 approximate fields treated per mission.

[3] The American Association of Pest Control Officials Drift Survey estimates that there were 244, 237 and 260 confirmed drift complaints in 2002, 2003 and 2004, respectively, equaling an average of 247 per year.

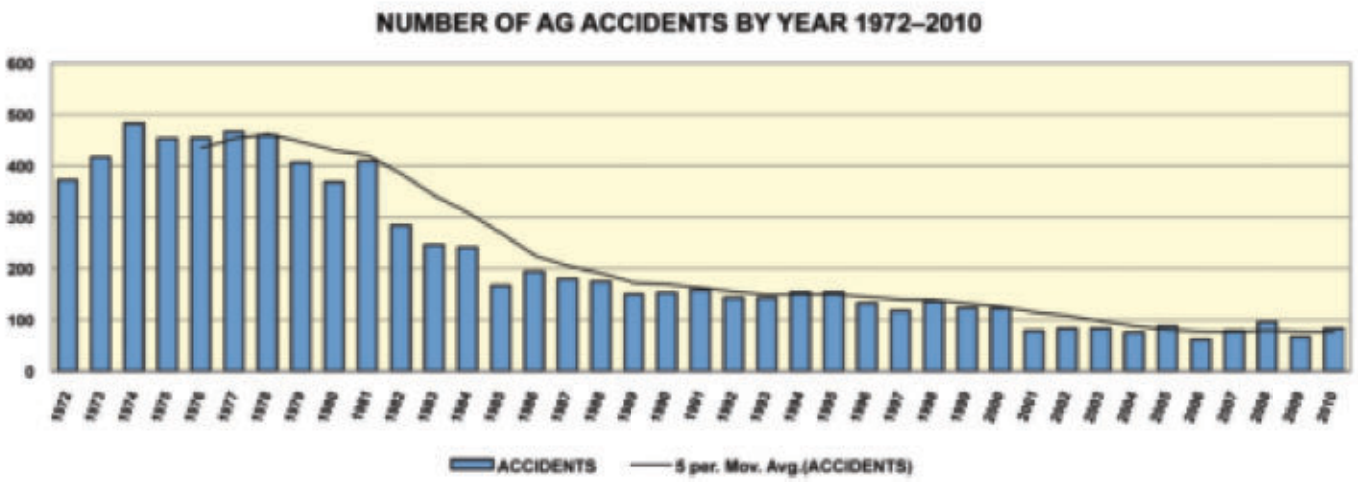
single one or very few. For this reason it is important for us to constantly strive for perfection in our industry and urge our peers to do the same.

Throughout the pages of this magazine you will be reading columns and articles related to this theme of the importance of being reputable ambassadors of the aerial application industry. The PAASS slogan cannot be stated enough times: "Upon the Performance of Each Rests the Fate of All." Key people's opinions—whether they are regulators, airport managers or the general public—are formed by our actions and our fellow applicators' actions. For this reason it is vital that as we approach the main part of the aerial application season all of our missions go without incident. We need to encourage our fellow applicators to strive to do the same.

It is human nature to evolve. It was cool not too long ago to have access to encyclopedias of cyber-information via a dial-up modem. Today, many would say anything other than a wireless connection to a smart phone is far too slow and confining.

Regulations aren't formed in a vacuum; there is an action that causes them. It doesn't have to be multiple actions, sometimes it might be a single one or very few. For this reason it is important for us to constantly strive for perfection in our industry and urge our peers to do the same.

Perfection is a tall order and its maintenance requires constant work. There are multiple benefits to it, though: a less burdensome regulatory environment, affordable insurance rates and peace of mind. Let's do all we can to make 2011 our safest, soundest season yet. ■



The aerial application industry has come a long way over the past 40 years. As seen in the chart above the total number of ag accidents has decreased five-fold from more than 400 per year in the 1970s to fewer than 80 accidents a year, on average, over the last decade. Note that in 1974 there were 481 ag accidents! The "trend line" on the graph shows the decreasing accident trend based on a five-year moving average. Despite these impressive safety improvements, NAAA and NAAREF are committed to bringing those figures down even further. For more on this topic, please see Ron Cline's article on pg. 31.

WNAAA President's Message

Julie Broussard

Communication: How Well Do You Use It?

It's time once again to crank up for the new season. The aircraft have new annuals. Trucks have been serviced, insurance paid and licenses are up to date. Even the office has been semi-cleaned. So you think you are ready to go to work?

As we start this new season, I think about the things I can improve on to make the business easier and more productive. Reviewing the past, I see one of the greatest things I can improve on is communication, getting the correct information to the correct person.

In our industry, communication can be the most important tool you have to do a good or bad job. Don't assume anyone knows what you are thinking. Emphasize all important points and repeat your instructions as necessary.

As the scheduler at our office, it is left up to me to make sure I get all the necessary information from the farmer when he comes in to book a job. Maps are necessary in order to avoid drift or other problems with other crops, homes, nurseries, wires or towers. I like the farmer to book his job with seed, fertilizer or pesticide dealers to keep errors to a minimum. The dealers and I can then make the necessary plans concerning time and place.

Don't assume the pilot knows the field just because he just flew it three days previously. Mr. Farmer has three 80-acre fields this year instead of two. Is the truck driver on the correct strip? After all, we have two strips with the same or similar names 20 miles apart!

The same is true for things happening here at the hanger and in the office. Do you feel like people should know what you intend for them to do? Guess again, they don't. Sometimes I look out my window and say to myself, "Why are they doing something that way?" Well, no one instructed them the way you had in mind.

The business of doing a good job should always come first. After all, the farmer's livelihood hinges on how well we do our job. With proper communication between everyone concerned all should run smoothly.

On another note, I would like to express my deepest sympathy to the Snow family for the passing of Mr. Leland Snow. The industry will miss him tremendously as a professional and personable man. His memorial service was one of a kind.

I hope everyone has a good, safe and prosperous season. ■

Communication can be the most important tool you have to do a good or bad job. Don't assume anyone knows what you are thinking. Emphasize all important points and repeat your instructions as necessary.

NAAREF President's Message

Rod Thomas

What I Didn't Do

Sometimes in this business when the dust settles at the end of the day less is more. Let me explain. By not getting just a little closer to that set of wires, or not making that last pass, you avoid a potential problem by something you didn't do. The easiest way to describe this concept is with a situation all of us men get into with the women we love. When asked our honest opinion about anything almost always less is better than more. A couple of words about "how that dress looks" is a lot safer than a long appraisal. I learned this the hard way since, like most of you, I didn't have a mentor when I started hanging around girls.

I didn't start in this business working for somebody so I had to reach out for "spray and aviation mentors" wherever I could find them. With the help of those folks and with a little trial and error mixed in, I have survived in this business for some time. I've made it a point to take notes every time something I did wasn't the best approach. As a result I have a long list of "what not to do." I am thankful for the advice I received along the way and would like to pass along a little advice of my own. Just like many of you I am a "Type A" perfectionist and take a great deal of pride in my work. I like to look at my GPS screen at the end of a job and see all of the lines filled in without gaps. I too circle that field and wonder if I can get just a little better "paint job" on it.

The biggest "what not to do" that ensnares ag aviators of all experience levels is the pressure to complete the mission without a thorough analysis of the conditions. Simply finishing the job can cause all kinds of problems when conditions aren't right. The temptation to empty the hopper or put on that last pass of herbicide in a tight corner of a field adjacent to a sensitive crop can put us in a position to explain why we did something when it would have been a lot easier to explain why we didn't. Putting out a load (or any part thereof) when it would have been better not to even take off can make us our own worst enemy (think flying in poor visibility, or weather, or light).

Economic or environmental damage from application mistakes causes our entire industry a problem. Physicians are taught to "first do no harm" and as ag pilots we have that same responsibility when we apply crop protection chemicals. As aviators we all had instructors that while introducing emergencies to our training admonished us to "stop and verify" before we added danger rather than resolution to the situation. Don't make your first words back from a flight, "I wish I wouldn't have done that." Remember, it is a lot easier to explain why you didn't do something than why you did.

Have a safe summer. ■

NEW MEXICO'S 10-GALLON CHALLENGE *NAAA Board member and New Mexico rep Richie Crockett presents NAAREF President Rod Thomas with a $2,000 donation to PAASS on behalf of the New Mexico Agricultural Aviation Association (NMAAA) at the NAAA Spring Board Meeting. This was NMAAA's third installment of a three-year, $6,000 pledge to the PAASS Program. After the presentation Crockett announced NMAAA was augmenting its generous commitment to PAASS with a pledge to donate $3,000 a year for the next three years and challenged other state associations to match his state's support for the program. To date, three state organizations, Illinois, South Dakota and Texas, have accepted the challenge by donating $2,000 for 2011.*

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Washington Report

By Danna Kelemen, NAAA Coordinator of Government & Public Relations

NAAA's Continued Campaign to Mark MET Towers

According to NAAA records, 8.3 percent of agricultural aircraft fatalities stem from collisions with towers. This past January, another tower contributed to this statistic, as one of our own tragically lost his life to an unmarked Meteorological Evaluation Tower (MET). And while towers are recognized as a known risk within aerial application, this sobering percentage is causing people outside the industry to sit up and take notice of the havoc that unmarked towers can cause. The concern for METs is becoming increasingly more evident, and NAAA is working to ensure more is done to provide for the safety of all low-level aircraft pilots.

In early February, NAAA and 384 other concerned individuals and organizations from across the country responded to a notice for comments issued by the Federal Aviation Administration (FAA) regarding proposed revisions to a tower marking Advisory Circular (AC). The responses overwhelmingly favored increased markings for METs less than 200 feet. Of the comments submitted, less than 2 percent were neither for nor against marking or opposed to marking altogether. Of those that were opposed, their justifications appeared to be proprietary in nature. Favorable comments ranged from outrage to beseeching requests for tower markings, and submissions were from industry, pilots and concerned citizens alike. As one individual stated, "I find it unfathomable that the FAA, as strict as it is with notification requirements, would not notify pilots and ag spraying operations as the Met towers would be the most dangerous to this industry." While the majority of comments stemmed from those involved or related to the aerial application industry, several wind energy companies did speak up and support the effort to mandate the marking of MET towers. Harness Energy LLC in particular stressed safety was a priority and could be achieved within the wind industry:

> We specialize in tilt-up MET installation and have installed these towers across the country. Safety is a key concern during the installation process, but it should not end there. It is important for the growth of our industry that the community feels safe well after we leave. Under the current system, there exists a high degree of legislative irregularity from county to county. This makes the construction process more difficult to navigate and increases the likelihood of potentially tragic events. It is our hope that any action made by the FAA will result in a national standard that provides a safe environment for aircraft without impeding the growth of renewable energy in the United States.

Other energy companies also touted safety as a priority and supported NAAA's position on marking MET towers. DNV Renewables (USA) Inc. stated, "DNV recognizes this important safety issue and as consultants in the wind power industry, we encourage our customers to mark all meteorological towers for enhanced visibility. DNV supports the efforts of the aviation industry to standardize and necessitate the implementation of reasonable and consistent marking requirements."

NAAA is urging for revisions to the AC to be promulgated promptly (as of press time the FAA has yet to finalize the AC). The FAA has communicated to NAAA that it is "working on a final agency position and … hope to move forward with it very soon."

Even if the proposed marking revisions are included in the AC, additional solutions to this dangerous problem must be found. NAAA worked to include language within

Out of 385 comments submitted to the FAA, less than 2 percent were neither for nor against marking or opposed to marking altogether. Favorable comments ranged from outrage to beseeching requests for tower markings. Submissions were from industry, pilots and concerned citizens alike.

the FAA Reauthorization Bill to establish a study on the feasibility of developing a central tower database where all tower locations could be stored and searched before low-level flight activity. While NAAA has sought variations of such legislation in earlier Congresses, this Congress the Association has been working closely with the office of Congressman Randy Neugebauer (R-TX) in drafting the current language. As such, the Association is very pleased that Congressman Neugebauer's amendment was included in H.R. 658, the FAA Reauthorization Bill, that the House of Representatives passed in early April. In his remarks to the House of Representatives, Congressman Neugebauer stated:

> This amendment is the first step in making vital information publicly available. Doing so will allow low-flying pilots to operate safely and conduct many important activities, including operations that are crucial to West Texas agriculture. Pilot fatalities and injuries can be avoided by providing easy-to-access information on the Internet regarding the location of these obstructions, and my amendment encourages the FAA Administrator to consider the development of such a resource.

The House and Senate will now come together in Conference Committee to reconcile their respective versions of the FAA Reauthorization Bill, and NAAA will continue to work with Members of Congress to ensure Congressman Neugebauer's amendment remains in the final version.

Media Scrutiny

In California, the tragic death of aerial applicator Stephen Allen at the beginning of the year has prompted several San Francisco Bay Area media outlets to shine a spotlight on unmarked METs. The *Contra Costa Times* published an article on March 3, which the *San Jose Mercury News* picked up a day later, discussing the recent fatality and looking at possible changes to permitting requirements for METs in Contra Costa County. The county is voluntarily considering changes to permitting requirements as a result of the deadly crash in January. Yolo County in the Bay Area is doing more than considering changes; it plans to implement permitting changes in response to the MET tower crash. The changes in Yolo County will require painting towers less than 200 feet so the towers are plainly visible to pilots.

GOOD STUFF! *NAAA's new Wind Tower Statement Stuffers make it easier than ever to get the word out to the people who need to hear our message the most—aerial applicators' customers.*

The Best Things in Life are Free (For NAAA Operator Members)

NAAA is pleased to introduce the newest tool in its Wind Tower Education Campaign, specially designed "statement stuffers" that give aerial applicators the means to make a simple yet bold statement. Use them to speak out against ill-planned wind energy siting and educate your community and customers about the risks to agricultural pilots and farmers alike.

With the summer flying season nearing full swing and aerial applicators' services in demand, it's the perfect time to remind your customers about the importance of aerial application and educate them about the unintended consequences that poorly planned wind tower placement can have on agriculture and low-level aviation.

The beauty of NAAA's Wind Tower Statement Stuffers is they are designed to fit into a No. 10 envelope. You don't have to advertise to get the message out. Simply slip an insert in along with the invoices you normally send to your aerial application customers.

The double-sided statement stuffers are printed on glossy, four-color paper and available in packets of 100. Best of all, the statement stuffers are ***free*** to NAAA Operator Members for the duration of the summer

In neighboring San Francisco, KQED Public Radio interviewed NAAA Executive Director Andrew Moore about the recent fatality and the MET tower regulations. Prior to that, KXTV News in Sacramento had interviewed Moore shortly after the preliminary NTSB report came out. The NTSB report indicated that Allen likely never saw the MET that his Thrush S-2R hit.

Many of the FAA AC comments also were from friends and family members of Allen, imploring the FAA to prevent another death from occurring. "I recently lost a friend in a collision with an unmarked MET tower. . . I believe that not marking these towers with high visibility paint and lights is a loop hole in established standards which compromises the safety of those who operate in this environment," stated a friend of Allen's who is a retired military and commercial pilot. "Reasonable standards allowing for the temporary use of these sites as well as promoting aviation safety can be found and applied."

In a recent development in California following Allen's death, legislation (A.B. 511) was introduced that would mandate marking and lighting of meteorological towers under 200 feet. A.B. 511 cleared its first hurdle April 26 when the Assembly Business and Professions Committee unanimously approved it. The bill moves to the Assembly Appropriations Committee next.

Meanwhile, NAAA is striving to educate media outlets in South Florida about ag aviation safety and accessibility concerns in relation to a wind company's plans to place 84–100 wind turbines in the heart of the Everglades Agricultural Area. Such media education campaigns are necessary to ensure the public realizes the potential consequences wind energy development and the siting of MET towers may have on agricultural production and aviation safety.

More Federal Attention

On the national level, the National Transportation Safety Board (NTSB) released a Safety Alert on March 11 urging pilots of low-flying aircraft to be watchful for unmarked Meteorological Evaluation Towers. The Safety Alert was released upon conclusion of the investigation into the January fatal ag plane crash. The NTSB Safety Alert not only warned of the dangers associated with unmarked METs, but also encouraged pilots to request markings of towers under 200

flying season (or while supplies last). We mailed samples of the new statement stuffers to our Operator Members in April. Non-members can get them, too, for $25 per 100-pack. NAAA encourages aerial applicators to order as many packets as they can reasonably use. We will continue to give them away to NAAA Operator Members through October, or while supplies last. (Additional postage fees may apply for large orders.)

Let's Be Fair About Sharing The Air

The statement stuffers are the latest component of NAAA's Wind Tower Education Campaign. Last year NAAA launched a public outreach campaign to raise awareness about the worrisome effects of wind energy development on agriculture and aviation. Like the ad slicks and radio scripts that preceded it, each statement stuffer takes a two-pronged approach: one side highlights the dangers of unmarked MET towers for pilots of low-flying aircraft; the other addresses the safety and accessibility concerns associated with the placement of wind turbines on productive farmland. Collectively, the messages illustrate how poor tower marking and improper wind turbine siting put pilots' lives and farmers' livelihood at risk.

Over the past 12 years there have been nine fatal accidents involving collisions with towers, including, most recently, one at the beginning of the year when an ag pilot in California lost his life in a collision with an unmarked MET. In the aftermath of that tragedy, many people have taken notice of the inherent danger that unmarked, untraceable METs pose to low-level aviators. NAAA is working to effect meaningful changes and believes that responsible wind energy development can be achieved without jeopardizing pilot safety.

It's up to everybody—NAAA, its state association partners and aerial applicators—to educate the public about the consequences that ill-planned wind energy development can have on agricultural and aviation. Please keep the conversation going in your area by using the statement stuffers and other public outreach tools available from NAAA. Our ad slicks and radio scripts are available for download at www.agaviation.org/towers.htm.

To order your Wind Tower Statement Stuffers, contact NAAA at (202) 546-5722 or information@agaviation.org. When e-mailing, please put "NAAA Wind Tower Statement Stuffers" in the subject line, indicate the number of packs desired and provide a mailing address for shipping purposes. Order processing may take up to one month, so we strongly encourage you to place your orders early. ■

Order Your Wind Tower Statement Stuffers Today!

- Packs of 100 are free to NAAA Operator Members; $25/pack for non-members.
- Offer runs through Oct. 31 and is good while supplies last (whichever comes first).
- Order as many packets as you can reasonably use; however, additional postage may apply for large orders.
- For more information, call NAAA at (202) 546-5722.

feet in their areas. The NTSB alert highlights the difficulty in seeing METs from the air and questions the overall effectiveness of the proposed voluntary revised AC. The NTSB took a strong position by stating that as a result of METs' inconspicuous size and color they could interfere with all types of low-level aircraft—including agriculture, and many others.

NAAA posted an article on the NTSB Safety Alert on our website and more information can be found by visiting www.agaviation.org. The NAAA posting was also picked up by *AVweb*, and links to the NAAA story can be found on its website as well. In addition, The FAA Safety Team (FAAST) recently produced a brochure highlighting the dangers of unlit, unmarked and unchartered towers—urging low-level pilots to "be aware and fly safe." Lastly, *Air Safety Week* recently spoke with Moore regarding an upcoming article on the impact of METs on aviation safety.

In news from across the border, the Canadian Civil Aviation released its Advisory Circular—effective March 8. The Canadian AC suggests two features: (1) painted banding in traditional orange and white or other conspicuous color combination; and (2) marker balls installed on the top guy wires. The Canadian AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards. The Canadian Civil Aviation states the purpose of the AC is to provide guidance for wind farm owners who may install MET towers and for crop-spraying aircraft regarding the marking of METs. Much like the FAA's proposed AC changes, the markings on MET towers remain strictly voluntary.

Allure of Wind Energy to Farmers

The issue of MET towers continues to grow in importance to the aerial application industry as the wind energy industry expands. A USDA survey in 2009 found farmers owned and operated 1,845 wind turbines. Surging costs of fossil energy, along with tax breaks and other government aid, are promoting new green energy systems on farms and ranches. USDA has a financial toolbox to help farmers adopt green energy including at least $100 million a year in the Rural Energy for America Program. Estimates of income from one wind turbine alone range from $5,000 to $15,000. As a result of this hard sell by wind energy companies, NAAA has urged the USDA, DoE and other federal agencies to inform farmers considering siting wind energy generators and related towers on their land of the safety concerns it poses to aerial applicators and the accessibility challenges it poses in aerially treating cropland with towers on or near such land. Unfortunately, in today's economically challenged times, farmers may decide that the potential for guaranteed green income outweighs the risks of accessibility to their farmland. That's a crucial consideration that farmers and landowners are unlikely to hear about from wind energy developers. To ensure that farmers are fully informed before making decisions about wind-energy development, NAAA encourages members to participate in our Wind Tower Education Campaign. NAAA launched the campaign last year to raise awareness about the worrisome effects of wind energy development on agriculture and aviation. That message is articulated in a series of wind tower education ad slicks and radio scripts available for download at www.agaviation.org/towers.htm. Each ad ends with a simple plea: "Let's Be Fair About Sharing The Air." New wind tower education statement stuffers are the latest addition to NAAA's arsenal of public outreach tools. The bill stuffers makes it easier than ever to get the word out to the people who need to hear our message the most—aerial applicators' customers. (See sidebar for details on ordering these statement stuffers from NAAA.)

NAAA will continue to monitor FAA's AC proposal and work toward the establishment of a feasibility study to develop a central database to house tower locations nationally. As information develops regarding MET towers, please monitor the eNewsletter and NAAA website for more information. Increasing emphasis is being placed on the necessity for proper MET tower marking. NAAA will continue to press for more stringent guidelines to provide for safer airspace of low-level aircraft. ■

Windfall or Wind Folly? Make Sure Farmers Hear the Rest of the Story

The prospect of converting high winds into big dollars may be an enticing proposition for farmers, but it is also one that can have far-reaching consequences for aerial applicators and farmers without careful planning. You can bet the American Wind Energy Association won't be highlighting that side of the story in ads like this one on display in Washington, D.C.'s Capitol South Metro Station. NAAA launched its Wind Tower Education Campaign to ensure that farmers are fully informed before making decisions about wind energy development.

NAAA President Testifies to Congress About High Fuel Prices' Effect on Agricultural Aviation

NAAA President Rick Richter testified April 14 before the House of Representatives, Small Business Committee, Subcommittee on Agriculture, Energy and Trade on the topic of high fuel prices' damaging effects on small businesses.

Richter, who is also owner of Richter Aviation, an aerial application small business in Maxwell, Calif., focused on the harmful effects fuel costs have on aerial application businesses, farmers and ultimately consumers. Richter informed the committee aerial application accounts for an estimated 18 percent of commercially applied crop protection products in the United States and is often the only method for timely pesticide application. Increases in fuel prices "result in a number of cash-flow and service-marketability issues for the aerial application industry," Richter testified. Moreover, "the price of fuel always tends to trickle down all the way to the last entity in the supply chain, from the applicator to the farmer to the retailer and ultimately to the consumer."

Richter stated fuel surcharges have become a common part of an aerial application business's invoice. Thanks to higher agricultural commodity prices, these surcharges are met with minimal complaint by farmer-clients presently because they are receiving a good price for their crop. The agricultural aviation industry would face real challenges, however, should fuel and commodity prices move sharply in opposite directions. For example, if the same high fuel prices exist as they do today but commodity prices return to 2002 levels—when prices were two to three times lower—farmers would be less willing to embrace surcharges. This would result in a decrease in the use of aerial application services, and farmers' yields and crop quality would be negatively affected.

Richter's testimony also underscored the challenges aerial applicators face with payment terms. Fuel typically must be paid in 10 days whereas applicators aren't typically paid for 45–60 days. This causes challenges because fuel costs consist of approximately 20 percent of an aerial applicator's total expenses and applicators purchase fuel loads in the thousands of gallons, outlaying large chunks of capital for fuel. Richter stressed this is a challenge "particularly when the price of fuel is high" and will be more of a challenge if, as expected, "higher interest rates return."

Richter's comments also acknowledged that applicators who hedge on the price by purchasing fuel early take on the risks of the financial markets and storing fuel. It can result in a loss of interest payable, and may jeopardize the fuel's efficacy by developing moisture issues, algae problems in Jet-A and possibly evaporation of avgas.

Another fuel issue Richter raised that pertains to aerial application is an effort underway by activist groups and EPA to either phase out or restrict avgas, which is used in 51.87 percent of agricultural aircraft in the U.S. Richter stated the impacts to the industry and farmers should avgas be phased out prior to the development of a safe and practical alternate fuel could leave crops potentially untreated and vulnerable to pests and diseases. In closing, Richter emphasized how a national policy that would ensure a stable price and supply for Jet A and avgas is imperative for aerial applicators and farmers because of the important role they play in producing a safe, affordable and abundant global supply of food, fiber and bio-fuel. ■

NAAA 2011 President Rick Richter (second from right) testifies before the House Small Business Subcommittee on Agriculture, Energy and Trade on the effect of fuel prices on small businesses.

Washington Report

NPDES PGP Planning Extended through October; EPA Publishes "Draft Final" Version; House Passes Fix; Help in Urging Senate Fix

With time running out on the April 9 court deadline for nationwide implementation of NPDES pesticide general permits (PGPs), in early March EPA asked for and received from the 6th Circuit Court of Appeals an additional six-month extension of the court's stay (or until Oct. 31, 2011). As we've reported in earlier NAAA articles, EPA's PGP would regulate pesticide applications into and over, including near, waters of the U.S. In addition, EPA must review the PGPs being developed by the remaining 44 states. About three dozen states have PGPs that are either complete or nearing completion, but many of the remaining states will require more time to finish their permits. Please visit the NAAA website (www.agaviation.org/sites/default/files/State-by-State-Comparison_0.pdf) for analysis of those states that have draft permits complete already. With the deadline now extended to Oct. 31, EPA's 2006 final rule exempting such permits remains in effect until then.

On April 1 EPA posted on its website a "near final" version (www.epa.gov/npdes/pesticides) of its PGP for states to use to complete their PGPs. This is the version that emerged from the White House Office of Management and Budget following an extensive interagency review. Keep in mind, this is not the "final" version of EPA's PGP, for EPA has yet to complete its consultation with the National Marine Fisheries Service and U.S. Fish & Wildlife Service (Services). It will take several months more to complete the consultation and incorporate any additional changes required to meet the Endangered Species Act. One of the reasons the court granted EPA (and states) the additional six months is to allow for completion of this consultation. While only federal actions (EPA's PGP) must undergo consultation with the Services, state officials are likely to incorporate in their state PGPs any additional requirements added to EPA's PGP as a result of the federal consultation.

Overview: The PGPs are being developed as a result of a February 2009 court decision in *National Cotton Council vs. EPA,* which struck down a 2006 EPA rule exempting certain pesticide applications when made in compliance with the pesticide product label. Following nearly two years of work, these PGPs will generally apply to pesticide applications made directly to water or where pesticides will unavoidably reach waters of the U.S. when applications are made to: (1) control mosquitoes and other aquatic nuisance insects; (2) control aquatic weeds and algae; (3) control forest canopy pests; and (4) control invasive fish or other nuisance animals in waters. Many states went beyond these four EPA-covered uses to include (5) pest control activities not covered by the other four uses where pesticides will unavoidably reach waterbodies, ditches or other conveyances to jurisdictional waters. About half of the states direct their permits to jurisdictional "waters of the state," which expand the permit's jurisdictional reach from waterbodies meeting the definition of "waters of the US" in the Clean Water Act (CWA) to cover almost all surface waterbodies in a state, often including roadside ditches, ponds and non-flowing conveyances. Groundwater is often considered a "water of the state" but is not included in the scope of most state PGPs.

With the publication of this version of the permit, EPA is providing states the version they will be expected to meet within the remaining six months of the extension. Since the ESA consultation applies only to EPA's permitting actions, only the six states for which EPA's PGP applies (Mass., N.H., N.M., Idaho, Alaska, Okla.) likely will be affected by any ESA-based requirements that emerge from the consultation with the Services. However, some states (e.g., Washington) already had aquatic pesticide permits that incorporate ESA court decision considerations, and these will continue to be applied. EPA's website states that its PGP will not cover non-target or off-target spray drift, although targeted drift is covered (e.g., from aerial pesticide applications over waterbodies to control adult mosquitoes [when the adulticide "drifts" into the water

By John Thorne, NAAA Consultant, and Danna Kelemen,
NAAA Coordinator of Government & Public Relations

below] or to control forest canopy pests [when the pesticide "drifts" through the canopy to waters below]. Those forms of targeted drift are covered by the PGP). EPA also states: "This permit … does not cover, nor is permit coverage required, for pesticide applications that do not result in a point source discharge to waters of the US, such as terrestrial applications for the purpose of controlling pests on agricultural crops, forest floors, or range lands." This is another way of saying EPA has no authority under the CWA to regulate nonpoint source (NPS) agricultural stormwater runoff or irrigation return flows, which were exempted by Congress from NPDES permitting.

Changes to EPA's PGP that could affect NAAA members: The following are key changes made to EPA's 2010 draft PGP:

- **Operators:** EPA has clarified who an "Operator" is: It's an "*Applicator*" or a "*Decision-maker*" or sometimes both an "*Applicator and Decision-maker*." See below for how this affects Operator responsibilities.
- **Automatic coverage** under this permit is extended to all Operators who:
  - are Applicators—any entity who performs the application of a pesticide or who has day-to-day control of the application (i.e., they are authorized to direct workers to carry out those activities);
  - are Decision-makers other than Federal or State pest control agencies, mosquito- or aquatic weed-control districts or similar pest control agencies, or are other entities and *do not exceed* the annual treatment area thresholds;
  - are scientists engaged in pesticide R&D efforts;
  - will make discharges prior to EPA's Notice of Intent (NOI) submission deadline of Jan. 9, 2012; or
  - are contractors, subcontractors and employees covered by Decision-makers' NOIs.
- **Non-automatic coverage** under this permit is obtained by Decision-makers that must submit an NOI. These are:
  - All Federal and State agencies responsible for pest control under any of the four use categories;
  - All mosquito control districts, all irrigation and weed control districts or similar pest control districts;
  - All Decision-makers with an eligible discharge to a Tier 3 water across any of the four use categories;
  - All other entities, public and private, that make decisions about pesticide discharges that exceed one or more of the following annual treatment area thresholds:
    - Mosquito and other pest control entities *making decisions* to treat with adulticide more than 6,400 acres in a calendar year;
    - Weed or algae, and animal pest control entities *making decisions* to treat more than either (a) 20 linear miles or (b) 80 acres of surface water; or
    - Forest canopy pest control entities *making decisions* to treat more than 6,400 acres in a calendar year.
    - These other public and private organizations are further segregated into *large* and *small* entities with respect to compliance requirements. The *small* entities are defined as those that are either private organizations with fewer than 50 employees and $7 million in annual revenues, or public agencies that serve fewer than 10,000 citizens. Such *small* NOI-submitting decision-makers have reduced recordkeeping requirements, and are not required to develop a PDMP or submit annual reports.
- **Counting annual treatment areas:** EPA changed its mathematics for counting annual treated areas for purposes of determining if Decision-makers must submit an NOI:
  - Count each pesticide application separately (e.g., three times per year to the same 1,000-acre site is counted as 3,000 acres), and such treatments are additive over the calendar year for "Mosquitoes and Other Flying Insect Pest Control" and "Forest Canopy Pest Control";
  - Count each treatment area only once in a given year, regardless of the number of applications for "Weed

and Algae Control" and "Animal Pest Control." Also, for applications to waterways with "linear features" (e.g., applications to canals or ditches), count only the length of the feature in miles, regardless of whether treating one or both banks and/or the water. Also, if the same feature is treated more than once in a calendar year, count such treatments only once; multiple treatments of the same feature are not cumulative in a given calendar year.

- **Applicators, although automatically covered without submitting an NOI, have PGP compliance requirements:** Applicators are required to minimize discharges by use of Pest Management Measures (PMMs), defined by EPA as "*any practice used to meet the effluent limitations that comply with manufacturing specifications, industry standards and recommended industry practices related to the application of pesticides, relevant legal requirements and other provisions that a prudent Operator would implement to reduce and/or eliminate pesticide discharges to waters of the United States*."[1] These requirements include:
  - Apply only the amount and frequency of pesticide needed to effectively control targeted pests;
  - Meet all applicable water quality standards;
  - Use proper equipment and maintain, calibrate, clean and repair it;
  - Prevent leaks and spills, and report any spills that exceed Reportable Quantities;
  - Assess weather conditions to ensure application is consistent with all applicable federal requirements;
  - Review PMMs routinely and, as necessary, revise, promptly document and take any corrective actions necessary to update them (such corrective actions may constitute a PGP violation, but failure to take corrective actions and promptly document them in on-site records may constitute an additional permit violation);
  - Visually assess the area during application for possible adverse effects;
  - During any post-application surveillance that applicators conduct, visually assess the area for possible and observable adverse effects;
  - Promptly document and report observed possible Adverse Incidents (including Adverse Incidents to Threatened or Endangered Species or Critical Habitat);
  - Keep certain records, including documentation of equipment calibration, information on each treatment area to which pesticides are discharged, a copy of any Adverse Incident Report (or rationale for any determination that reporting an identified adverse incident is not required), a copy of any corrective action documentation, a copy of reports documenting any spill and leak, spray logs, name of each pesticide product used including the EPA registration number, whether or not visual monitoring was conducted, and description of each treatment area and pests targeted.
  - NAAA members and other pesticide applicators who are also Decision-makers must submit an NOI if they also exceed annual treatment area thresholds for any of the various covered pesticide uses;
  - Applicators not submitting an NOI are not required to develop a Pesticide Discharge Management Plan (PDMP), conduct Integrated Pest Management (IPM) or submit an annual report.
- **Decision-makers (and Applicators who are also Decision-makers) have requirements based on size and, in some cases, on whether annual treatment areas exceed thresholds:** All Operators are required to minimize discharges by use of PMMs;
- Use only the amount and frequency of pesticide needed to control the pests and meet all applicable water quality standards;
- If required to submit an NOI then also conduct the equivalent of Integrated Pest Management (identified by EPA as PMMs) prior to any pesticide discharge (evaluate pest management options and, if pesticide use is selected and will result in a discharge to waters of the U.S., then conduct surveillance and only apply pesticides when an appropriate action threshold has been met);
- Review and, as necessary, revise, promptly document and take any corrective actions necessary to update PMMs, including those of applicators under the Decision-makers' NOI (such corrective actions may constitute a PGP violation, but failure to take corrective actions promptly may constitute an additional permit violation); meet water quality-based effluent limitations;

[1] The text of the revised PGP on page 2-2 includes a typographical error, stating that 'Pesticide Management Measures' are defined in Appendix A. We believe this to be a typo, but EPA has not confirmed this.

- Develop and update PDMP and submit annual reports if state and federal pest control agencies, mosquito control districts, weed control districts, and irrigation districts, as well as other large public and private pest control Decision-makers that exceed annual treatment area thresholds. PDMP development and Annual Reporting requirements are not required of entities that do not have to submit an NOI, nor those small entities described below under recordkeeping;
- Conduct visual spot checks during application for possible adverse effects;
- During any post-application surveillance conducted also conduct spot checks for possible and observable adverse effects; conduct visual spot checks during application for possible adverse effects;
- Visually assess the area during application for possible adverse effects;
- During any post-application surveillance that applicators conduct, visually assess the area for possible and observable adverse effects;
- Promptly document and report observed possible Adverse Incidents (including Adverse Incidents to Threatened or Endangered Species or Critical Habitat);
- Keep records and submit annual reports—these requirements vary among state, federal, county, municipal and private Decision-makers.
    - *Small* Decision-makers records include: adverse incident reports; corrective action taken; copy of any spill or leak documentation; copy of NOI; target pests and explanation of need for pest control; identity of products used (including EPA registration number) and amounts for each treatment area; company name and contact information of applicator(s) used; descriptions of each treatment area; description of pesticide use patterns (e.g., mosquito pest control); description of pest management measures (IPM) used prior to first pesticide application; date of applications; whether visual monitoring was used, and if not, why not. Also, documentation of equipment calibration (only if Decision-maker is also the Applicator).
    - *Large* Decision-makers records include: adverse incident reports; corrective action taken; copy of any spill or leak documentation; copy of NOI and copy of EPA acknowledgment letter with the assigned permit tracking number; develop and submit a PDMP, retaining a copy on-site including any modifications made to the PDMP; submit and retain a copy of Annual Reports; descriptions of each treatment area; description of each pesticide use pattern applied (e.g., mosquito pest control); target pests and explanation of need for pest control; action thresholds; method and/or data used to determine action thresholds have been met; description of pest management measures (IPM) used prior to first pesticide application; company name and contact information of applicator(s) used; identity of products used (including EPA registration number) and amounts applied to each treatment area; date of applications; whether visual monitoring was used, and if not, why not. Also, if Decision-maker is also the Applicator then retain documentation of equipment calibration.

All Operators are required to monitor activities, use certain PMMs, take corrective actions, revise PMMs as needed, and keep certain records: All operators must keep on site a copy of any Adverse Incident Report (or rationale for any determination that reporting an identified adverse incident is not required), a copy of any corrective action documentation, a copy of reports documenting any spill and leak, a copy of any NOI submitted to EPA, and information on each treatment area to which pesticides are discharged, including spray logs, company name and contact information for each pesticide applicator; name of each pesticide product used including the EPA registration number, whether or not visual monitoring was conducted, description of pest management measures implemented prior to the first pesticide application, and description of each treatment area and pests targeted.

NAAA has been actively involved in this issue since EPA first began its PGP development process. In numerous documents and meetings with EPA officials, NAAA provided industry perspective and survey data to challenge several aspects of EPA's June 2010 draft, including our concerns about co-permitting of decision-making agencies and for-hire applicators, likely impacts of burdens and costs to the small businesses that make up NAAA membership, the need to enlarge EPA's annual treatment thresholds, and NAAA's suggestion that EPA focus its permitting attention and requirements on the Federal, State and local agencies that are decision makers and provide automatic NPDES coverage to professional applicators with reduced requirements (e.g., not having to file an NOI, produce a PDMP, or submit annual reports, but instead simply follow the FIFRA label, use professional BMPs for equipment

maintenance and calibration, and report potential adverse effects). Many of NAAA's recommendations appear to have been incorporated into this near-final version of EPA's PGP.

Endangered Species Act consultation with the Services is not going well: EPA and the Services had been in consultation since early last fall, and EPA kept extending the finalization date of its PGP as the consultation made little progress. EPA quickly petitioned the 6th Circuit for an extension when on March 1 the Services issued a draft biological opinion on EPA's near-final PGP stating that in its present condition it is unlikely to prevent jeopardy to threatened or endangered species or prevent adverse modification to critical habitat. As part of the Administration's petition to the court for an extension, the Services submitted a declaration that more time is needed to negotiate with EPA modifications to the PGP to add additional protections in the form of Reasonable & Prudent Alternatives (RPAs). This will take time, the Services stated, and will likely change the final form of EPA's PGP. EPA acknowledged this in its petition, and said that if such changes are made to the PGP, it would likely require an additional interagency review and perhaps even an additional 30-day public comment period.

New timeline established by the extension: The Administration identified the following revised timeline in its petition to the court:

- **June 15:** EPA expects to complete negotiations with the Services over changes to the PGP, and indicated that in mid-June it will begin another interagency review of a modified PGP with any added requirements to protect endangered and threatened species and habitat. If substantial edits are made as a result of the negotiations with the Services, EPA may need to do another 30-day public comment period.
- **July 30:** EPA expects to publish its "final" PGP for public review. At the same time, EPA will publish a revised Fact Sheet, response to public comments, revised economic analysis and guidance documents. EPA will initiate a series of meetings with stakeholders to help them interpret the PGP.
- **Oct. 31:** EPA's and all other states' PGPs would become effective on Oct. 31, 2011. At this time EPA's 2006 rule exempting pesticides applied in accordance with FIFRA labels would end.

Congressional action continues: While work continues at EPA and the other 44 states to finish the PGPs, the House of Representatives has completed work on legislation to overturn the 6th Circuit decision in *NCC vs. EPA* that required EPA to develop the PGP. Legislation (H.R. 872) was approved unanimously by the House Agriculture Committee and nearly unanimously by the House Transportation & Infrastructure Committee. The full House of Representatives approved the legislation with more than a two-thirds majority on March 31.

The next stop for the legislation is consideration by the United States Senate, and H.R. 872 has been referred to the Senate Agriculture, Nutrition and Forestry Committee. NAAA will continue to work with a coalition of agricultural organizations and other allies to address this legislation in a bipartisan fashion in the Senate, with the ultimate goal of passage into public law.

Once again, NAAA is asking and needs members to contact their respective Senators to urge support of H.R. 872 in the Senate. Please visit http://www.agaviation.org/sites/default/files/Sen_NPDES_Support.pdf for a draft letter to use when writing your Senator. You may contact your Senator by visiting www.congress.org and entering your zip code (look for the "Get Involved" search box on the homepage). Once redirected, click on your Senator and you will be sent to another page with basic information about your Senator. Choose the Contact tab and the fax number for the Washington, D.C., office. For expediency, NAAA urges you to fax your correspondence to your Senator. If you have any questions, please call NAAA at (202) 546-5722.

Stay tuned: These changes to the PGP do not eliminate the burdens of compliance or risks of enforcement and citizen suits. We'll keep you informed as states complete their PGPs, and update you on EPA's efforts to complete its permit. Continue to monitor the eNewsletter and NAAA website for updates. ■

EPA Unveils New Web-based Tool for Determining NPDES PGP Requirements

Have you questioned whether you'll need an NPDES permit when making a pesticide application, or whether you'll be eligible for coverage under EPA's Pesticide General Permit (PGP)? If you are seeking answers to these and other questions, EPA has introduced a new interactive tool designed to help determine if an NPDES PGP is needed in the six EPA-regulated states (Mass., N.H., N.M., Idaho, Alaska and Okla.). If you are a pesticide applicator in any of these six states, the tool may prove extremely useful in determining whether you are eligible for coverage under EPA's NPDES PGP. Please visit http://cfpub.epa.gov/npdes/pesticides/prtool.cfm to access this assessment tool.

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LIKE A GOOD NEIGHBOR:

Understanding Airport Protocol & Embracing Good Stewardship Practices

An airport manager called our state association recently with a complaint. The manager described it this way:

"A group of crop dusters flew in, not talking to anyone on staff, hot fueling out of the back of pickup trucks, parking on the ramp overnight without permission, paying no fee and, by using no fuel, providing no income for the working airport. We are highly visible and watched by many people. We just ask that you guys be respectful of the airport where you mix and load, following the rules of the airport. Call and ask if you can hot fuel. We were told if the fire marshal had seen this, he would have shut the entire airport down. How do I know if what you guys are doing is legal and proper?"

We in the aerial application profession need to always show ourselves to be good neighbors. The nature of agricultural aviation invites a certain amount of curiosity and attention automatically, whether we are flying over a field or at an airport. Most operators understand this and are conscientious in their dealings with their FBO and other pilots and act professional at all times. However, if four aerial applicators are doing a good job at an airport and one isn't, it's not just the offender's problem—all five operators have a problem.

The following discussions apply to all airports, but let's consider airports that are not used to having an ag operation at their location and try to look at the situation from their point of view. First, just because an airport is public doesn't mean we have unfettered access to it. In addition to FAA regulations, an airport may have its own rules and requirements that must be followed to operate there. Let's break down the above complaint and consider how to avoid such conflicts.

By Jeff Summersill, President
Florida Agricultural Aviation Association

"Not talking to anyone on staff." This speaks to our attitude. Several FBO managers I talked to shared similar critiques. They consider it an affront when an ag pilot doesn't call them to discuss their intentions beforehand. They are right. In the PAASS Program, throughout the fall and winter, we discussed ethics and their role in our business. Treating one another with respect is certainly high on the ethical chart. Talk to the FBO before you make plans to work from their location.

Tip No. 1: Communicate! Talk to the FBO and make sure the ag operation and airport are on the same page.

"Paying no fee and, by using no fuel, providing no income for the working airport." FBOs have to raise funds to pay for their facilities. Many have skydiving, ballooning, military exercises and flight schools. If possible, support the airport you are using by buying fuel. It's probably the easiest way to show appreciation for letting us use the airport and they usually waive the ramp fee. Most businesses understand the concept of a fuel surcharge. I know it costs more to buy fuel from an airport, but some operators have been able to pass that cost through with a fuel surcharge. You can also relate to your customers how a good portion of the funds they spend on you stay in their community.

If ramp fees or airport area usage fees are imposed, pay them; not paying equates to stealing from the airport. This includes things like the honor bar and snacks. (One manager said a crop duster was upset by having to pay $1 for a bottle of water, but didn't the FBO have to buy the bottle first?) If we break a light or sign while working there, make sure to cover that expense. When we leave an FBO, we want it to be in better shape than when we got there, physically and financially.

Tip No. 2: Pay your fair share. Be an asset, not a liability to the airport.

"We just ask that you guys be respectful of the airport where you mix and load." As professional aerial applicators and as a courtesy to the airport, we should keep our mixing area clean and in good physical order, keeping materials away from public access. Do we maintain our equipment to prevent a leaking nozzle, hose or tank from burning the grass or staining the ramp? The FBO pays for garbage pickup. Do we put our empty containers in their dumpster without asking? What condition are the empties in? Are they cleaned out? What about our water source? If we are using a pond on the property, are we ensuring that we are not leeching back into the source? Hydrate meters work well and support the community as well.

Tip No. 3: Load and reload as cleanly as possible and clean up after yourself.

"At this location, we are highly visible and watched by many people." I recently worked off a public airport that had never had an aerial applicator work from it before. They said we're quite the spectacle. Between the color and size of our aircraft, we are highly visible. People stop and pull over to watch what we do. We are not air show or stunt pilots. We are not crazy, as some people assert. We are experienced and educated pilots.

The rules tell us to follow airport traffic patterns except when permission to deviate has been given by the airport management. When deviating, the aircraft must give way to other aircraft using the proper traffic pattern. This can sometimes be difficult (for instance, when an 802 is following a cub in the pattern). It is extremely important to communicate with others in the pattern. Most FBOs would feel more comfortable letting you work from their airport if you are equipped with a communication radio. How do we treat traffic in the area? If we chase off traffic, which is in turn the revenue source for the FBO, how are they going to look at us? Probably as a liability.

Tip No. 4: Get airport management's permission before deviating from normal traffic patterns, and respect the traffic pattern at all times.

"Hot fueling out of the back of pickup trucks." This is a hot topic. FBOs have concerns about hot fueling out of the back of a pickup truck or trailer. They question the quality and safety of the fueling systems. They have the same rules

and regulations we do. Even if we don't follow the rules, they can become responsible for our actions.

Tip No. 5: Develop a written procedure for the safe loading of fuel or hopper material while the engine is operating, and consult with the FBO to find out what fueling methods are permitted at their airport.

There were also questions as to what we do: Is it legal? This is of course referring to our spray operation. These kinds of questions arise sometimes because of the physical condition of our equipment. When in the public eye (and really all the time), we want to make sure our equipment is clean and presentable. This would include not only the aircraft, but loading equipment and personnel. When we run a clean operation, it gives off a good impression. It shows we know what we are doing and that we are interested in the welfare of the environment both at the airport and out where we are spraying in their community. When competence and cleanliness are on display, it doesn't leave much room in the minds of airport management or onlookers for thoughts of "is what they're doing right and proper?"

As the PAASS motto goes, "Upon the performance of each rests the fate of all." Continued complaints against a few thoughtless operators could curtail aerial applicators' ability to spray from these types of locations. There has been recent talk of airport fees for each takeoff or landing. I hope we don't shoot ourselves in the foot by abusing FBOs to the point that they would want to back such a thing.

Fortunately, this is not how most of our industry operates. We make our calls ahead of time, pay airport fees, buy fuel on site, maintain clean work sites and are observant and courteous to local aircraft traffic. Many of us should be commended for how we handle ourselves in the public arena. People are often fascinated and curious about what we do. Let's always show them our best! ■

Jeff Summersill is a third-generation ag pilot with Thomas R. Summersill Inc. in West Palm Beach, Fla.

Agricultural Aviation Operations at Non-Towered Airports

By Harlow Voorhees
FAA Safety Team Program Manager, Western Pacific Region, Fresno, Calif.

In this article, we will discuss issues associated with aerial application operations at public use airports. Airports and landing strips are important assets for the agricultural aviation industry. In many cases, small private strips close to customers are the best locations for basing flight operations. This is because traffic is limited and the operator can control all activities on the surface. However, there are some circumstances where aerial applicators operate out of public use airports. These operations present challenges which include following regulations, assuring safety and maintaining neighbor relations. The following discussion will review some of the rules and best operating practices that apply to non-towered public use airports.

Public Use Airports

Public use airports are available to most general aviation operators without the need to gain prior permission. There may be restrictions imposed by the airport owner such as maximum aircraft weights based on runway load limitations and these can be found in the Airport Facility Directory (AF/D). Some airports may limit commercial operations including aerial application. Since there may also be considerations based on FAA and other governmental regulations, it is the pilot's responsibility to check and comply with all regulations that apply to a particular flight or type of operation.

In addition, public use airports may be owned by a governmental body (e.g., a city or county) or they could be privately owned. Importantly, the airport owner has the authority to determine how the airport will be used, and operators should always coordinate with the airport manager or person in charge to make sure that proposed operations are acceptable.

Restricted Category Aircraft

Most agricultural aircraft are in the restricted category and 14 CFR 91.313 prohibits operations over a densely populated area, in a congested airway, or near a busy airport where passenger transport operations are conducted. This rule does not have an exception for takeoff and landing over a densely populated area. Operators may apply for a waiver or special operating limitations that allow restricted category flight operations under these circumstances. Applications for waivers are normally handled by the local FAA Flight Standards District Office (FSDO), and applicants must submit an application for a waiver a minimum of 30 days before the proposed operation will take place.

Figure 1: Example of a sectional chart

Operating Rules

Both 14 CFR part 91 and part 137 regulate flight operations at non-towered airports. While pilots should refer to the current CFR for guidance, here is a brief summary:

- 91.113 specifies that an aircraft on final approach to landing or while landing has the right of way over other aircraft in the air or on the surface. If two or more aircraft are approaching an airport for landing, the lower aircraft has the right of way except it may not use this rule to "cut in front of or overtake another aircraft on final approach."
- 91.126 applies to aircraft operating on or in the vicinity of an airport in Class G (uncontrolled) airspace. This rule specifies that when approaching to land, all turns must be made to the left unless the airport has directed that turns be made to the right in which case turns must be made to the right. Pilots of helicopters must avoid the flow of fixed wing traffic.
- 91.127 makes the requirements of 91.126 applicable to operations on or in the vicinity of airports in Class E (controlled) airspace.
- 137.45 allows an agricultural aircraft operator to deviate from an airport traffic pattern during an agricultural operation with prior permission of the airport manager. Except in an emergency, takeoffs and landings from ramps or taxiways are not permitted and the agricultural aircraft must remain clear of and give way to other aircraft conforming to the traffic pattern. To protect both the aerial applicator and airport operator it is recommended that non standard traffic pattern agreements be in writing and a NOTAM or A/FD note be issued if the operation could affect the safety of other pilots.

Airport Traffic Patterns

The standard pattern for airports consists of a downwind, base and final leg flown at the appropriate altitudes for the airport. Additional legs include the departure (after takeoff), upwind (parallel to the runway opposite the downwind side), and cross wind (see Aeronautical Information Manual (AIM) for definitions). The standard pattern altitude is 1,000 feet above ground level and turns are to the left. Right-hand patterns and non standard altitudes can be found in the Airport Facility Directory if they are in effect at a particular field. The AIM recommends that pilots enter the downwind leg from a 45-degree angle at pattern altitude to enhance the pilot's ability to see and be seen by other aircraft. Pilots operating at non-towered airports are expected to sequence themselves and provide the necessary separation to arrive and depart safely. Airplanes should be operated at pattern altitudes to enhance their visibility to other pilots, and helicopters should avoid the flow of fixed wing traffic. If in doubt about traffic or other safety issues, a pilot should depart the pattern in a direction away from the flow of traffic and re-enter when conditions permit.

Departures from an airport should follow any published recommendations or requirements of the airport and these can be found in the Airport Facility Directory and sometimes on signs adjacent to the runways. When departing an airport with no departure directions, pilots should either fly straight out from the runway or make turns in the direction of the traffic pattern. A 45-degree turn after takeoff is considered a standard departure and it enhances the pilot's ability to see and be seen as in the 45-degree entry to downwind on arrival.

Surface Operations

While operating on the surface of non-towered airports, pilots must exercise vigilance and be prepared to yield to other aircraft. Surface loading operations should be coordinated with the airport manager and be located to minimize hazards to others. Taxiways should not be used for loading unless there is no other alternative and airport management approves the process. In such cases, NOTAMs should be considered. Vehicle drivers should receive training and be supervised to minimize conflicts with other aircraft.

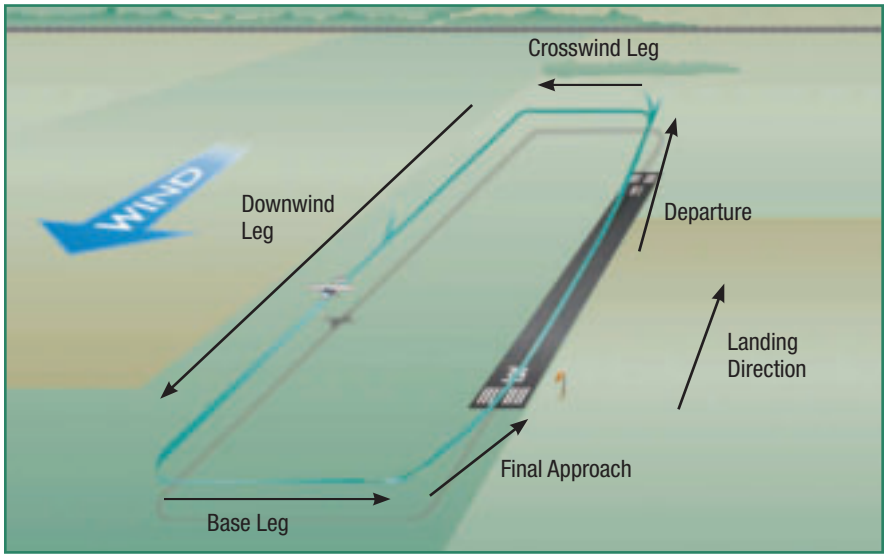
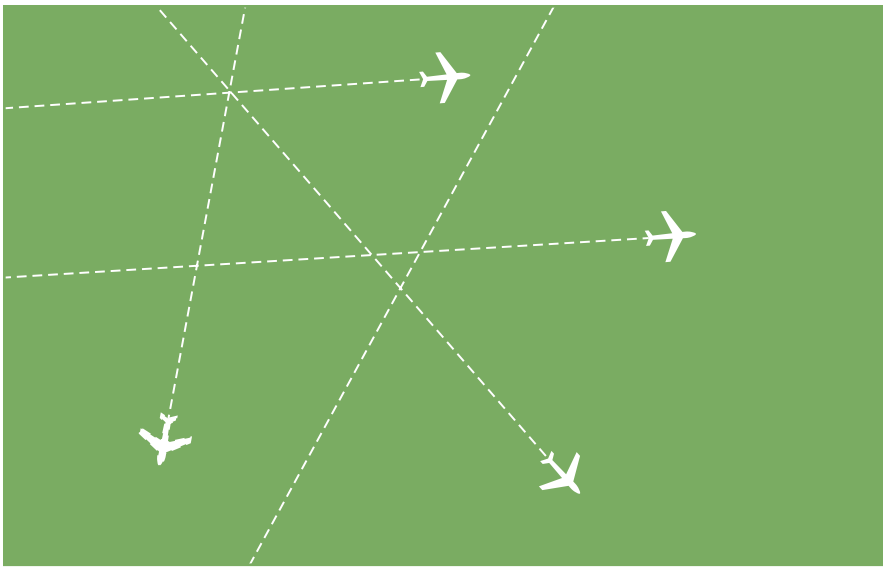


Figure 3: Cross-runway airport traffic pattern



Helicopter operations on airport surfaces should be given special attention. Rotor wash can create a hazard and operations should be staged and routed to minimize risk of injury or damage. Helicopter arrival and departure routes should be carefully planned with concurrence from the airport manager. Helicopter landing pads or "spots" should be designated and marked.

Both helicopter and airplane servicing and loading on an airport surface may involve leaving the engines operating and carefully planned procedures should be used to protect both employees and others in the vicinity. Operators should consider performing hot reloading or refueling in remote locations on the airport where access by persons other than direct employees is controlled. Operators are encouraged to refer to recently issued FAA SAFO 10020 (safety alert for operators) for help in developing appropriate safety procedures. The SAFO is available on NAAA's website at www.agaviation.org/content/safo-10020-hot-servicing. (For more information, see *Agricultural Aviation*, March/April 2011.)

Airspace Considerations

Class G uncontrolled airspace extends from the surface up to Class E controlled airspace. Near most airports, the overlying controlled airspace begins at 700 feet above ground level—depicted by a magenta boundary in the aeronautical sectional chart (Figure 1) at the beginning of this article—or 1,200 feet above ground level (blue boundary, see Figure 1). A magenta boundary contains a transition area that means the airport is served by an instrument approach procedure and pilots should use caution for IFR traffic. The weather minimums for Class G airspace (1,200 feet or less above the ground) are for day use, one mile visibility and clear of clouds. At night, the weather minimums are 500 feet below clouds, 1,000 feet above clouds, and 2,000 feet horizontal distance from clouds except an airplane, powered parachute or weight shift control aircraft may operate with one mile visibility and clear of clouds at night within one-half mile of a runway. A helicopter may operate clear of clouds with no visibility limitation provided it maintains a speed that allows the pilot to see and avoid air traffic and obstructions.

A magenta dashed line around an airport indicates the airspace is Class E to the surface. Despite not having a control tower, airports in Class E airspace have a weather limitation of ceiling 1,000 feet and visibility of three miles for VFR operations. Operations in Class E surface areas when weather conditions are below the above values require a special VFR clearance from air traffic control. 137.43 also requires agricultural aviation aircraft to obtain a clearance from ATC when the weather is below minimums and exempts the pilot and the aircraft from being qualified for instrument flight during night operations. The weather minimums for VFR operation in Class E airspace below 10,000 feet MSL both day and night are 500 feet below clouds, 1,000 feet above clouds, 2,000 feet horizontal distance from clouds and three miles visibility.

It is essential that pilots know which airspace they are operating in and what operations may be expected. Controlled airspace near an airport is intended for use in making instrument approaches and departures. Pilots must maintain ongoing awareness of weather conditions and communications with air traffic control when necessary to avoid conflict with IFR traffic that may be using the airport.

Best Practices

By themselves, the regulations provide only the most basic framework for operating at a non towered airport. To

The airport owner has the authority to determine how the airport will be used. Operators should always coordinate with the airport manager or person in charge to make sure that proposed operations are acceptable.

maintain an acceptable level of safety, pilots are encouraged to observe safe operating practices and obtain safety information from the following sources:

- The Aeronautical Information Manual (AIM)
- Advisory Circular AC 90-66A, Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports Without Operating Control Towers
- Advisory Circular AC 90-42, Traffic Advisory Practices at Airports Without Operating Control Towers
- Advisory Circular AC 90-48, Pilot's Role in Collision Avoidance
- Advisory Circular AC 91-32, Safety in and around Helicopters
- Airport Facility Directory (AF/D) and current aeronautical charts
- Notice to Airmen (NOTAM)

VHF Radio: The use of radios greatly increases aviation safety by providing a means of communicating position and intentions at a non-towered airport. Current regulations do not require radios and all pilots operating at non-towered airports must expect no radio aircraft in the pattern or on the surface. In 2009, two agricultural aircraft collided while landing on the same runway at a non-towered airport in California. Fortunately, both pilots survived, although one suffered serious injuries. One aircraft had made a base entry and the other a straight-in approach prior to landing on top of the first. The NTSB attributed the probable cause to the failure of each pilot to see and avoid the other. Neither aircraft was equipped with a VHF radio. While not required by rule, it is possible that communication on Common Traffic Advisory Frequency (CTAF) might have prevented this accident by alerting the pilots to each other's presence.

An agricultural aircraft operator can deviate from an airport traffic pattern during an agricultural operation with prior permission of the airport manager. To protect both the aerial applicator and airport operator it is recommended that non standard traffic pattern agreements be in writing and a NOTAM or A/FD note be issued if the operation could affect the safety of other pilots.

Aerial applicators are encouraged to equip their aircraft with VHF radios and to use them while operating at public use airports to alert other pilots and to increase situational awareness. The See and Avoid Concept is greatly enhanced by good communications.

Approaches: Straight-in or base-entry approaches are not prohibited by current FAA regulations, and AC 90-66A, while encouraging standard patterns, acknowledges that pilots do make straight-in approaches. A pilot on a straight-in or base-entry approach should take all precautions not to disrupt the flow of traffic and be prepared to break off the approach if it cannot be completed safely. All pilots should be on the lookout for aircraft making non-standard approaches at non-towered airports.

Noise Considerations: Noise considerations are important, and pilots should exercise care to minimize the impact of their operations with respect to airport neighbors. If a noise abatement procedure is in effect, make sure your aircraft complies with it. If a safety consideration makes that impractical, be sure to consult with the airport manager prior to flying. Remain as far away from populated areas as practical but do not compromise safety of flight.

Takeoffs and Landings: Selection of a runway for takeoff and landing is at the discretion of the pilot and the only rule that applies is the right of way requirement to yield to the aircraft on final approach. Some airports designate a calm wind runway or have noise abatement rules and pilots should comply with these except in circumstances involving safety of flight.

Aerial applicators frequently land towards the loading truck and take off in the opposite direction. If this is practiced at a public airport, care should be exercised to avoid traffic conflicts. In addition to the use of radios, ground personnel may be of assistance in looking out for traffic.

The use of a ramp or taxiway is prohibited by Part 137 under the non-standard pattern regulation (137.45). If use of a taxiway is necessary, both the operator and airport manager should first consult with the local FSDO and consider designating the surface a temporary runway. Issuance of a NOTAM and/or note in the AF/D will alert other pilots to this operation and reduce the likelihood of a conflict. Operations of this type require prior coordination and planning to avoid potential violations and unnecessary hazards.

Public use airports are shared assets in the United States and it is incumbent on all users to strive for a high level of safety and to respect each other's rights to the airspace and surface facilities provided. The lack of a control tower confers the responsibility of traffic separation on the individual pilot, and this must be understood and taken seriously by all. Compliance with the operating rules provides the minimum level of safety while best practices and consideration of others can elevate day-to-day operations to a higher level. Professional aerial applicators are encouraged to set an example to other pilots by following this guidance and making sure all flights are conducted safely. Being a good neighbor will also be of great value in ensuring the future of agricultural aviation. ■

Harlow Voorhees is a member of the FAA Safety Team based in Fresno, Calif. He is leading an FAA national project for increased safety in agricultural aviation operations. Mr. Voorhees has worked for the FAA as an aviation safety inspector since 1998 and has experience in oversight of Part 137 operators in the central valley of California. Prior to joining the FAA, he was employed as a pilot and supervisor for a regional airline.

OPERATION SAFER: THE STATUS QUO SHOULDN'T FLY ANYMORE

By Ron Cline, Chairman, NAAA Safety/Federal Aviation Regulations Committee

"Aeronautics was neither an industry nor a science. It was a miracle."
—Igor Sikorsky

Agricultural aviation may be responsible for the first risk management system known to aviation. I know this because I have practiced this natural process I call WHORM. WHORM is an acronym for an organic progression that stands for the **Worry/Hurry of Risk Management.** This practice is still popular today because you can develop all processes for the WHORM system simply by going to bed. Here is how it works:

- Go to bed and think of all the terrifying scenarios you can envision. This is commonly known as Hazard Identification.
- Wake up in the morning and go to work. All the worry and lack of sleep the night before will cause you to naturally hurry. This is called Risk Mitigation. The faster you go, the more time you will save for dealing with whatever gremlin comes your way.

I can personally attest that this is the most dysfunctional plan that I had ever implemented. I had to lay awake night after night making sure I thought of everything. I became convinced that everything I was attempting to worry about, over and over again, in all probability would never happen. I could possibly sleep better by just knowing *if things went wrong, I simply would refuse to go with them.* The unfortunate reality with this

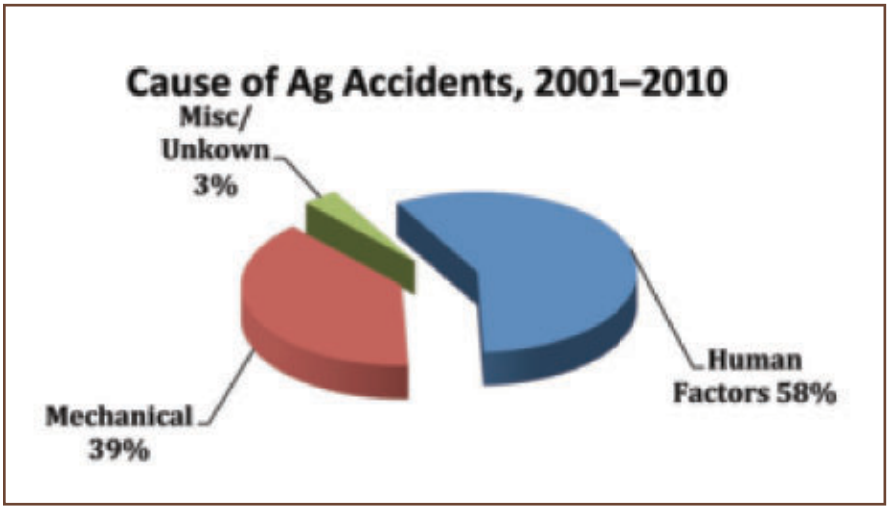


Figure 1. *Accident figures compiled by NAAA based on NTSB reports indicate 58 percent of ag accidents over the last 10 years could be contributed to "human factors," commonly known as pilot error.*

The most disconcerting reality to me is that our industry will continue to lose five or six pilots every year unless we change our culture.

plan is when something does go wrong we are *entombed* in an aircraft that is temporarily constrained in that third dimension called *altitude*.

A remarkable event happened after finally realizing the good Lord gave me two ears and one set of lips for a reason (I think my wife knows the exact date when this epiphany landed). I heard and listened to sources provided through NAAREF's PAASS Program—FAASTeam representative Harlow Voorhees and Dr. Don Arendt, SMS program manager for the FAA.

Dr. Arendt demonstrated very convincingly that there really aren't any new ways to crash an airplane. He explained how the airline industry from 2006 through 2009 had "zero" accidents. It is an extraordinary fact that the airline industry can conduct more than 18 million flights annually and has gone three years without scratching a single human being. This monumental achievement is attributed to technology and an extremely complex Safety Management System (SMS).

Some of you who may conduct fire suppression operations for the USFS or operate a FAR 135 service have already become familiar with SMS. In my modest view, SMS in the complexity that it worked for airlines, will never be successful in our industry. We need a system that will change our culture in the same way but be manageable so we can still work efficiently.

The most disconcerting reality to me is that our industry will continue to lose five or six pilots every year unless we change our culture. If we look back the last 10 years, the combined accidents and fatalities in our industry are 58 percent attributed to human factors (Figure 1). Dr. Earl Weiner said it best: "There is no problem so complex that it cannot simply be blamed on the pilot." According to the statistics for ag aviation, we have established a plateau that will continue until we change it, or we can choose not to and accept that we are okay with 61 accidents and five fatalities, which is the best we have ever done on an annual basis (Figure 2).

Challenge to the Industry

Harlow Voorhees mentioned to me that he thinks most ag operators have a simplified version of an SMS system located between their left and right ears. The challenge has been to pull from the one and involve the whole company to operate as a team with a centrally organized play book.

We can develop a culture that will have a tremendous positive effect on every aspect of our lives. It is no news update to anyone how expensive

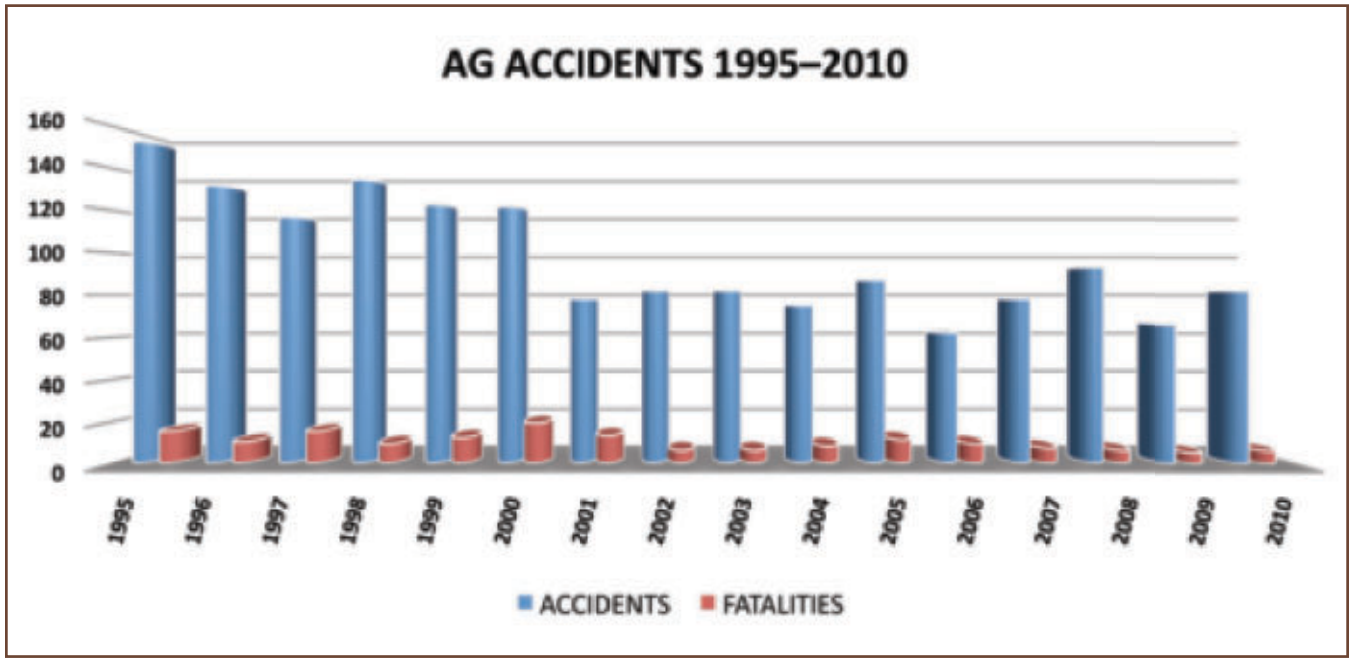


Figure 2. *Annual number of ag aircraft accidents and fatalities from 1995 to 2010. The accidents are numbers only and as such do not factor in the amount of exposure based on hours flown.*

and detrimental mistakes are to our businesses and families. How much additional personal time do you have to spend to resolve or fix a problem after it has occurred? How or what would we do differently if we had a time machine and could go back and change that condition or event to prevent that mistake? The only way to do this is to change our culture in a way that works for us. We can simplify the pillars of SMS, which would enable us to reduce risks, trim down the intrusiveness and abridge the safety system process to the point where we can still work and be productive.

By simplifying the pillars of SMS, we can reduce risks, trim down the intrusiveness and abridge the safety system process to the point where we can still work and be productive.

Six Rules of Engagement

1. Safety Day

Choose one day a month for safety and regulatory compliance. My business uses the first Monday of every month to discuss any issues of concern. Even though we may engage in additional safety discussions, we document the monthly meeting for State Workers Comp and Retro requirements. This monthly arrangement allows employees to freely discuss any concerns they may have without feeling singled out or targeted in a one-to-one safety confrontation.

2. Safety Policy

Develop a written company policy that describes what you want to do to prevent accidents. You want to identify all the hazards you can think of. This is the same process as worrying but you write them down so you don't have to worry about them anymore. Then develop a risk-mitigation procedure for each risk that you or your pilot, loader/mixer, mechanic, employee or spouse will follow.

Dr. Arendt called this the KISS and MISS system. Keep it simple, stupid, but don't make it simply stupid. For instance, communicate with your loader a written process for tracking and locating an aircraft. How long do your loaders wait before they are to initiate a locating process? If locating is not successful when do they call 911? Could technology be implemented like a Spot Messenger? What about a chip light or post flight inspection and tie-down procedure? These are all completely different tasks but may be handled differently depending on the operator. Develop all standard operating procedures (SOPs) for loading, hot fueling or best management practices to which you want to adhere. The NAAA Professional Operating Standards (POS) guide is an excellent reference.

3. Incident Reporting

Incident reporting may be a task not incorporated in your past management plans. It is important to know when that chip light came on or when the pilot deviated from the SOP. Document those squawks and any issues that arise in your daily operations. This data is important for feedback to you only.

4. Internal Auditing

Internally audit your incidents to determine trends and whether you're SOPs need to be revised to better address any issues you see. This is a process that you use for your own information to improve your company risk management. It is imperative that you use the data from incident reporting to review whether your expectations are being met.

5. PAASS/Operation S.A.F.E.

Nowhere on this planet can two programs benefit your business more to enhance safety and efficiency.

6. Association Participation

Association membership matters too. Our state and national associations offer valuable resources; utilizing them will have a strong positive effect on your operation. The associations' educational sessions and publications keep essential safety messages in the forefront, and their conventions bring everything together. To stay on top of the latest techniques and technologies, operators and pilots should make a habit of attending their state's and NAAA's annual conventions as often as possible.

Adopting this process or a process like this would positively change the culture of your aviation business. I don't look at this as adding something else on my plate, it organizes what is already on there to make my life and business easier to manage. Those that have a system like this in place benefit by receiving the lowest insurance rates in the industry. If in the unfortunate event you have a mishap you can show you have gone beyond what is required to be as safe as you possibly can. That is the very best you can do. If you choose to continue the WHORM system then my advice is, *"Leave the worrying to God, as he will be up all night anyway!"* ■

OpSpecs or No OpSpecs for Part 137 Operators?

By Ken Degg,
NAAA Director of Education & Safety

Even after several years of discussion by NAAA and representatives of the FAA, the most common regulatory question I receive is, "What am I supposed to do about these operations specifications the FSDO is telling me that I must sign?" Operations Specifications, shortened to OpSpecs, are basically a "contract" between certain certificate holders and the FAA. Let me begin by saying that the Association has been told by FAA Headquarters and FAA speakers at the National Conventions for the past three years that there are no OpSpecs for Part 137 operators.

For a little background, in the immediate aftermath of the Sept. 11, 2011, terrorist attacks, the government asked the FAA who and where the ag operators were. Headquarters had only limited information because the records were kept at individual FSDOs (there are about 100 nationwide) and were not immediately available to FAA Headquarters. Consequently, Congress mandated the FAA to develop a system to track all of the operators and aircraft. The need to have a database containing this information prompted the changes and confusion which prompted the writing of this article. The information that follows is what the FAA has related to me or what I have found from research.

The FAA already had a national Internet-based database used to keep track of certain operations that required OpSpecs. OpSpecs are required for operators such as Part 135 (air taxi) and 121 (airline) operations. To help understand what they are, FAR Part 119 titled Certification: Air Carriers and Commercial Operators, §119.7 describes the contents of Operations Specifications in the following manner.

> Each certificate holder's operations specifications must contain (1) the authorizations, limitations, and certain procedures under which each kind of operation, if applicable, is to be conducted; and (2) certain other procedures under which each class of aircraft is to be operated.

Now that we have an idea of what OpSpecs are, this part mandates them for certain commercial operations. §119.1 describes the applicability of the requirements of this part to operators holding operating certificates under part 121, 125 or 135. It specifically exempts operations conducted under part 129, 133, 137 or 139. Therefore, it appears that there is no regulatory basis for requiring agricultural operators to have OpSpecs issued to them.

FAA Headquarters decided to use the referenced database for other purposes—like tracking ag operators and letters of authorization issued for certain activities. This database, previously referred to as the "OpSpecs" database, was chosen to be used and the Operations Safety System (OPSS) eventually evolved into WebOPSS. The FAA is attempting to put the operator's information into the WebOPSS database so that information can be accessed wherever the Internet is available.

This is when problems began to develop. Either because of the inspector's lack of understanding or because they have "always" referred to information in this database as OpSpecs, they began telling operators that we now have OpSpecs for Part 137 operators. Since it is a computer-generated database, inspectors have to enter information on templates like they were used to doing for operators that required OpSpecs. The templates have been redesigned to reflect Part 137 information instead of that required of Part 135 Air Taxi or other

Confused about the difference between WebOPPS and OpSpecs? *Ag aviation operators aren't the only ones. Even though there are no Operations Specifications (OpSpecs) for Part 137 operators, some FAA inspectors have that impression now that Congress has required the FAA to catalog all ag operators and aircraft in a searchable database. Some poorly worded guidance, which FAA Headquarters is in the process of rewriting, may be contributing to inspectors' confusion. New guidance material clarifying what is expected of the FAA inspector and the ag operator won't happen overnight, but it will happen.*

previous users. Inspectors started processing these templates like they did when they were OpSpecs—for example, requiring operators to sign them. A signature is not required, but both the FSDO and the operator should agree on its content and have a copy. *To reiterate, they are not OpSpecs, only information stored in that renamed database.*

FAA Headquarters is currently rewriting its guidance material to clarify what is expected of the FAA inspector and the operator. It will take some time for that information to get out into the field, but eventually it is slated to happen. My research into Flight Standards Information Management System (FSIMS) yielded some information that I feel could help operators when discussing this issue with the FSDO office or its representatives. The guidance in FSIMS 8900.1 was formerly known as inspector's handbooks before they were consolidated and made available online. The manuals are available to the public at http://fsims.faa.gov.

It appears to me that some poorly worded guidance in the FSIMS 8900.1 may have contributed to the confusion. For example, Volume 2, Chapter 8, Section 1, Item G under 2-981 of the certification procedures reads:

> Operations specifications *were not previously issued* [emphasis added] to part 137 operators; however, the OPSS system is used to provide a national standardized method for issuing the regulatory authorizations such as congested area operations. The use of the OPSS also puts the operator into the national database for receiving safety advisories and alerts. Enter all appropriate information in the OPSS and issue at least paragraphs A001, A002, A003, A007, A447 and D095, if applicable.

The italicized portion of the paragraph, "were not previously issued", could easily be incorrectly interpreted to mean that OpSpecs are now required for Part 137 operators, but that is not the case. The remainder of the paragraph gives the reason why ag operators are to be entered into the system.

Volume 3, Chapter 18, Section 2, 3-704 provides guidance for inspectors in the completion of supplied templates for entering information into the database. Paragraph G, a part of which is given below, relates the following about part 137:

> There are standard "OpSpec" paragraphs developed for part 137 certificate holders, agricultural aerial application. *Even though OpSpec paragraphs are not required for part 137 operations* [emphasis added], PIs are encouraged to use the provisions of the OPSS to record the information on the part 137 certificate holder in the OPSS [database].

The information given above is only my interpretation and the results of conversations with various FAA personnel. I present it to help understand the complexity of the situation until everyone is on the same page. In the meantime, FAA Headquarters suggests operators and FSDOs work together until the wording in the guidance has been changed and the interpretation is clear to inspectors. They suggest having the inspector call AFS-800 in Washington if clarification is needed. ■

Opportunities for Aerial Application

Glyphosate performance problems could open new doors for aerial applicators

By Scott Bretthauer, Ph.D.,
University of Illinois, Application Technology Extension Specialist

As you are no doubt aware, many weeds are becoming resistant to glyphosate and these weeds are spreading in certain parts of the country. There are many sources where you can go to learn more about glyphosate-resistant weeds. A separate issue is poor performance of glyphosate applications on weeds that are not resistant. While this is a different problem, both lead to the same thing: uncontrolled weeds in fields. In this article, I would like to focus on how aerial application can fit in the glyphosate picture.

Poor Timing

One of the issues associated with poor performance of glyphosate is poor timing of application in relation to weed size. A recent publication from Purdue University Extension identified application delay until the weeds are too tall to effectively control as the primary cause for glyphosate performance failure. Ideally, for many weed species glyphosate is sprayed when the weeds are three to five inches tall. Numerous factors, including wet field conditions, windy days that eliminate the ability to spray and large acreages to cover, all contribute to fields not getting sprayed when weeds are at a stage when they are more susceptible to glyphosate. The larger the weed, the more difficult it becomes to control with glyphosate. One solution for applying glyphosate to weeds that are larger than the ideal size for spraying is to increase the rate of glyphosate used, which increases the cost of the application.

Aerial application is a good solution to the problem of not making applications at the right weed height. Agricultural aircraft have the ability to spray when fields are wet, which means fields can get treated even if ground rigs are not able to make the applications. The speed of agricultural aircraft also means more acres treated in any given period of time. If high wind speeds limit the time periods when glyphosate applications can be made, the speed advantage of aircraft is again paramount. Suppose high winds leave only a two-hour window for application on a certain day. During that two-hour window, an aircraft can cover many more acres than a ground rig can. All of this translates into fields being sprayed with glyphosate when they should be, increasing the effectiveness of the applications.

Another element to consider in terms of application timing is the environmental stress placed on the weeds. Hot, dry conditions can cause the weed to react through physiological changes in a manner that reduces the effectiveness of glyphosate. When large acreages need to be sprayed, pressure to get the work done can cause glyphosate applications to be made during these periods of environmental stress. The ability of agricultural aircraft to spray more acres in a shorter period of time means glyphosate applications can be delayed when these stressful conditions exist. The spraying can get done more quickly with an agricultural aircraft once more favorable environmental conditions resume and the weeds begin to function normally.

Poor Deposition and Coverage

A recent publication on glyphosate-resistant weeds suggested that reduced rates of glyphosate may have contributed to certain weed species developing resistance to glyphosate. While the authors state it is not possible to conclude for sure whether this is the case, they recommend using glyphosate at labeled rates in order to stop weeds that are difficult to control from increasing their levels in a field.

As a professional aerial applicator, you are capable of administering glyphosate at the right place, at the right time and in the right amounts. That's a compelling argument for the advantages of aerial application.

There are two ways a less-than-labeled rate can be applied to targeted weeds. The first is the most obvious: intentionally applying glyphosate at a rate lower than what is recommended on the label. Something that is often overlooked, however, is that poor spray deposition also can cause a reduced rate to be applied on the targeted weeds, even if the full label rate was applied to the field. Just because the spray leaves the nozzle and heads toward the field does not mean it lands and is retained on the weed. Large spray droplets can bounce or run off the weeds. In this situation, the full amount of glyphosate does not reach the target, which translates into a reduced rate and potentially reduced levels of control.

Poor coverage can also potentially reduce the effectiveness of glyphosate on weeds. Glyphosate is mobile within the plant so coverage for glyphosate applications can be reduced compared to other less systemic pesticides and still maintain acceptable control. At a certain point, though, reduced coverage can lead to reduced efficacy.

Large spray droplets reduce coverage because there are fewer droplets available to cover the weed targets in a field. For example, suppose we make an application at 2 gallons per acre, and hypothetically all of our droplets are 250 microns in diameter. It is not possible to make every droplet the same size, but we'll do so for the sake of this example. With this application, we will have roughly 925 million droplets to cover each acre to be treated. The second application will also be made at 2 gallons per acre but with every droplet 500 microns in diameter. In this application, we will only have around 116 million droplets to cover an acre. While a larger droplet spectrum may provide a sufficient number of droplets to cover the leaves of weeds above the

crop canopy or in between crop rows, it may fail to adequately cover weeds below the crop canopy.

The narrow droplet spectrum of agricultural aircraft is well suited to solve these problems. With the correct nozzle selection and setup, it is possible to provide a droplet spectrum with a smaller overall droplet size while still not increasing the risk of drift. To determine what droplet spectrum you are creating, you can use the USDA-ARS Aerial Spray Nozzle Models (available at http://apmru.usda.gov/aerial) or attend an Operation S.A.F.E. fly-in.

Spray Volume

Research has shown that glyphosate performs better when applied in lower spray volumes. The two primary reasons for this are a reduction in antagonistic salts and a more concentrated spray solution. The antagonistic salts bind with the glyphosate and reduce its effectiveness by decreasing absorption into the plant. Increasing spray volume means more water, which means more salts and an increased potential for reduced control.

In terms of spray concentration, the higher the spray volume, the more water, and the more diluted the final spray. This dilution effect occurs for both the glyphosate and any surfactants contained in the formulation. This concept can be confusing to people who simply look at percent coverage of spray as the primary means of judging an application's effectiveness. As an example, let's say we are comparing two applications. The first is an aerial application at 2 gallons per acre and the second is a ground application at 10 gallons per acre. We are going to use water-sensitive papers placed in the plant canopy to measure percent coverage and rate the effectiveness of the applications. I can tell you without bothering to do the research which one will have the higher percent coverage on the water-sensitive paper—the 10-gallon-per-acre application. This is why many people conclude higher spray volumes are more effective. Of course, the 10-gallon-per-acre spray is only one-fifth as concentrated as the 2-gallon-per-acre spray, so you would need five times the coverage to get as much glyphosate onto the target as the 2-gallon-per-acre spray.

Many people are concerned about a reduction in coverage when applications are made at lower spray volumes. As already mentioned, coverage is a function of both spray volume and droplet size. Going back to our first example, let's add a third application to the scenario—a ground application at 10 gallons per acre also (hypothetically) using all 500-micron droplets. In this situation we have about 578 million droplets to spread out over an acre of field, compared to the 925 million droplets from our 2-gallon-per-acre application with 250-micron droplets. The 10-gallon-per-acre application provides fewer total droplets than the 2-gallon-per-acre application to spread out on the field despite the fact that the spray volume is five times higher. This is why droplet size is so critical in determining coverage.

To compensate for a reduction in coverage with a lower spray volume, a smaller droplet size can be used. Of course, a smaller droplet size could mean an increase in the risk of drift. Again, this is where aerial application is uniquely suited because of the narrow droplet possible with agricultural aircraft. Aerial applicators can produce a droplet spectrum that provides good coverage at lower spray volumes and keeps the portion

of the spray volume contained in small droplets susceptible to drift to a minimum. For instance, using straight stream nozzle tips to apply 2 gallons per acre at 140 miles per hour, an agricultural aircraft can be set up to provide a droplet spectrum with 2.4 percent of spray contained in droplets less than 100 microns in diameter (those droplets small enough to be considered at risk for drift) and a relative span of 1.16. In comparison, a ground rig configured for 10 gallons per acre with one type of air induction nozzles creates a droplet spectrum with 4.2 percent of the spray contained in droplets less than 100 microns in diameter, and a relative span of 1.48. In this comparison, more spray would be at risk of drifting from the ground rig than the aircraft.

Tire Tracks

A common problem seen with glyphosate applications made by ground rigs is poor control on weeds located in the tire tracks. There are two likely causes to this problem. One is physical damage done to the plant by the tire, which may cause stress to the weed and reduce the effectiveness of the glyphosate. The other is binding of the glyphosate with dust kicked up by the tires, which renders the glyphosate inactive (glyphosate binds very strongly to soil particles). For an agricultural aircraft, tire tracks are obviously not an issue. While ground rig applicators can try various nozzle placement and selection options to overcome this problem, the best recommendation is to make applications when weeds are smaller, which leads back to making the applications at the right time.

Opportunity Knocks

There are multiple reasons why glyphosate may fail to provide adequate weed control. Poor timing, poor spray deposition and coverage, too high a spray volume and issues with tire tracks can all play a role. Aerial application can provide a solution to these problems.

Before your customers find themselves choking in weeds, remind them about aerial application's ability to manage weeds. As a professional aerial applicator, you are capable of administering glyphosate at the right place, at the right time and in the right amounts. That's a compelling argument for the advantages of aerial application and could open new doors for your business. ■

Sources:
Facts About Glyphosate-Resistant Weeds. Chris Boerboom and Micheal Own. 2006. Purdue Extension Publication GWC-1.

Understanding Glyphosate to Increase Performance. Bob Hartzler, Chris Boerboom, Glenn Nice, and Peter Sikkena. 2006. Purdue Extension Publication GWC-2.

Tips on Managing Glyphosate Resistance

Here are some general guidelines to help reduce the risk of weed resistance from occurring. For more tips, visit www.weedresistancemanagement.com.

- Scout fields before and after herbicide application.
- Start with a clean field, using either a burndown herbicide application or tillage.
- Control weeds early when they are small.
- Add other herbicides (e.g., a selective and/or a residual herbicide) and cultural practices (e.g., tillage or crop rotation) as part of your cropping system where appropriate.
- One method for adding other herbicides into a continuous glyphosate-tolerant system is to rotate to other glyphosate-tolerant crops.
- Use the right herbicide product at the right rate and the right time.
- Control weed escapes and prevent weeds from setting seeds.
- Clean equipment before moving from field to field to minimize spread of weed seed.
- Use new commercial seed as free from weed seed as possible.

Source: Monsanto

A PESKY IMPORT

The Brown Marmorated Stink Bug is Nothing for Aerial Applicators to Curl Their Nose Up At

By Scott Bretthauer, Ph.D.,
University of Illinois, Application Technology Extension Specialist

The brown marmorated stink bug (BMSB) is a pernicious pest spreading rapidly across the country. It has established populations in 17 states, has been detected in 16 others and has a boundless appetite for a variety of fruits and vegetables. This is an emerging threat with the potential to become another opportunity for aerial applicators. Control options remain a work in progress, however, as the search for solutions continues.

Origins

The brown marmorated stink bug is not native to the United States. It originates from China, Japan, Korea and Taiwan, where it is considered an agricultural pest on fruit trees and soybeans. It was first identified in the United States in Allentown, Pa., in 2001, but has likely been present in the United States as far back as 1996. Packing crates originating from Asia are thought to be how the pest was imported. By 2006, it had become a pest on commercial fruit orchards in eastern Pennsylvania and western New Jersey.

Description

Adult BMSBs are about five-eighths of an inch long. They are colored various shades of brown on both the upper and lower parts of the body. The term marmorated refers to this marbling of various shades of brown. As with other stink bugs, they are shaped like a shield and release a substance that creates a strong, foul odor when the bugs are crushed or frightened. The BMSB can be distinguished from other stink bugs by two banding features. The outer parts of the antenna have alternating bands of light and dark coloring and the outer edge of the upper body also alternates between light and dark coloring.

In the United States, sexually immature adult BMSB overwinter in large groups in protected shelters, which includes human structures. They begin seeking shelter towards the end of September, and emerge in the spring. After emerging in spring, they mature sexually, mate within two weeks of emerging, and then the females lay eggs under the leaves and stems of host plants. The BMSB has been observed laying eggs from May to August. They are capable of laying eggs throughout the course of their adult lifespan, in multiple egg masses which amounts to about 240 eggs. Eggs hatch in four to seven days and then the BMSB go through five nymphal instars before becoming adults. This development takes between 33 and 45 days depending on weather, with faster development occurring with warmer weather. A climate suitability map developed for the BMSB predicts that it can complete a minimum of one generation in all parts of the United

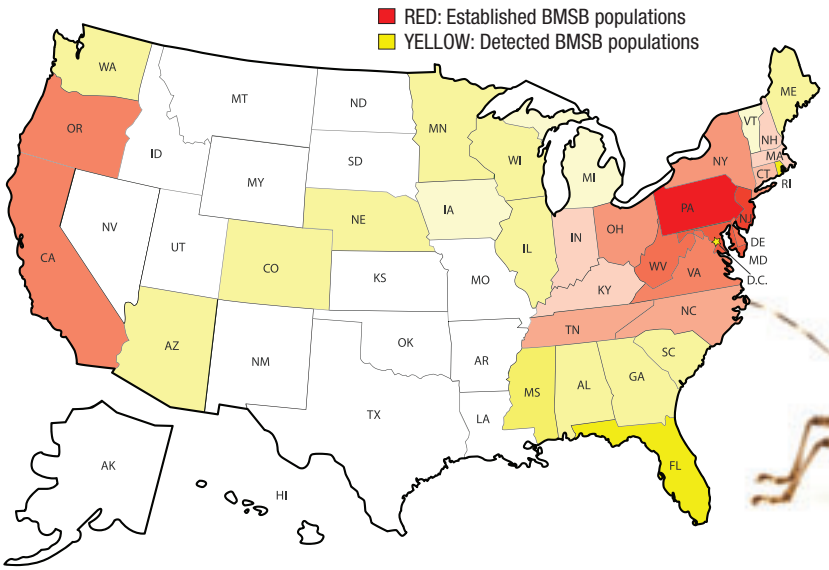


Figure 1. Current Distribution of the Brown Marmorated Stink Bug
Initially detected in Pennsylvania in 1996, the brown marmorated stink bug has spread up and down the East Coast and across the country into 34 states. States in red have established BMSB populations. Yellow signifies states with detected BMSB populations. The varying shades of red and yellow indicate the spread of BMSB over time. The darkest shades represent states with the earliest established (Penn.) and detected (Fla., R.I.) BMSB populations. Lighter shades are used for each subsequent year.

States, and more generations per year in warmer parts of the country, maybe as high as five in the warmest southern parts. At this time, there does not appear to be any environmentally limiting factors for the BMSB, as the populations in the United States continue to grow.

Current Range

Currently, the brown marmorated stink bug has been sighted in 34 states. Last fall, it was only found in 25 states. The BMSB is considered highly mobile, and can expand its range in several ways, including flying to new areas and hitchhiking on vehicles. It has established populations in 17 states and has been detected in 17 others. It is considered highly likely BMSB will continue to spread throughout the United States, encounter suitable hosts as it does so, and become established. Figure 1 shows the states in which BMSBs have been detected as of 2011.

There is no regulatory framework to federally control BMSB in the United States. Eradication and quarantine are not considered feasible due to the widespread distribution, high mobility and wide variety of hosts of BMSB.

Crops Damaged

BMSB nymphs and adults can be found on a wide variety of host plants found throughout the United States. These include fruits such as peach, apricot, pear, apple, cherry, raspberry, grape and currant. Vegetables, including green beans, asparagus, peppers, corn and soybeans are also affected by BMSB. In addition to these plants, various ornamental trees and shrubs can also host BMSB. While no damage has been reported in the United States to citrus or cotton from the BMSB, they have been reported as hosts and may be impacted if populations become established in states where these crops are grown.

The BMSB feeds on host plant tissue by sucking plant juices with piercing and sucking mouthparts. Damage caused by this feeding can cause economic damage and can range from mild, with no yield loss, to severe, with complete crop loss. The immature seeds in pods are what are damaged when the BMSB feeds on beans. With fruit, feeding by the BMSB results in necrotic spots. Feeding is not limited to fruit, however. The BMSB will also feed on leaf tissue, also causing lesions. Feeding by the BMSB can result in the loss of plant fluids, deformation of fruits and seeds, abortion of fruits and seeds and delays in plant maturity. Additionally, damage from feeding may lead to infection of the fruit by pathogens. The BMSB easily migrates between host plants, moving from plants with fruit that ripens early on to plants with fruit that ripens later in the season.

On bell peppers in the Mid-Atlantic states, the BMSB damaged around 20–30 percent of the fruit in untreated plots in 2010. For tomatoes in the same region, damaged fruit ranged from about 15 percent to more than 60 percent. Research on sweet corn revealed that three adult BMSBs per ear resulted in about 55 damaged kernels per ear. In 2010 Maryland had high infestations of BMSB in corn, soybeans, certain vegetable crops and fruit trees. These high infestations occurred primarily in the western and central part of the state. In these areas, they incurred significant losses to peaches and apples and unmarketable tomato, pepper and sweet corn crops. It was estimated that the BMSB reduced apple production in the Mid-Atlantic states by 18 percent—a reduction of 3.7 million bushels of apples and a loss to apple growers of $37 million.

On field corn, losses were reported along field margins. For Maryland soybeans in 2010, BMSB populations increased 5 to 10 times in many parts. Infestations were highest at field margins where it caused delayed senescence and pod injury. It infested the soybeans in mid to late August, after first feeding on various vegetable crops and corn. In Virginia in 2010, the BMSB was first found in early August at the R1 stage. A study involving the introduction of BMSB via cages on soybeans in Maryland, Delaware and Virginia in 2010 found that when infested at the R2 and R4 stages, the BMSB significantly increased the percentage of damaged seeds in the test plots. For the R4 stage, the percent damaged seeds increased from 10 percent in plots with no BMSB to 25–30 percent with BMSB. Yield data revealed a trend of reduced seed weight with higher levels of infestations, which was greater at R4 than R2. An analysis of the impact of delayed growth caused by BMSB feeding on field margins, where BMSB levels were the highest, found that infested soybean plants had 57–67 percent lower seed yield and 26–38 percent fewer mature pods.

A 2006 study in commercial peach and apple orchards found 50 percent of peaches from the perimeter and 35 percent of peaches from the interior of the orchards had injury from the BMSB. For apples, injury was found on 60 percent of the fruit from the perimeter and on 40 percent of the fruit from the interior of the orchards. In 2009, the BMSB caused economic damage on apples, peaches, cherries, tomatoes, corn and soybeans. In areas of Maryland, West Virginia, Pennsylvania, New Jersey and Virginia with extremely high populations of BMSB researchers found 50–60 percent of commercial stone and pome fruit was injured, with some growers losing their entire crop.

Due to the wide variety of plants on which it feeds, and the damage it causes to plants when feeding, it is likely the BMSB will become a serious pest on agricultural crops in the United States. It will likely expand its host plant range as it expands to other parts of the United States. In addition to damaging agricultural crops, the BMSB is also considered a nuisance pest. It enters buildings in the fall in order to find shelter for the winter. While they cause no harm to humans, their characteristic smell and propensity to gather in large groups can create a nuisance.

Control Options

Researchers are working on developing control options for the BMSB. This research includes studying the BMSB's biology, testing the effectiveness of various pesticides and determining thresholds for the variety of plants that the BMSB can infest. Reliable monitoring tools to detect the movements of the BMSB are not available for any crops. Researchers are currently investigating pheromones and trapping methods to help monitor BMSB populations more accurately, as well develop attract-and-kill management options.

At this time there are no known cultural control options for the BMSB. Surveys investigating naturally occurring enemies in the United States that attacked the BMSB found that they do not have a significant impact on the BMSB. Work in the BMSB native range has potentially found egg parasitoids that may have a substantial impact; research on these continues, but it is felt that biological control programs are years away from being implemented.

The following classes of chemistry have activity on stink bugs overall: cyclodiene organochlorines, organophosphates, carbamates, synthetic pyrethroids and neonicotinoids. In the Mid-Atlantic states, pyrethroids and organophosphates are primarily used to control native

stink bug species, with efficacy among the pesticides varying between species. Using recommendations made for native stink bugs reportedly led to poor control of BMSB.

Research into chemical control specific to BMSB is just beginning. In India, pyrethroids and organophosphates are used to control BMSB. Testing through bioassays in the United States has included pyrethroids, carbamates, organophosphates, chlorinated hydrocarbons and neonicotinoids. A pyrethroid, a chlorinated hydrocarbon, a carbamate and several organophosphates showed good efficacy in the laboratory tests. Field trials conducted by USDA-ARS showed adequate BMSB control with a carbamate and a pyrethroid. One concern that has been noted for pyrethroids, though, is the recovery of BMSB after the initial knock down, which has been seen in both field and laboratory testing. In heavily infested areas, treated sites were quickly repopulated by BMSB migrating from untreated sites, requiring a high number of insecticide applications within the overall defined area. Research on soybeans from Maryland in 2010 achieved 80–90 percent control with a single application of several pyrethroids, carbamate and two foliar neonicotinoids. The organophosphate included in the study did not provide as a high a level of control.

Additional research is needed into the residual activity of the insecticides currently registered. Because the BMSB is migratory, applications of the field perimeter for some crops may be effective in preventing it from reaching the interior of the field.

Whatever the products used to treat the BMSB will be, aerial application should play an important role in controlling this pest. Agricultural aircraft are well suited to making applications to control rapidly spreading pests like the brown marmorated stink bug. Quick responses, the ability to spray a potentially large number of acres in a short period of time, and providing good coverage will all likely be important for controlling this odiferous invader. ■

Sources:
The Challenges Posed by the Invasive Brown Marmorated Stink Bug, Halyomorpha halys *(Stal), to U.S. Agriculture. Prepared by Tracy Leskey. 2011. USDA-ARS.*

Summary of 2010 Studies of Brown Marmorated Stink Bug on Soybean in Maryland. Galen Dively and Terry Patton. 2011. University of Maryland.

Qualitative analysis of the pest risk potential of the brown marmorated stink bug (BMSB), Halyomorpha halys *(Stal), in the United States. Tara Holtz and Katherine Kamminga. 2011. USDA-PERAL-CPHST-PPQ-APHIS.*

What in the World is Workers' Compensation, Anyway?

By John Carroll
on behalf of the NAAA Insurance Committee

Prior to the enactment of workers' compensation laws in the early 20th century, injured employees were forced to rely on common law when seeking compensation. This required the injured employee to sue the employer which proved to be an ineffective way to deal with employee injuries. Additionally, if an employee suffered a fatal injury, common law prohibited any survivors from filing suit.

After a few false starts by several states in the early 1900s, the Wisconsin law passed in 1911 was the first to be ruled constitutional in the U.S. By 1934, all states had passed workers' compensation laws. These laws provided for a fixed schedule of benefits for specific injuries to workers and generally disallowed former common law defenses that previously had been so effective in employers avoiding liability for these injuries.

What is Workers' Compensation?

Workers' compensation is a form of insurance that provides wage replacement and medical benefits for employees who are injured in the course and scope of their employment. Workers' compensation will pay lost wages to the employee if he is unable to return to work for an extended period of time. If an employee suffers a fatal injury, workers' compensation will provide for death benefits to a spouse and children under the age of 18. In exchange, injured employees must give up their right to sue their employer.

Rather than a benefit, workers' compensation is a legally mandated right of the worker. Workers' compensation will pay for the claim regardless of who is at fault, as long as the employee injury occurred within the course and scope of employment. A work comp claim may be denied for self-inflicted injuries such as starting a fight, or if an employee is injured while violating company policy.

Businesses who meet certain requirements must provide workers' compensation for all employees of the business. These requirements vary by state but often involve number of employees. Typically, if an employer has three or fewer employees, workers' compensation is not required. There are fines and other penalties for businesses that do not provide workers' compensation coverage as required by law. Employers who do not carry workers' compensation coverage also risk being sued by injured employees where there is no certainty of outcome and employer-employee relations may suffer.

Workers' compensation can be confusing to people because it is not priced like other forms of insurance. The cost is related to the risk classifications for the employer's business and the employer's payroll.

How is it Priced?

Workers' compensation can be confusing to people because it is not priced like other forms of insurance. The cost of workers' compensation is related to the risk classifications for the employer's business and the employer's payroll. The risk classification is determined by the employer's operations.

The cost of workers' compensation is determined by a state bureau. Each job is assigned a risk classification, and each classification is given a rate. The rate is calculated by the state-specific workers' compensation bureau and is dependent on two primary factors: the frequency of work-related injuries and the severity of those injuries in the specific class of business. The rates are generally updated on an annual basis.

Experience Rating

Each business that carries workers' compensation earns an experience rating. Experience rating is a mandatory plan that applies to all employers that meet a state's minimum premium requirements. The minimum premium requirement is typically $5,000. An employer earns an experience rating by meeting the minimum premium requirements for the past two years. Experience rating is based on an employer's past individual loss experience. The experience rating results in either a credit or debit modification and is applied directly to the premium. The more claims an employer has, the more likely that an experience debit will develop. Favorable loss experience

is rewarded with an experience credit. The experience rating modification must be used by the carrier insuring the business. Generally, it is applied for one year and a new modification is calculated for the next year.

Limiting Costs

There are other ways to control workers' comp costs. Insurance carriers look for procedures or systems that demonstrate that an employer has taken initiative to provide a safe workplace. Such initiatives might include a safety manual that covers proper job procedures, documented safety meetings, an orderly place to work and proper safety equipment. If a workers' comp claim is filed, the best way to limit the claim is to get the injured employee back to work as soon as possible. This may involve allowing the employee to do a light duty job until fully recovered.

State Funds

Each state has a State Fund. Most of these funds are a market of last resort. They must offer a quote to any employer subject to the workers' compensation laws of that state. State Funds are typically cost prohibitive and offer minimal services and coverages. If an insured is doing work in more than one state, the State Fund typically cannot accommodate, necessitating a second workers' compensation policy from the other state. Private carriers are more competitive and can offer other state coverages as well as a broad menu of coverages and services.

Workers' Compensation and You

If you are not carrying workers' compensation insurance, you may need to ask your insurance broker about the necessity of purchasing the coverage and you will also want to be sure to be in compliance with the requirements in your particular state. Even if you don't have enough employees to require the coverage, it is a show of good faith to your employees that you care about their well being and it protects you against potential litigation. If you do have workers' compensation coverage and are not sure if you are getting the best deal, ask to see some additional proposals at your renewal date. ■

Insurance carriers look for procedures or systems that demonstrate that an employer has taken initiative to provide a safe workplace. Such initiatives might include a safety manual that covers proper job procedures and documented safety meetings.

Is there an insurance matter you would like to learn more about or think would be of interest to Agricultural Aviation*'s readers? The NAAA Insurance Committee welcomes your suggestions. Please send insurance article ideas to information@agaviation.org.*

Inaugural NAAA/BASF Agricultural Aviation Scholarship winners Matthew Kollars (center left) and Ben Cadenbach (center right), flanked by their Operator Sponsors, Woods Aviation's Waylon Woods and Buffalo Air Services' Sean Penner, at the Kickoff Breakfast for NAAA's 2010 Convention.

The Kearney Connection

By Jay Calleja
Manager of Communications

What is it about Kearney, Neb., that makes it such a wellspring for aspiring ag pilots? Coincidentally, both recipients of the inaugural NAAA/BASF Agricultural Aviation Scholarship hail from this small Nebraska city. Last December at NAAA's 2010 Convention in Savannah, Ga., NAAA presented Ben Cadenbach and Matthew Kollars with scholarships in the amounts of $5,000 and $2,500, respectively. The Kearney kids beat out a pack of solid contenders to earn the much needed financial aid and fast-track their flight training.

Neither Cadenbach nor Kollars had a family background in agricultural aviation. All they had were their dreams, some obvious determination and the good fortune to latch onto a couple of supportive mentors like Sean Penner of Buffalo Air Services and Waylon Woods of Woods Aviation. Both outfits are based in Kearney. Penner sponsored Cadenbach and Woods endorsed Kollars as they vied for the scholarship funds from NAAA and BASF.

Overcoming Obstacles

It isn't really fair to call them kids. They are in their early to mid 20s, and by all appearances, Cadenbach and Kollars are mature young men who are serious about aerial application and committed to making a career out of it now that they have gotten a taste. As loaders last summer they gained valuable on-the-job training and impressed their bosses with their enthusiasm and work ethic.

In the winter of 2010, Cadenbach sent letters to several operators in Nebraska looking for employment as a loader, a step he felt would aid in his quest to become an ag pilot. Intrigued, Penner set up an interview. He learned Cadenbach had decided three years earlier to get into the agricultural aviation industry. After earning his private pilot's license, Cadenbach had enrolled in Flying Tiger Aviation and completed the school's Instrument Rating & Agricultural Pilot Program.

The financial responsibilities of caring for a young family forced Cadenbach to put his dream of earning his commercial license on hold, but he did not lose hope. "I commend Ben for sacrificing his dream to provide for his family," Penner wrote in his letter of recommendation to the scholarship committee. "He did not give up on his interest in our industry; instead he took the time to apply for a position and ultimately acquired employment with an operator to learn more about the industry while also trying to save money [for flight training]. It took a lot for him not to throw in the towel and just quit."

A visual limitation nearly forced Kollars to abandon his dream of being a professional pilot. Kollars was well on his way to earning a degree in Airway Science at the University of Nebraska at Kearney when a large boulder suddenly blocked his path. He failed his second flight physical when a color deficiency was discovered. He hadn't had any trouble passing his first flight physical and already had completed the flight training he needed to graduate, but it appeared to be to no avail. His new medical certificate restricted him from flying at night. To earn his commercial certificate Kollars needed to complete 10 solo night takeoffs and landings at a tower-controlled airport.

Seeing his future in aviation dissolving, Kollars changed majors and earned a degree in Industrial Distribution instead. He missed

flying, though, and found a way to stay involved in aviation after graduation. He worked as a line service technician at an air service during the fall and winter of 2009–2010. When another pilot told him about a chance to work for a crop duster loading his planes, Kollars jumped at the opportunity. Before his medical red flag emerged he had already been thinking about agricultural aviation as a possible career. The opening at Woods Aviation proved to be a turning point.

As he waited for the ag season to begin, he learned the FAA had reworded some of its 14 CFR Part 61 rules. The new wording opened the door for him to complete the requirements for a commercial pilot certificate without violating the terms of his medical. Rejuvenated by that news, Kollars resumed his flight training. He was 70 hours short of earning his commercial license when Woods nominated him for the NAAA/BASF Agricultural Aviation Scholarship. After observing him on a daily basis, it was an easy call for Woods to recommend Kollars for the scholarship.

"Something that stood out to me right way was how he consistently asked me if my nozzles are set right and if I have plenty of fuel before I get ready to leave with the load," Woods wrote in his recommendation. "I have no doubt that he will make a great ag pilot in the very near future and would be lucky to have him fly for me."

NAAA's Membership Committee, which has jurisdiction over the scholarship, agreed, and awarded scholarships in the amount of $5,000 to Cadenbach and $2,500 to Kollars. They gratefully accepted the early Christmas gift and put it to good use.

Earning Their Wings

Cadenbach is now an instrument rated commercial pilot and had about 50 hours of tailwheel time as of March. He returned to Flying Tiger in January for six weeks of training to complete his commercial license.

"I used up every dime of that scholarship on flight training in no time flat and was extremely grateful to have that chunk of the bill knocked out and have that much less to worry about," Cadenbach said.

Since NAAA's convention Cadenbach received several prospective job offers, but he's happy to report he will be working for Buffalo Air Services again this summer. "My biggest concern for the 2011 season was that I did not want to go a year without doing any flying and letting my training and work get stale," he said. "I was not sure if I would have the opportunity to fly with Buffalo Air in 2011, but things seem to be working out well."

Cadenbach worked under three Buffalo Air pilots last year and is looking forward to continuing to learn from those mentors. "Everybody wanted to give me a lot of advice," he said. "If they'd run into something everybody was very helpful in saying, 'Hey, pay attention to this when you're doing it. Watch out for this.'"

"He still has plenty more to learn, but he is headed in the right direction," Penner said.

Loading Up on Knowledge

As of mid March Kollars had logged 15 hours of dual tailwheel time and five to six hours of complex time since Savannah. He took the written test for his commercial license in late March. He has to build more time before he can take the flight exam for his commercial license. That's hardly an inexpensive proposition. Getting the scholarship was the booster shot he needed.

"The scholarship jumpstarted everything," Kollars said. "It gave me an opportunity to start flying and keep flying." Before, he used to save for a month or two, fly until those funds were exhausted, save some more and repeat. The Agricultural Aviation Scholarship allowed him to take weekly flying lessons. "The consistency is a huge deal. You learn a lot more doing it every week."

In June, Kollars will begin working for Woods Aviation for the summer. After spending the 2010 season as a mixer/loader, Woods is entrusting Kollars with more responsibility. For instance, he will have much more direct contact with the farmers Woods services.

Woods is a solo operator, which means there's one pilot—him. He had two ground people during the 2010 season, Kollars and another "college guy." "One handles fuel, one handles the actual loading of the airplane. I just kind of stay in the airplane and they do everything else. They made it real easy for me," Woods said. "Matt caught on real quick with the loading and was excited and there every morning on time. That's a hard thing to find, a college guy that can be there every morning on time and halfway coherent. He did a good job."

Working for an aerial applicator gave Kollars "a whole new respect" for aerial application. "I knew it was a lot of flying. I didn't realize how technical and precise, but it's amazing how much actually goes into it," he said. "I got a great view of it from all the angles—from the loading side, the business side and also on the flying side of it. So, I've seen all the positives. The more I know about it, the more I get excited about it because it's just such an interesting field. It's a lot of fun." ■

NAAA/BASF Agricultural Aviation Scholarship Resumes Flight for 2011

NAAA is pleased to announce the second year of the NAAA/BASF Agricultural Aviation Scholarship Program is underway. This year NAAA has expanded the scope of what it considers to be acceptable use of scholarship funds to allow for NAAA Operator-sponsored flight training apprenticeship programs—essentially opening the door to a whole new pool of applicants.

The goal of the Agricultural Aviation Scholarship is to strengthen the aerial application industry by helping NAAA Operators bring new pilots into the profession. Each applicant must be sponsored by an NAAA Operator, and scholarship recipients must use the proceeds for flight training or agricultural coursework at a university, college, community college or other institution of higher learning. A stipend for a trainee in an NAAA Operator-sponsored apprentice program is also permissible. The Agricultural Aviation Scholarship is funded by an educational grant provided by BASF and administered by NAAA.

NAAA will award one scholarship valued at $5,000 and could award a second scholarship valued at $2,500 depending on the pool of applicants. This year's winner, or winners, will be recognized in December at NAAA's 45th Annual Convention & Exposition in Las Vegas.

To be considered for the 2011 scholarship, every applicant must submit:

- **A letter of recommendation** from the NAAA Operator sponsoring the applicant.
- **An essay of 250 words or less** written by the applicant explaining why he or she is deserving of an NAAA/BASF Agricultural Aviation Scholarship.
- **A one-page résumé or list of activities** detailing all agricultural and aviation experiences, education and training.

To learn more about the 2011 NAAA/BASF Agricultural Aviation Scholarship, review the application instructions on the adjacent page and on NAAA's website, www.agaviation.org.

Please call NAAA at (202) 546-5722 if you need clarification about any of the application requirements. **The deadline to apply is Aug. 31.** ■

2011 NAAA/BASF AGRICULTURAL AVIATION SCHOLARSHIP APPLICATION INSTRUCTIONS

This scholarship program is made possible through an educational grant from BASF Corp.
The scholarship program is administered by the National Agricultural Aviation Association.

BASIC INFORMATION:

Purpose: To bring new pilots into Agricultural Aviation and help fund their training. Scholarship is to be used for flight training or ag-related coursework at a university, college, community college or other institution of higher learning.

Amount: The **NAAA Agricultural Aviation Scholarship Program** will award up to two (2) one-year scholarships to a deserving, qualified student(s) participating in one or more of the following programs:

1. **a certified flight training program**
2. **an NAAA Operator-sponsored flight-training apprentice program**
3. **an agriculture, agribusiness or ag vocation program** for a second-year or later student(s) enrolled at a U.S. 2-year or 4-year program of study at an accredited junior college, college or university.

The number of scholarships may vary from year to year. NAAA will award one $5,000 scholarship annually for the life of the program, and may award a second $2,500 scholarship. One award per applicant.

Eligibility: Paid employees of NAAA or BASF and immediate members of their families are not eligible. Entrant must be sponsored by an NAAA Operator.
Prior NAAA Agricultural Aviation Scholarship winners are not eligible.

Sponsor: Each applicant must be sponsored by an NAAA Member Operator.
An Operator may sponsor only one applicant per year.

Application Process: Applicant should fill out ALL "applicant information," sign the form and give the application to the NAAA Operator Sponsor. The Sponsor will complete the sponsor form, add a letter of recommendation, and forward all this information via U.S. Mail, Fax or E-mail to:

NAAA Agricultural Aviation Scholarship
1005 E Street, SE, Washington, DC 20003
Fax to (202) 546-5726 • E-mail to information@agaviation.org

Application Checklist: By August 31, 2011, please submit the following materials:

- Completed application
- One (1) letter of recommendation from the NAAA Operator sponsoring the applicant. *(Letter of recommendation may be submitted in a sealed envelope.)*
- Essay of 250 words or less explaining why you are deserving of an NAAA/BASF Agricultural Aviation Scholarship.
- Current one-page résumé or list of activities detailing all agricultural and aviation experiences, education and training.
- Plus:

If scholarship proceeds are for flight training:

- Provide proof you are enrolled or have been accepted for enrollment in a certified flight training program (ag or otherwise).

If scholarship proceeds are for an Operator-sponsored apprentice program:

- Provide a brief but detailed explanation of the apprentice program.

If scholarship proceeds are for ag-related coursework at a college or university:

- Submit an official transcript from applicant's college, junior college or university. The Registrar's Office can mail your official transcript to NAAA or place it in a sealed envelope for you to mail with your application form. (GPA must be 2.5 or better on a 4.0 scale at the time of application to be eligible for NAAA scholarship).
- Provide proof that you are seeking an undergraduate or graduate degree in an agricultural, agribusiness or an ag vocation field (transcript may suffice; consult your registrar or department office for more information).

All applications must be received or postmarked by **August 31** to be eligible for scholarship funds available for the following calendar year (January–December).

Applications will be reviewed and winners chosen during the Fall NAAA Board Meeting by the NAAA Membership Committee.

Winners will be notified by November 11. Winners will be publicly announced at the NAAA Annual Convention in December.

The decision of the NAAA Membership Committee is final.

Payment: A tuition bill must be presented verifying enrollment of the applicant. If tuition has been paid in full, upon proof of such payment, NAAA will remit payment to the scholarship recipient. Otherwise, the scholarship will be paid directly to the appropriate school before the recipient's training/coursework begins or resumes. Any funds paid directly to the applicant as part of this award not used for approved higher education or apprenticeship expenses must be returned to NAAA. Paid receipts for tuition or higher education expenses must be provided. A signed statement from the Operator providing the apprenticeship will serve to verify those expenses. Scholarship recipients must provide proof of expenses to NAAA by October 1 of the year following the award. Apprenticeship payments used for living expenses may be taxable.

Duration: BASF and NAAA have agreed to continue this scholarship program for a minimum of three years, 2010, 2011 and 2012.

Revisions: NAAA reserves the right to review the conditions and procedures of this scholarship program and to make changes at any time.

2011 NAAA/BASF AGRICULTURAL AVIATION SCHOLARSHIP APPLICATION

PART 1
APPLICANT INFORMATION:

Name:_____

Address:_____

City, State, ZIP:_____

Phone: _____ E-mail:_____

Name of University, College, Community College, Flight School or other flight training program:

_____

Address:_____

City, State, ZIP:_____

Phone: _____ Enrollment Contact: _____

Course of Study:_____

Description:_____

_____

Length of Program: _____

I am (choose one):

____ Currently enrolled_____ Enrolled beginning: (date course begins) _____

I expect to complete this course of training or study by (month/year) _____

In 250 words or less, please explain why you deserve NAAA's Agricultural Aviation Scholarship (focus on why you want to pursue a career in agricultural aviation):

_____

_____

_____

APPLICANT'S SIGNATURE _____ **Date:**_____

2011 NAAA/BASF AGRICULTURAL AVIATION SCHOLARSHIP APPLICATION

PART 2
SPONSOR (NAAA OPERATOR MEMBER):

Sponsor Name:_____

Company:_____

Address:_____

City, State, Zip: _____

Phone:_____ E-mail_____

Relationship to employee (choose as many as appropriate):

___ Family Member

___ Employee (current or past)

___ Other, please explain: _____

If not a family member, how long have you known the applicant:_____

NAAA OPERATOR/SPONSOR'S SIGNATURE _____

Date:_____

Please attach a letter of recommendation for the attendee. Please comment on the applicant's agricultural or flying background as well as general character, focusing on why you believe the applicant will become a good ag pilot and what the applicant has to do to further his or her training and development.

All applications must be received or postmarked by **August 31** to be eligible for scholarship funds available for the following calendar year (January–December).

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Spray Season Now, Awards Season Around the Corner

Many aerial applicators are heading into the thick of their spray seasons, and for the majority of NAAA's members, summer signifies the busiest and best time of year. Before you know it, though, another rite of passage will be upon us—the annual convention and awards season.

The nomination period for NAAA's 2011 Annual Awards is officially open. Each year, NAAA recognizes a handful of members for outstanding contributions to the aerial application industry. We will honor this year's award recipients at the 2011 Convention & Exposition in Las Vegas. This industry is filled with exceptional individuals who go above and beyond the call of duty, often with little fanfare. We need your help to identify these unsung heroes.

There are 10 NAAA Award categories and one new award, the Evans-Christopher Operation S.A.F.E. Award. An Awards Nomination Form and a sample nomination are provided on the following pages. To make a nomination, fax or e-mail completed entries to NAAA at 202-546-5726 or information@agaviation.org. For typed submissions, please use the fillable form available at www.agaviation.org/content/naaa-annual-awards. The deadline is Sept. 12.

2011 NAAA Awards Nomination Form

Each year, the National Agricultural Aviation Association (NAAA) accepts nominations for members who deserve recognition because of their outstanding contributions to this industry. The individuals chosen this year will be recognized during the association's Farwell Banquet and Awards Ceremony to be held as part of the NAAA Annual Convention, Thursday, December 8, 2011, at 6:30 p.m. in Las Vegas. Members are encouraged to provide the Awards Selection Committee with one or more nominations and are asked to use one form per nomination. ***Please use the space provided to explain why the nominee is deserving of the award.*** Last year's award recipients are listed below. Additional award nomination forms, including a fill-in-the-blank PDF, are available on the NAAA website at www.agaviation.org under Membership.

2010 NAAA Award Recipients

- Agrinaut Award – **Terry Sharp**
- Allied Industry Individual Award – **Ron Deck (posthumously)**
- Allied Industry Individual Award – **R. Brent Short**
- Evans-Christopher Operation S.A.F.E. Award – **Larry Roth**
- John Robert Horne Memorial Award – **Jason Davis**
- Larsen-Miller Community Service Award – **Lucille Schiffer**
- Opal & Bill Binnion Memorial Award – **Randy Hardy**
- Outstanding Service Award – **Peggy Knizner**
- William O. Marsh Safety Award – **Ken Degg**

NAAA Award Descriptions

Agrinaut Award: Honors an agricultural aircraft operator or operating organization that has made an outstanding contribution in the field of ag aircraft operations. The recipient for the award must have been actively engaged in commercial agricultural application with an agricultural aircraft and the achievement cited shall have contributed to the "state-of-the-art" for the benefit of the agricultural aircraft industry as a whole.

Allied Industry Individual Award: Presented to NAAA members or staff and/or an allied industry individual who has significantly contributed their efforts for the benefit of the allied industry and their exhibit efforts.

Delta Air Lines "Puffer" Award: Presented to the individual who has made an outstanding contribution to the design of agricultural aircraft and/or related equipment.

Evans-Christopher Operation S.A.F.E. Award: Recognizes individuals or entities that have made outstanding contributions to the Operation S.A.F.E. program. This Award is presented by NAAREF.

John Robert Horne Memorial Award: Honors a pilot with five years or less experience in the agricultural aviation industry that has an exemplary safety record and/or has contributed to safety in ag aviation.

Larsen-Miller Community Service Award: Recognizes outstanding contributions by a member to his/her community.

Most Active Woman Award: Recognizes an outstanding contribution by a woman who is active in the affairs of the industry or the association.

Opal & Bill Binnion Memorial Award: Acknowledges those who contribute to the WNAAA in its efforts to educate the public about aerial application.

Outstanding Service Award: Awards outstanding service to the commercial agricultural aviation industry or to its association.

Related Industry Award: Recognizes outstanding contributions by an allied industry member and his company.

William O. Marsh Safety Award: Recognizes significant achievements in safety, safety education or an outstanding operational safety program.

Any individual or organization, regardless of whether they are a member, may submit nominations. However, all nominees must be NAAA Members to be eligible for consideration for an NAAA Award.

When completing the form below, please give concise details that support your nomination, and be sure to supply supportive materials to aid consideration in the selection process. These materials may include awards, letters of recommendation, training certifications, photographs and newspaper and magazine articles that relate to your nomination. Please do not send more than three items. These items must be suitable for photocopying. Supportive material can be mailed or faxed to NAAA, or scanned and sent as an e-mail attachment. Following the initial supportive materials, award recipients must also be prepared to provide additional biographical material, including photos, to NAAA.

NAAA Award Category:_____

Nominee Information	**Nominator Information**
Nominee:_____	Nominated by:_____
Company: _____	Company: _____
Address: _____	Address: _____
City: _____ ST _____ Zip_____	City: _____ ST _____ Zip _____
Phone:_____	Phone: _____

Nominee's Local Newspaper: _____ (for press release)

Please describe, in 400 words or less, why your nominee is deserving of this award, adhering to the guidelines outlined above. Please attach another sheet if additional space is needed.

_____

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Nominations must be mailed, faxed or e-mailed to NAAA by September 12, 2011, to:
NAAA Awards – 1005 E Street, SE – Washington, DC 20003
Fax: (202) 546-5726 • E-mail: information@agaviation.org

2011 NAAA Awards Nomination Form

Any individual or organization, regardless of whether they are a member, may submit nominations. However, all nominees must be NAAA Members to be eligible for consideration for an NAAA Award.

When completing the form below, please give concise details that support your nomination, and be sure to supply supportive materials to aid consideration in the selection process. These materials may include awards, letters of recommendation, training certifications, photographs and newspaper and magazine articles that relate to your nomination. Please do not send more than three items. These items must be suitable for photocopying. Supportive material can be mailed or faxed to NAAA, or scanned and sent as an e-mail attachment. Following the initial supportive materials, award recipients must also be prepared to provide additional biographical material, including photos, to NAAA.

NAAA Award Category: Larsen-Miller Community Service Award

Nominee Information

Nominee: John Doe

Company: John Doe Spraying Service

Address: 123 Main Street

City: Topeka ST KS Zip 66603

Phone: (785) 555-5555

E-mail: johndoe@jdsprayingservice.com

Nominator Information

Nominated by: Jane Doe

Company: John Doe Spraying Service

Address: 123 Main Street

City: Topeka ST KS Zip 66603

Phone: (785) 555-5555

E-mail: janedoe@jdsprayingservice.com

Nominee's Local Newspaper: The Topeka Capital-Journal (for press release)

Please describe, in 400 words or less, why your nominee is deserving of this award, adhering to the guidelines outlined above. Please attach another sheet if additional space is needed.

Fifteen years ago John attended Career Day at our daughter Joanna's elementary school. John addressed Joanna's fourth grade class and shared what it was like to fly planes for a living and help farmers as an aerial applicator. If there weren't other parents waiting to speak after him, he probably could have talked all day. The teacher had to cut the questions off at one point. The level of interest the kids showed prompted John to arrange a field trip for Joanna's class to come to our hanger to see an ag operation up close. A pilot of John's applied water to a field for part of that demonstration. The kids thought that was the coolest thing ever. John won over a lot of hearts and minds that day, including those of the parent chaperons. The field trip proved to be so popular that word spread to other grades. John also hosted the fifth grade class that first year. John has continued to host a group of fourth graders every year since then. Some of those fourth graders kept in touch with John as they got older and he even hired a few of them in high school to help wash the planes and do other jobs around the hanger. One particularly promising individual who had gotten the flying bug after that fourth-grade field trip is now John's newest pilot. John has spent so much time mentoring him that we consider him to be an extended member of our family. This year, Joanna's elementary school presented John with a certificate of appreciation for making a second career out of its Career Day activities. This outreach effort has been a blessing for everyone involved—the kids, the school, John, his employees and our industry.

Nominations must be mailed, faxed or e-mailed to NAAA by September 12, 2011, to:
NAAA Awards – 1005 E Street, SE – Washington, DC 20003
Fax: (202) 546-5726 • E-mail: information@agaviation.org

2010 General Aviation Activity Survey Underway

The latest annual survey of General Aviation (GA) activity is underway and Tetra Tech, the FAA's contractor, is asking for the agricultural aviation community's cooperation and participation as it seeks to measure the GA activities that occurred during the year 2010. Providing accurate information is imperative since the survey is the only source available to estimate the amount of hours flown by ag aircraft.

NAAA believes the survey data from 2008 underestimated the number of aerial application hours flown as indicated by a marked drop in hours reported in the GA survey that year compared to the previous year. This resulted in our own data showing a much higher number of accidents per 100,000 hours flown. These "skewed statistics" were partially due to the survey being sent in the late spring when aerial applicators were actively flying and unable to participate. These data are used to calculate the amount of activity, the number of aircraft and the accident rate within our industry so full participation by Part 137 operators asked to participate is key.

Don't assume because the title mentions Part 135 that it does not apply to ag aircraft owners. The notification from Tetra Tech provided below explains why an aircraft owner's assistance is needed and the methods for submitting information.

Please help us provide accurate information on aviation activity and aviation safety. The 33rd annual General Aviation and Part 135 Activity Survey (GA Survey) for reporting on calendar year 2010 began in early April.

The FAA's annual GA Survey is the only source of information on the general aviation fleet, the number of hours flown and the ways people use general aviation aircraft. These data help to determine funding for infrastructure and service needs, assess the impact of regulatory changes and measure aviation safety. The GA Survey is also used to prepare safety statistics and calculate the rate of accidents among general aviation aircraft.

If you were selected to complete this year's survey, you would have received a postcard invitation to participate in the GA Survey in early April. Those who receive an invitation can complete the survey online or by filling out the survey form mailed to them along with a postage-paid envelope.

Why is your participation important?

- *We need your help so that we can prepare accurate estimates of aviation safety.* Data from this survey are used to calculate fatal accident rates for general aviation and Part 135 aircraft.
- *We need to hear from everyone that receives an invitation to participate!* Please respond, even if you did not fly your aircraft during 2010, you sold it or the plane was damaged.
- *Your responses are confidential.* Tetra Tech is an independent research firm that conducts the GA Survey on behalf of the FAA. The information will be used only for statistical purposes and will not be published or released in any form that would reveal an individual participant.
- *A short version of the survey form is available for owners of multiple aircraft.* We know your time is valuable. If you own three or more aircraft and receive several surveys, please contact us.

Questions? Own three or more aircraft? Please contact Tetra Tech toll-free at 1-800-826-1797 or e-mail infoaviationsurvey@tetratech.com. ■

NAAA Membership Application

There's no time like the present to protect your future.

Become an NAAA Member today!

2011 NAAA Membership Application

Please note: NAAA Membership runs from Jan. 1 to Dec. 31 regardless of the date joined.

Membership Categories: (please select one)
Dues amounts are subject to change by NAAA Board.

Operators & Pilots who do not belong to a State/Regional Aerial Application Association must pay Participating Operator or Participating Pilot dues.

$450	___ Operator
	___ $10 each aircraft over 3
$170	___ Affiliated Operator
$900	___ Participating Operator
$170	___ Pilot
$340	___ Participating Pilot
$450	___ Allied (1–10 employees)
$680	___ Allied (11–50 employees)
$850	___ Allied (51–100 employees)
$1,000	___ Allied (101–500 employees)
$1,700	___ Allied (500+ employees)
$170	___ Affiliated Allied
$85	___ Associate
$225	___ International
$680	___ State/Regional Association
$170	___ WNAAA

Allied Industry Indicate your division:

__ Airframe __ Application Technology __ Chemical
__ Dealer/Parts __ Insurance __ Propulsion __ Support

Not sure which categories applies to you? Visit www.agaviation.org/Membership%20Classification.pdf for more information.

Name: _____

Company: _____

Address: _____

City, State, Zip: _____

Bus (_____)_____ Home (_____)_____

Fax (_____)_____ Cell (_____)_____

E-mail _____

Website: _____ Spouse _____

NAAA Dues $_____

NAAREF Donation $_____

Please consider a donation to support NAAREF programs.

(NAAREF depends on your donations to pay for PAASS and other programs such as Compaass Rose, Operation S.A.F.E., Fly Safe and Athena. PAASS attendance fees do not completely offset program costs. Your additional donation, made out to NAAREF, is greatly appreciated and is tax deductible.)

Total Payment $_____

Payment via: ___ Check Enclosed ___ Credit Card

Card # _____ Exp Date _____

Signature _____
(signature authorizes billing credit card)

Cardholder Name _____

Cardholder Address _____

Date _____

Mail to: NAAA, 1005 E Street St., Washington, DC 20003 Ph: (202) 546-5722 Fax to: (202) 546-5726 E-mail: information@agaviation.org Join online – www.agaviation.org

Dues, contributions or gifts to the NAAA are not tax deductible as charitable contributions for income tax purposes. Dues and similar payments may be deducted as ordinary and necessary business expenses subject to restrictions imposed as a result of the NAAA's lobbying activities as defined by Section 13222 – Omnibus budget Reconciliation Act of 1993 {IRS Code 162(e)}. NAAA estimates the non-deductible portion of dues paid during calendar year 2010 as 17%. Agricultural Aviation subscription cost ($30 for domestic, $45 for international) is included in membership dues for all membership categories.

Welcome to New Members

As of March 29, 2011

OPERATOR

David Bolhuis
Pine Ridge Air Spray
Kelliher, MN

James Costa Jr.
Costa Spraying Inc.
Tulare, CA

Edward Heisel
SprayCopter LLC
Labadie, MO

Ronnie Lee Jr.
RCL Flying Service Inc.
Bronwood, GA

Luke Meyers
Meyers Aerial Service
Superior, NE

Regenald Michaud
Regenald Michaud Aviation
Willows, CA

John Newton
Air Advantage Inc.
Mt. Pleasant, IA

Mark Paetzold
Caprock Spraying Inc.
Vega, TX

Marty Reynolds
Reynolds Flying Service Inc.
McCrory, AR

Tim Welch
Ellinwood Flying Service
Ellinwood, KS

William Williams Jr.
Air Cover Crop Solutions LLC
Bowling Green, MO

Chris Zimmer
Rubbert Aerial Inc.
Upham, ND

PARTICIPATING OPERATOR

Robert Eisele
Bighorn Airways Inc.
Sheridan, WY

AFFILIATED OPERATOR

Bill Harris
Harris Spraying Inc.
Circle, MT

PILOT

Robert Aslesen
Top Hat Aerial
Applicators Inc.
Grand Forks, ND

Mike Babcock
Breaux Bridge, LA

Julius Brekhus
Great Plains Aero Inc.
Kenmore, ND

John Bunn
Bunn & Bunn Flying
Midville, GA

Matthew Carranza
Crop First Aviation Inc.
Stanfield, AZ

Michael Denny
Newport, NC

Tripp Everidge
Daddy Rabbit Aviation
Pinehurst, GA

Joseph Hart
Myers Flying Service Inc.
Blytheville, AR

Paul Heideman
Chase, IA

Junior Hopkins
Hopkins Flying Service
Bishopville, SC

Kyle King
Double K Spraying Service
Eakly, OK

David Lambert
Kankakee, IL

Kenneth Lillehaug
Wilbur-Ellis Air LLC/dba
Kroeplin Ag Service
Highmore, SD

Nicholas Matthews
Wilbur-Ellis Air LLC
Huron, SD

Robbie McMillan
McMillan Custom Service Inc.
Waynesboro, GA

Michael Meines
Palouse, WA

Robert Michaelis
Racer's Ag Service
Goodwin, AR

Taylor Michaud
Regenald Michaud Aviation
Willows, CA

Christopher Morris
Sunray, TX

Casey Odegard
Dakota Air Spray
Huron, SD

Robert Peed
C & M Helicopters Inc.
Hollister, CA

James Robertson
Ag Aviation Inc.
Welsh, LA

J D Scarborough
RCL Flying Service Inc.
Cordele, GA

Eric Schmidt
Wilbur-Ellis Air LLC/Kroeplin
Ag Service
Moses Lake, WA

John Shearer
Shearer Sprayers Inc.
The Dalles, OR

Charlie Smith
Pensacola, FL

Richard Spohnholtz
Dakota Ag Service
Newark, IL

Greg Stoker
Earle, AR

Marcus Suhn
Wilbur-Ellis Air LLC/dba
Koreplin Ag Service
Highmore, SD

Mike Taylor
Ag Inc.
Proctor, AR

Michael Zip Wallin
Wallin Agri Aviation
Walnut Ridge, AR

Gregg Watts
O'Brien Flying Service Inc.
Sulphur, LA

Michael Woodrum
Holzwarth Flying Service
Petersburg, IL

AFFILIATED ALLIED

Jane Garr
Garrco Products Inc.
Converse, IN

Michael Jones
Bayer CropScience LP
Anamosa, IA

Bradley Ruden
Bayer CropScience LP
Bruce, SD

ALLIED INDUSTRY

Clay Rassi
AgSync
Wakarusa, IN

Robert Blaskovic
Millennium Enterprises Inc.
Marietta, GA

Ken Hunter
Hunter Agri-Sales Inc.
Coatesville, IN

Jay Sharp
Application Management LLC
Indianola, IA

ASSOCIATE

Akram Abdul-Rahman
Cleveland, OH

Brenndan Figurski
Arlington, TX

Joe Fitzpatrick
Blue Bell, PA

Charles Huckabee III
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Kensington, CA

Dean Rauenhorst
Olivia, MN

Larry Schulze
Nebraska Aviation Trades
Association
Eagle, NE

Michael Teague
Green Country A/C &
Exhaust Inc.
Tulsa, OK

Thia Walker
Fort Collins, CO

William Walker
Ag-Flight Inc.
Bainbridge, GA

WNAAA

Kelly Greenly
MSG Enterprises
Lincoln, DE

Brittany Kerr
Wilbur-Ellis Air LLC/dba
Kroeplin Ag Service
Highmore, SD

Brenda Richter
Richter Aviation Inc.
Maxwell, CA

Sue Stewart
D & S Aerial LLC
Haskill, TX

Saranne Vogt
Elmwood, NE

Date	City	State	Aircraft Type	N #	Injury	Description of Accident
02/05/11	Buttonwillow	CA	G-164B	6725K	None	Hit irrigation vent pipe–made forced landing

CLASSIFIED

A *Classic*fied Account

With Tampa, Fla., hosting the Commodity Classic March 3–5, NAAA was fortunate to have a contingent of Floridian members representing it at the premier convention for the U.S. corn, soybean, wheat and sorghum industries. NAAA thanks Lee and Nancy Turnquist (Whirly Birds Inc.), Jeff Summersill and his father Tommy Summersill (Thomas R. Summersill Inc.) for volunteering their time and representing the Association before an estimated 4,500 growers and industry representatives. The Turnquists filed this report on their Commodity Classic experience.

Having a presence at the Commodity Classic is valuable because it gives attendees an opportunity to talk to an actual aerial applicator and learn more about our services. As folks flowed past our center-aisle booth, a smile or offer of a handout prompted many of them to stop and say hello, inquire about what we represented or tell us what they thought of the work being done in their area. The airplanes and helicopters featured in the "Aerial Application's Growing Role" DVD piqued the interest of several passersby. Kids especially would stop to watch and ask questions.

We had numerous conversations with people who thought the job aerial applicators were doing and the support to their crops and industries were great. Many stated they could not survive without our support. We also heard from a few people who were unhappy with aerial application in their area.

Here are some areas of concern that came up. One big one is an expansion of wind farms popping up in the middle of productive agriculture areas (*see pg. 12*). Another problem is that of transient applicators hired by co-ops who come into their area and start a job and then pull out leaving a partially treated field. We heard from one grower who also operated an airport, and his concern was the lack of respect and stewardship for his facility from the transients as well as local applicators using the airport (*see pg. 22*). We as professional applicators need to address these issues.

The next time you are invited to staff the NAAA booth at the Commodity Classic or Agriculture in the Classroom Conference, say yes. It is a great way to support the industry and have a fun time. ■

The USDA-ARS Aerial Application Technology Group (AAT) publishes almost 20 papers a year in peer-reviewed scientific journals. That scientific stamp of approval provides important validation, but academic journals aren't part of the daily reading lists of most aerial applicators. In an effort to share its research efforts with the people it is intended to help, ATT has developed one-page summaries for each of its peer-reviewed manuscripts. These Applied Research Summaries have been boiled down to a few quick take-away messages and will be appearing regularly in Agricultural Aviation. Full reports are available at AAT's recently revamped website, apmru.usda.gov/aerial.

Current Status and Future Directions of Precision Aerial Application for Site-Specific Crop Management in the USA

Original Citation: Lan, Y, Thomson, S.J., Huang, Y., Hoffmann, W.C., and Zhang, H. 2010. Computers and Electronics in Agriculture.

Research Objective: To explore the current state of precision application and remote sensing technologies that support the aerial application market and to determine and discuss where these systems are going in the future, what research areas need to be addressed to bridge any gaps, and ultimately, how these systems will make aerial applicators more efficient.

Research Methods: The available body of literature, along with current research efforts and experiences were reviewed. The most promising equipment and techniques are described and discussed. An overview of what a complete variable-rate, precision application system would look like is discussed in detail.

Research Results: The basic components required for a fully functional variable rate, precision application aerial system are already available. There is still room for developing and improving how remotely obtained (aerial or satellite imagery) data is interpreted and used to create prescription application maps, but through use of new data fusion technologies, this information is becoming more readily available

Research Application:

- The basic components for aerial variable rate, precision application systems are readily available. With continued improvements to how field and crop conditions are obtained and interpreted to create prescription application maps, these systems will be fully operational within the next several years with real-time operational capabilities.
- The development and adoption of real-time, remote sensing, variable rate, precision application aerial systems will allow applicators to respond quickly to emerging pests on an areawide basis through targeted and judicious usage of pesticides that will result in effective, environmentally responsible applications.

Article can be downloaded in the **Publications** Section of the Aerial Application Technology website: Apmru.usda.gov/aerial ■

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