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POTATOES

MORE THAN MEETS THE EYE

ALSO INSIDE:

- Georgia on Our Minds, Again
- NPDES Insurance Concerns
- Learning from Other Ag Pilots' Mistakes

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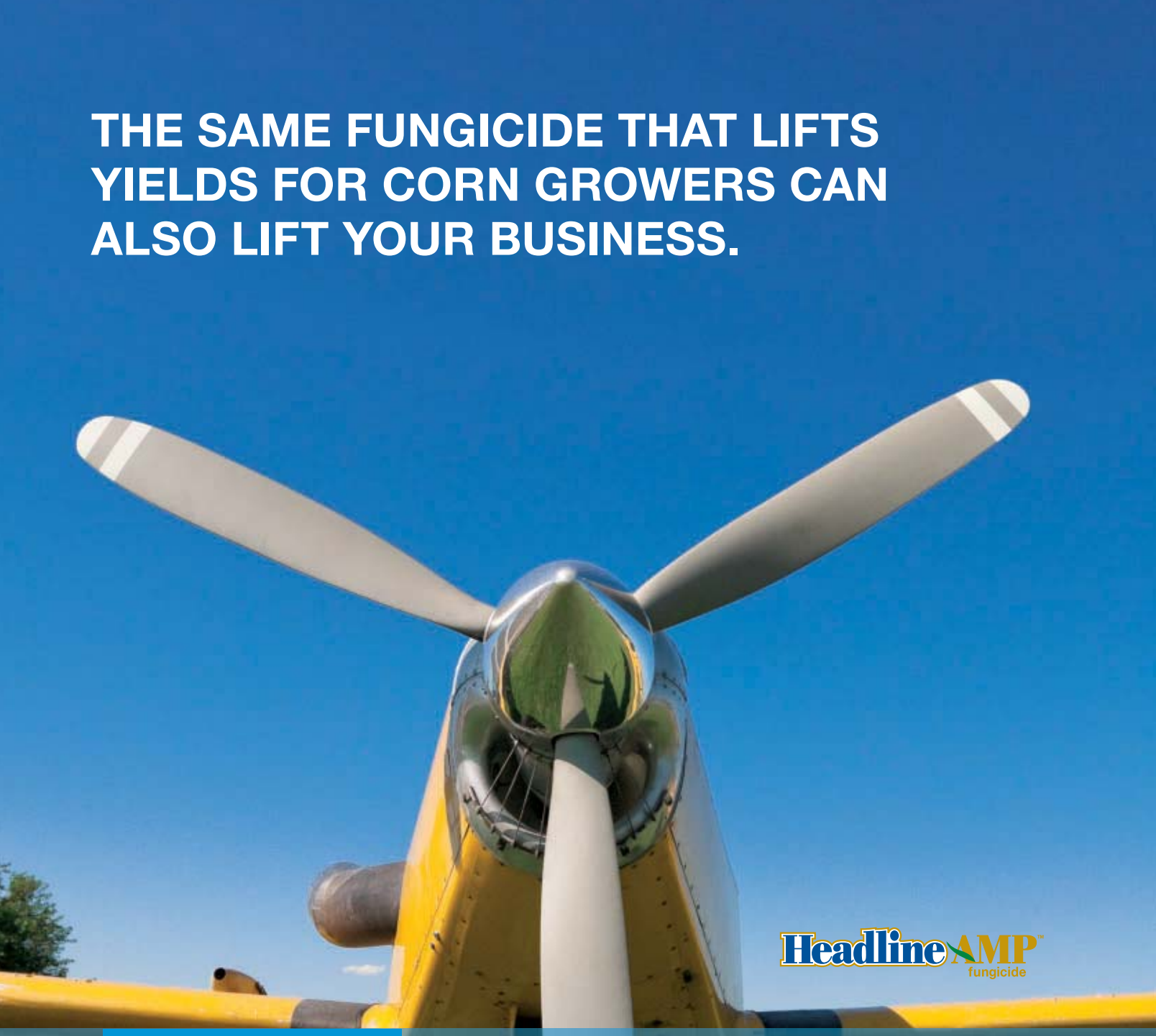

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(202) 546-5722 • Fax (202) 546-5726
information@agaviation.org
www.agaviation.org

NAAA Staff

Executive Director/Executive Editor
Andrew Moore

Assistant Executive Director
Peggy Knizner

Office Affairs Coordinator
Margaret Dea

Director of Education & Safety
Kenneth Degg

Manager of Communications/ Agricultural Aviation Managing Editor
Jay Calleja

Manager of Government & Public Relations
Danna Kelemen

Administrative Assistant
Marisa Beam

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The purpose of NAAA shall be to advance the aerial application industry and its members in their efforts to enhance agriculture, and to protect the public health and the environment.

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Contents

ON THE COVER

When it comes to protecting potatoes, farmers have an ace up their sleeve: aerial application

ALSO INSIDE:

The Grumman Ag-Cat is one of many aircraft treasures celebrated in a new book about the Smithsonian's Steven F. Udvar-Hazy Center

COVER STORY

FEATURES

NOTES

DEPARTMENTS

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

President's Message

Mark Hartz

What is an Association?

Those of us who make our living in the aerial application industry are very fortunate to have the Association we have that looks out for our interests and promotes agricultural aviation in all venues possible. The scope of operations conducted by our Association on behalf of agricultural aviation includes but is not limited to: education, government relations, communications, public relations and networking. Yet another major operation of our Association is the production of the annual NAAA Convention & Exposition. It is the foremost trade show highlighting all things relating to agricultural aviation.

The National Agricultural Aviation Association is not just a logo on a piece of letterhead or the destination when you type in *www.agaviation.org*. It is people. People are the heart and soul of any organization. And our Association is extremely fortunate to have on staff dedicated individuals for whom going above and beyond the call of duty is the rule and not the exception.

The norm for our existence on this earth is that technologies advance on a daily basis. As technologies advance so do their complexities. The same is true of our Association.

Forward thinking leaders in our industry many years ago saw the need for an organization to represent our industry and laid the ground work for the organization(s) that exists today. While the scope and diversity of the activities of our Association have increased tremendously since the inception of the National Agricultural Aviation Association, the mission of the Association has not. The purpose of NAAA is to advance the aerial application industry and its members in their efforts to enhance agriculture, and to protect the public health and the environment. There are many ways the Association does this. The Association is the recognized public policy advocate for our industry. When situations arise that warrant comment about our industry, NAAA is the acknowledged and respected source for information regarding aerial application issues.

Another area of great importance to our industry is the government relations efforts in which our Association is engaged. While most of us in the application end of the industry retreat to our operations during the growing season, the NAAA staff remains on the front lines dealing with our issues whether they be legislative, regulatory or public relations. Often all of these areas will be manifested on a single issue.

The National Agricultural Aviation Association is not just a logo on a piece of letterhead or the destination when you type in www.agaviation.org. It is people. People are the heart and soul of any organization.

Such is the case with the NPDES PGP issue. A Court decision mandated a regulatory agency to place a duplicative, burdensome set of regulations upon agriculture. Solutions to issues like these require interactions with regulators, legislators and in some cases the public at large. To have success in these arenas, it takes having NAAA staff members versed in the workings of the government and the media that have established relationships with public officials to be able to affect favorable changes. A stable, consistent message and direction in our governmental relations efforts makes our Association a credible force with which to hopefully affect changes in issues that would adversely affect our industry. The NAAA staff's efforts on this front are augmented of course by NAAA members making contact with their legislators and regulators about issues that are critical to our industry.

There are many other things that occupy the NAAA staff's time. While perhaps not as glamorous as government relations, just as necessary are the many administrative tasks of the Association. From preparing for the spring and

fall board meetings, along with the annual convention, to administering the membership of the association, to the extensive communication efforts on behalf of the industry, these are just some of the many things that keep our staff members working full tilt year round.

NAAA's extensive communications efforts which include our membership directory, magazine, eNewsletter, Fly Safe fax/emails, media relations kit, industry surveys and many other products—just some of the benefits that come with being an NAAA member—require a huge contribution from a human resources standpoint. All of this is generated by a staff that consists of only seven people. NAAA is very lucky to have such a dedicated staff that works earnestly to make our Association the respected institution that promotes and protects the agricultural aviation industry.

For many years now our present office near Capitol Hill has served the needs of our Association but due to its size has prevented NAAA from expanding its staffing level. It has been a desire of NAAA for many years to acquire new office facilities that are of more modern construction than the converted townhouse that is our current office. Also, space limitations have precluded adding additional staff members to better meet the needs of NAAA as the scope and workload of the Association increases. Well, that desire has turned into reality. NAAA purchased a new office facility in Alexandria, Va., late last year that will allow for a more professional atmosphere in which to conduct its operations. The additional space will allow for expansion of the staff to meet the growing needs of the Association as it strives to promote, protect and defend the agricultural aviation industry.

As we have all had to do in our businesses, we have to be innovative, progressive and look to the future needs of our business. The same holds true for NAAA. With the purchase of the new office facility NAAA stands poised to take its mission of advocacy, education, safety, stewardship and networking to the next level. Hopefully, renovations will be completed by late summer or early fall and very soon NAAA will have a new place to call home.

By the time this reaches you the season will already be in full swing and activity will be at a fever pitch. Remember the bargain we made in my last column and take a moment or two to think about being safe aerial applicators. The few moments lost thinking about safety and stewardship will be paid back tremendously if it prevented an accident or a misapplication of crop protection products. So until next time, FLY SAFE! ■

Executive Director's Message

Andrew Moore

Positive Trends in the Media and Tools to Further the Cause

Oftentimes NAAA members express their frustration to me about inaccurate portrayals of the aerial application industry in the media. This frustration is understandable. Unfortunately, there are those in the media who would prefer to serve up a story that is muddled in controversy, focusing on the supposedly extreme risks of low-level flying and the use of crop protection products rather than an accurate depiction of the benefits aerial applicators and modern agricultural production provide society in the form of abundant, affordable, safe food and fiber. We are experiencing the 50th anniversary of this controversial reporting for it was in 1962 that the book *Silent Spring* was published and the author, Rachel Carson, wrote that pesticide use was detrimental for the environment, particularly to birds.

Much has changed in those 50 years from a policy and technological standpoint. For one, the U.S. Environmental Protection Agency was created resulting in a more rigorous registration program for crop protection products. Furthermore, the Federal Fungicide, Insecticide and Rodenticide Act has been revised several times since 1962 providing additional safety measures. Most importantly, newer technologies have been developed, including more precise application equipment and chemistries that hone in on the target pest solely and are much safer and improved. Boom lengths for aircraft don't spread wing-tip to wing-tip today like they did when the Beatles entered the pop music scene—they stop at two-thirds of the wing or rotor span, thereby keeping the applied material out of the upwash created by the wingtips' vortices. Nozzles that discharge in a narrow spectrum in conjunction with global positioning systems and other precision agricultural technologies are far more efficient and target the applied material much more directly to the plant. Unlike during the Kennedy Administration, a number of chemicals today are regarded as much more environmentally friendly because they target the pest with little or no effect on humans, wildlife, pollinators or on other beneficial insects.

So why aren't these stories showing up in the media? Actually, we are seeing progress in the media telling a more accurate story of the benefits of modern agricultural production. For example, *Scientific American* magazine recently published a story that was also reported on Time.com, *Time* magazine's website, about an analysis conducted by environmental scientists at McGill University in Montreal and the University of Minnesota. The analysis looked at 66 studies and compared conventional and organic crops across 34 different crop species and found that "when it comes to major cereal crops, such as corn or wheat, and vegetables, such as broccoli, conventional methods delivered more than 25 percent more yield."

NAAA's new media/public relations kit provides information at the ready to help members convey the value of agricultural aviation to the media or at any other forum with the potential to directly or indirectly reach the public.

In another issue of *Time* from earlier this year came a special issue titled "10 Ideas That Are Changing Your Life" which included a story about ensuring nature's future in a period of human dominance and mass population. In that piece it stated we will have to promote "technology that environmentalists have often opposed, from nuclear power … to genetically modified crops that could allow us to grow

more food on less land, saving precious space for wildlife." This is reporting that advocates of modern agricultural production like to hear and particularly so from the world's largest circulation-based weekly news magazine with a readership of 25 million.

The importance of ag aviation was one of many positive messages about American agriculture highlighted in the exceptional PBS miniseries *America Revealed,* which premiered in April. The first episode was named "Food Machine," and NAAA member Robert Grace of Grace Flying Service, St. Francis, Kan., wonderfully articulated the vital support aerial applicators provide to America's farmers. There was plenty of stunning aerial footage as well. In many respects, *America Revealed* marveled at the wonders of modern agriculture and the productivity of a system where, for first time in human history, less than 2% of the population can feed the other 98%.

NAAA realizes we can't rely solely on the media to broadcast modern agriculture's successful story. We must work to positively affect aerial application public relations in a number of ways, which include producing the promotional video *Aerial Application's Growing Role*; broadcasting this message on YouTube and other growing and alternative media sites or social media sites; sending out press releases about positive industry news and directly addressing a number of media inquiries at the Association's office. However, an important approach in reaching the media and the public effectively is grassroots, whereby each of us communicates the positive aspects and proactive nature of our industry to public officials and media in our local area. Remember, it was former Speaker of the House of Representatives Tip O'Neil who said, "All politics is local."

To follow through on this we've updated the NAAA media/public relations kit so you will have information at the ready on how to communicate when needed to the media or at any other forum that might directly or indirectly reach the public. The updated materials will be distributed to all NAAA members and may currently be found on NAAA's website by visiting *www.agaviation.org/content/naaa-media-relations-kit*. Keep in mind, these materials may be used not just with the media, but also with public forums such as field days at your operation to enlighten public officials and/or students about the importance of aerial application and/or for other public relations purposes.

Your help in getting the word out is crucial. It is cost-prohibitive for a small association like NAAA to take out ads offered by the national media and effectively reach the public. For example, taking out a one-page, black and white ad in *USA Today*, the newspaper with the greatest U.S. circulation at 1.768 million, is $125,600. The same ad in *The Wall Street Journal*, the newspaper with the second-highest U.S. circulation at 1.613 million, is more than $277,000. The average network television show (FOX, ABC, CBS, NBC) in primetime reaches 9.1075 million viewers, according to Nielson, and a 30-second commercial on one of those networks averages $84,000. There are huge ranges depending on the show, the timeslot, etc., but those are the averages and they are dollars NAAA can't afford to spend without taking a large percentage out of our annual budget, much of which is vital to represent the industry before the federal government in Washington and to produce life-saving educational programming for the industry.

NAAA encourages members to capitalize on the growing number of media stories being told about the benefits of modern agricultural production as motivation for using the NAAA media relations kit to further inform your local public and media about aerial application and the important contribution we as an industry make in the production of food, fiber and biofuel and environmental preservation. ■

WNAAA President's Message

Kathy Diehl

Stress Management: Take Care of Yourself

As the season moves into the summer months, the days are getting longer and hotter and the nights much shorter. It is that time of the year we may start feeling frustrated and anxious when there is more work to do than there are hours in the day. No matter what your role, whether it is a pilot, ground crew, office staff or spouse, the stress during this time can be a bit overwhelming.

For most of us taking a deep breath and stepping away from a stressful situation for a few minutes can sometimes put things in a different perspective. Many times we think there is not an extra minute in the day to relax, but a clear mind will help us focus on getting the job done in a safe, calm and efficient manner. During these times it is also easy to forget there are things we simply cannot control, fix or finish in the timeframe others may expect. Do what you can, and try to forget about those things you cannot change. Continuing to worry only causes extra stress you don't need. Another thing to remember is you may need to get away from a stressful situation in order to get things under control. Once you have calmed yourself down, it is much easier to change the attitudes and stress level of others around you.

During these busy times we also need to take care of our health, which means eating and drinking enough throughout the day. Unfortunately, it is when we have the most work to do that we don't always eat properly or timely. Start your day with breakfast, eat healthy foods throughout the day and drink plenty of water. Again, you may not think you have the time to eat or drink when you are busy, but by being well nourished and hydrated you will be more alert and have more energy.

Another way to deal with a stressful situation is to have a strong support system. If you are feeling overwhelmed, take a break to call a friend or loved one. A reassuring voice, even for a few minutes, can put everything back into perspective. With that said, remember that one of the many benefits of being an NAAA/WNAAA member is the support you can receive from other members. Sometimes friends and loved ones outside of the industry don't understand the issues you may be dealing with. Your membership in the organization gives you a large pool of individuals who have had the same issues and problems you may be experiencing. NAAA/WNAAA also provides programs such as PAASS and Athena that will give you unlimited information on several issues that affect you and your business. You also have the opportunity to attend the 46th Annual NAAA Convention & Exposition this December in Savannah, where you will meet men and women who are more than happy to talk about their experiences. If you are not a member, I would urge you to join and take advantage of the resources and support available for you and your business.

> "The time to relax is when you don't have time for it."
>
> —*Sydney J. Harris*

As you go through this busy season take a moment now and then to reflect on all the things that are important in your life, and don't forget to include yourself as being important to others. Take a break now and then from your work and get some rest, or take time to do something you enjoy. We all need to remember that taking care of ourselves is a necessity, not a luxury. ■


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Washington Report

By John Thorne

EPA Provides Update on Spray Drift Policy

Off-target spray drift of pesticides continues to be an issue for the public, pesticide applicators and EPA. New equipment design, adjuvants and chemical formulations offer solutions to this. A federal program to verify the effectiveness of Spray Drift Reduction Technologies (DRTs) and incentivize pesticide manufacturers to incorporate use of DRTs in new and renewed product labels was a key topic of discussion at a recent meeting of the Pesticide Program Dialogue Committee (PPDC). DRTs include advanced nozzle designs, boom shielding, adjuvants and other technologies designed and verified to significantly reduce the amount of driftable fine particles, reduce drift and as a result of their use may minimize the need or size of no-spray buffers required on pesticide labels.

The PPDC was established in 1995 under the Federal Advisory Committee Act, providing a forum for a diverse group of selected stakeholders to provide feedback to the EPA's pesticide program on various pesticide regulatory policies. The PPDC meets two to three times a year, and Scott Schertz of Schertz Aerial Spraying in Hudson, Ill., is NAAA's current representative on the PPDC.

Spray Drift Reduction Technology Program: EPA officials reported at the meeting that the Agency is about to roll out a new voluntary Spray Drift Reduction Technology Program designed to stimulate pesticide manufacturers to use DRTs in decisions leading to product use label limitations, accelerate the use of verified-effective DRTs and encourage equipment manufacturers to continue to research and develop more advanced DRTs. EPA consulted with spray drift research experts from other countries, including the U.K., Australia, New Zealand, as well as experts here in the U.S. in application technology (e.g., the USDA-ARS Aerial Technology Group scientists).

EPA decided to initially focus the new program on technologies for aerial and ground-boom applications to row and field crops since these application methods and crops account for most of the annual applications and applied pesticides. Depending on the success of the program, EPA may expand it to include air-blast sprayers for orchards.

Star System will Rate DRT Effectiveness: A rating system is being developed for DRTs that will credit DRT-use pesticide labels as risk-management measures in product risk assessments. Test results from DRT verification studies will be used to rate DRT effectiveness rankings from 1 to 4 stars. The actual values of the stars haven't been assigned yet but could be something like 1 star up to 25% reduction; 2 stars 26 to 50% reduction; 3 stars 51 to 75%; and 4 stars more than 75% reduction of potential drift as compared to standard technology. Such a star rating system has been successful in the U.K.

> When included on a product label, use of the Drift Reduction Technology will become a FIFRA requirement unless alternative options for application without DRTs are included on the label.

Validation of DRTs is a Key Part of the Program: To arrive at a rating for a DRT, EPA must receive test results to validate the amount of drift reduction as compared to a standard produced under wind tunnel or field study conditions. This testing will be done by contractors, such as scientists at universities. The University of Nebraska has recently built two new wind tunnels to conduct DRT validation studies. When the studies are complete and reviewed, EPA will post the DRT effectiveness ratings (star number) on a new future website (*www.epa.gov/pesticides/drt*). EPA will also begin crediting use of those DRTs when registrants work with EPA to develop product labels that include DRTs. EPA believes the use of DRTs can dramatically reduce the need or degree of application restrictions, such as no-spray buffer zones to protect sensitive areas or crops. Labels with DRTs can also give applicators more flexibility to make applications in higher

wind velocities or release heights and keep more of the spray on the target site to get better efficacy.

Participation is Voluntary: The program is voluntary, so DRT manufacturers will have to volunteer to have their equipment tested and pay for the testing. The key hurdle will be to get pesticide registrants to volunteer to add DRT use to their registration or amended registration submissions for risk assessment credit on proposed product labels. For registrants that add DRT use to their labels (for example, "Apply with DRT** equipment.") EPA will consider the DRT claim in the product risk assessments and in product use decisions for registration. DRT labeled products will have fewer or lower application restrictions than similar products without DRT labels. When included on a product label, use of the DRT will become a FIFRA requirement unless alternative options for application without DRTs are included on the label. Applicators using products with DRTs included in the label will need to refer to EPA's new website for specific equipment with DRT ratings.

DRT program implementation is likely to start in August: Soon EPA will publicize the launch of the program in the agricultural trade press, describing the star rating system and sources of validation. EPA anticipates the first equipment verification tests will occur this fall. EPA hopes to review these tests' results and have DRT ratings for those verified DRT equipment posted by early winter 2012 in time for initial new labels on the market in the spring of 2013.

EPA's Final Spray Drift PR Notice Delayed: EPA officials also provided an update of the status of the Agency's Spray Drift PR Notice—the document that will provide new guidance for spray drift control and labeling. The PR Notice is under internal review, where it will likely remain until after the November presidential election and EPA's completion of the DRT program.

Implications for NAAA: DRTs for aerial applicators are primarily nozzles, but for ground applicators adjuvants, boom shields and other technologies could likely qualify. Scott Schertz reminded the PPDC that aerial applicators combine other technologies with DRTs, including smokers and the Aircraft Integrated Meteorological Measurement System (AIMMs), which adds an additional layer to the precision ag system by incorporating a real-time onboard wind speed and direction measurement system. The atmospheric data collected by AIMMS is then synchronized with the GPS unit and GIS software. This enables the variable rate flow controller to apply product, taking into account outside wind speed and direction, resulting in an even more precise application. Coupled with advanced nozzle design, these methods help aerial applicators manage drift.

NAAA will continue to follow EPA's progress in the implementation of the new DRT program and encourages members to monitor the NAAA eNewsletter for updates as they occur. ■

John Thorne, Ph.D., recently joined the public policy practice of Bergeson & Campbell, PC as Senior Government Affairs Counsel. Dr. Thorne is a leader in the areas of agricultural and pesticide industries and brings extensive experience with related regulatory, legislative and policy issues. His areas of expertise include water and air environmental policy; pesticide and fertilizer use policy; food production and processing; biomass crop and bioenergy policy; livestock regulatory issues; toxic science and regulatory issues; sustainable agriculture policy; and nonprofit and coalition management. Dr. Thorne holds an undergraduate degree in agronomy from Washington State University and an M.S. and Ph.D. from Purdue University. Most recently, Dr. Thorne was a senior policy advisor in the Washington, D.C., office of Crowell & Moring LLP, and from 1993 to 2004 was managing director of Capitolink, LLC.

POTATOES

MORE THAN MEETS THE EYE

Any way you slice it, dice it or bake it, aerial application plays a vital role in helping potato farmers keep up with the demands for 'America's Favorite Vegetable'

By Colleen Isaacson
Contributing Writer

The loveable Mr. Potato Head has been one of America's favorite toy celebrities since 1952. What started out as a group of body parts used to stick into real vegetables to give them life and expression developed into an iconic symbol of "America's Favorite Vegetable" … the potato. Just as Mr. Potato Head has a place in America's hearts, the real potato has an equal place at their tables. Potatoes are an important staple for Americans and aerial application plays a critical roll in keeping up with the demands.

The first potato patches were established in North America in 1719 and today there are several varietals grown in more than 36 states including Idaho, Washington, Oregon, North Dakota, Wisconsin, Colorado, California and Maine, with Idaho being the top producing state. It's the leading vegetable crop and the second most consumed food in the United States, just after dairy. In fact, according to the United States Potato Board, the average American eats over 100 pounds of potatoes every year whether they are frozen, fresh, dehydrated, canned or in the form of chips.

While Russet Burbanks are the most widely used potatoes in the United States there are several other varietals including white, red, yellow, fingerlings, gold, blue and purple. Burbanks' versatility make them great for baking, mashing or frying, but each type of potato has its own distinct flavor, skin and texture to complement any dish. The possibilities are as endless as Mr. Potato Head's expressions.

WHY THE SKY?

Although there are other methods such as ground sprayers and chemigation to apply crop protection products to farms, aerial application is the most efficient way to get products on the fields. "Aerial application can apply more product in an hour than any other form of application can in a day. With that speed comes efficiency in fuel savings and manpower hours to conserve resources and time," said NAAA Vice President Leif Isaacson, operator of Desert Air Ag in southeastern Idaho. *[Full disclosure: he is also my father.]*

Although ground sprayers have their advantages, in some situations they can cause several problems for potatoes. As potatoes grow and encroach on the outsides of their rows, the wheels of the ground rig drive through the furrows and put pressure against the potatoes damaging the outermost spuds. In addition, ground sprayers have the potential to spread disease and compact the soil. When tubers grow, they require loose soil to grow more evenly and produce a more aesthetic-looking potato, so soil compaction from the ground rigs can have less than pleasing results.

The role of aerial application in potato farming is "vital," says NAAREF President Rod Thomas of Thomas Helicopters in Gooding, Idaho. "There is a time in the life of that crop when nothing else is better than an aerial application, due to speed, efficiency, quality, lack of crop damage and no soil compaction."

POTATOES AS FAR AS THE EYE CAN SEE

No matter how former vice presidents spell "potato," the best potatoes come from the best seed. The United States' diverse geography, technical expertise, strict regulation and commitment to quality allow for a variety of certified seed potato growing areas. According to the United States Potato Board, seed is typically grown in remote regions with low temperatures to control insects and disease and are often isolated from commercial production to ensure healthier tubers. Fifteen states are ideal for producing seed and span from the Pacific Northwest to the East Coast. Seed potatoes are typically smaller than commercial potatoes and are cut into sections so at least one eye is present in the seed piece to be planted.

The Russet Burbank is the spud that made Idaho famous for their potatoes,

but Idaho has ideal growing conditions for a variety of potatoes because of its rich volcanic soil, temperate climate and irrigation. In southeastern Idaho there are primarily Russet Burbanks, red potatoes and various Russet varieties like the Norkotah Russets. A farmer in southeastern Idaho who works with Desert Air Ag says that over half of his farmland is potatoes, primarily Russet Burbanks and Klondike Rose varieties that will go to the retail and food service sectors with 30–40% of those being dehydrated. Dehydrated potatoes come in slices, dices, shreds, granules and flour and can be used as a base food as well as a standalone ingredient. They are lightweight, prepared easily and store well since they don't require refrigeration.

Farther west in central California the combination of sandy soils, moderate climate and little rain gives farmers the ability to control their environment better than other regions can. Round white potatoes and several varieties that are identified with numbers for large chip manufacturers are grown here for the potato chip industry. Sandy soils also provide a great environment for chip-stock in other parts of the country. According to the Wisconsin Potato and Vegetable Growers Association, Wisconsin is the top producing state east of the Mississippi and the third largest potato producer overall. They mostly grow potatoes raised for chip stock and Russet varieties like the Norkotah.

Reabe Spraying Service treats a potato field in Wisconsin, a high-humidity area where potatoes are susceptible to blight. Depending on the severity of the disease pressure, aerial applicators can apply anywhere from 12 to 17 blight sprays per season on a potato field.

"There is a time in the life of that crop when nothing else is better than an aerial application, due to speed, efficiency, quality, lack of crop damage and no soil compaction."

—Rod Thomas of Thomas Helicopters in Gooding, Idaho, on the vital role aerial application plays in potato farming

Although potatoes are still a significant part of agriculture in some areas, the dynamic has changed in other parts of the country. Thomas Helicopters Inc. doesn't spray as many potatoes as they use to because the "dairies have moved in and changed the crop structure, and we're seeing more corn now grown for silage and grain because of the high worldwide price," Thomas said. It's a similar story for former NAAA President and retired ag aviator Jim Avery in Savannah, N.Y., who said, "The areas have gotten built up with corn and soybeans and less potatoes are planted because the yields tend to be more

predictable out west." Despite potato spraying being drastically reduced over the years in this area he said aerial application is still "very important because of the weather conditions. Almost 100% of our potatoes are on reclaimed swampland, like muck ground, and very treacherous for tractors. So a successful potato farmer really has to have access to an airplane."

PEST & DISEASE PREVENTION

No matter what unique circumstances each region has, aerial application plays a critical role in managing potential threats such as diseases, insects and weeds. The largest threats to the crops are evolving pests and early and late blight, a fungus that spreads quickly when there is increased humidity, thunderstorm activity and winds to carry and spread spores. Aerial application is the fastest way to prevent the spread of these diseases and treat fields.

Some varieties of potatoes require a longer growing season than others, like the Russet Burbank. "Russet Burbanks are treated more aggressively because they have to live a little longer," says Thomas. Other varieties like the Norkotah Russets and red varieties have a shorter growing season. Overall it can take anywhere from four to seven months from planting to harvesting depending on the varietal. Potatoes grow better in cool environments so in parts of the country like the Northwest, Midwest and Northeast, they are planted anywhere from mid to late April and are harvested late September to early October with some varieties being harvested as early as July. In warmer parts of the country like California, planting is typically started in December and harvested in the early summer before the temperatures get too hot.

This Potato in History

- More than one million acres of potatoes are planted in the U.S. each year. That's like the size of Rhode Island.
- The potato, from the perennial Solanum tuberosum, is the world's fourth largest food crop, following rice, wheat and maize. The Inca Indians in Peru were the first to cultivate potatoes around 200 B.C.
- Potatoes arrived in the Colonies in 1621 when the Governor of Bermuda, Nathaniel Butler, sent two large cedar chests containing potatoes and other vegetables to Governor Francis Wyatt of Virginia at Jamestown. The first permanent potato patches in North America were established in 1719, most likely near Londonderry (Derry), N.H., by Scotch-Irish immigrants. From there, the crop spread across the country.
- French Fries were introduced to the U.S. when Thomas Jefferson served them in the White House during his presidency of 1801–1809.
- Idaho, the present-day largest producer of potatoes, did not begin growing potatoes until 1836, when missionaries moved west in an effort to teach the native tribes to grow crops instead of relying upon hunting and gathering methods. However, it wasn't until 1872 when the Russet Burbank variety was developed that the Idaho potato industry began to flourish.
- In the 1840s a major outbreak of potato blight, a plant disease, swept through Europe, wiping out the potato crop in many countries. The Irish working class lived largely on potatoes and when the blight reached Ireland, their main staple food disappeared. This famine left many poverty-stricken families with no choice but to struggle to survive or emigrate out of Ireland. Over the course of the famine, almost one million people died from starvation or disease. Another one million people left Ireland, mostly for Canada and the United States.
- Most Americans regarded the potato as food for animals rather than for humans until an effective fungicide against blight was found in 1883 by French botanist Alexander Millardet.
- During the Alaskan Klondike Gold Rush from 1897–1899, potatoes were practically worth their weight in gold. Gold, at the time, was more plentiful than nutritious foods, and potatoes were treasured for their vitamin C.
- In October 1995, the potato became the first vegetable to be grown in space. NASA and the University of Wisconsin, Madison, had the goal of feeding astronauts.
- Various folk remedies include curing a toothache by carrying a potato in your pocket; easing aches and pains by rubbing the affected area with the water potatoes have been boiled in; and treating sunburns by applying grated potatoes. Incas used them to promote healing and prevent rheumatism.

Early in the season, prior to or just after the emergence of potatoes, it's common to apply herbicides to the crop to control weeds. In some regions they are applied by air and in other areas where the surrounding crops are more diverse, they are applied by ground sprayers. "As soon as the potatoes get large enough that the leaves touch the wheels of the ground sprayer, the applications are all done by air," Medina Flying Services' Brian Rau, 2010 NAAA President, said of his area in Medina, N.D.

Each region also deals with perennial pests whether it's the potato beetle, loopers or aphids. In the Northwest and Midwest regions, "Most potatoes are planted with a soil insecticide that keeps the insects down for most of the season," Rau said.

"We've had growers explain that while they don't rely on us to perform their preventative fungicide applications, they would not raise potatoes without access to our services. These growers must know that there is an alternate means of treatment when soils get too wet for ground equipment."

—Operator Damon Reabe of Reabe Spraying Service, Waupun, Wis.

Isaacson agreed. "We used to do a lot of insect control but now farmers are combining it at the time of planting," he said. "We're seeing farmers taking advantage of more foliar applications because the plants respond quickly and are provided better protection against disease. We typically combine them with fungicides to save the farmer money." Foliar application isn't common in all areas but is an important part of the work in Idaho.

Blight spraying typically begins early to mid June for the cooler regions and is scheduled on a 7- to 14-day rotation with five to seven applications per season. That rotation can be shortened or lengthened depending on the pressure from the environment or the variety of the potato.

Desert Air Ag's customer said, "Depending on the season, I'll schedule applications at least every 30 days with a minimum of four applications per season. We pretty much use all aerial application, and although we can get by without it, the airplanes make our applications more

GOING VIRAL:
New Diseases Hit the Potato Patch

Aerial applicators and farmers deal with perennial pests and the threat of blight each season, but the threat of new pests and diseases is always present. Zebra Chip Virus and Potato Virus Y are two examples of relatively new pressures they may be dealing with this year.

ZEBRA CHIP

Zebra Chip (ZC) is caused by a bacterium that causes necrotic flecking in the flesh of the tuber and extends over its length. The psyllid, approximately the size of a winged aphid, is a phloem-feeding insect that affects twenty plant families but reproduces mostly on the potato and nightshade family. The defect causes a dark-striped pattern, hence the name "Zebra Chip," that is more noticeable when fried as the sugars caramelize in processed foods. Not only is it not aesthetically pleasing, the virus can cause reduced yields and tuber size on any variety of potato.

According to the USDA, the disease was first documented in potato fields around Saltillo, Mexico, in 1994 and was first identified in the U.S. in 2000. Since that time it has spread to a number of other states, particularly in the North and Midwest regions. The disease is spread by infected psyllids both horizontally from plant to plant and vertically within psyllid populations as they reproduce.

The psyllid can damage the plant even if it isn't a carrier of the bacterium since it injects toxins through its saliva as it feeds, causing leaf yellowing or purpling called "psyllid yellows" and it can also mimic symptoms of purple top wilt syndrome.

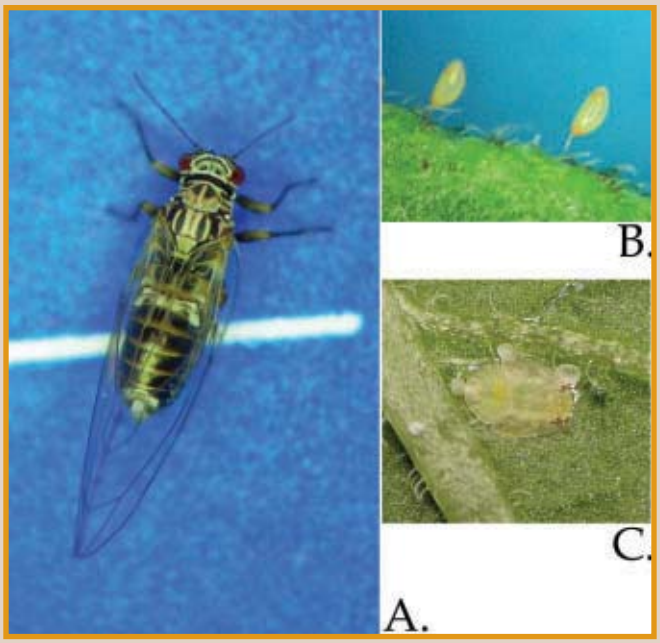
The disease usually takes three weeks from infection to produce symptoms in the foliage and tubers. The way to control the spread of the virus is to control the psyllids. At this time there is no effective non-chemical control tactic, and aerial applicators may see a re-emergence of insecticide spraying in an effort to control them. Heavy infestations can be treated as much as once per week all season long.

USDA-ARS Yakima Agricultural Research Lab

The dark-striped pattern on this potato is a tell-tale symptom of zebra chip disease.

The National Institute of Food and Agriculture's Integrated Pest Management program recommends several steps for monitoring the pests including scouting techniques, using yellow sticky traps, sweep nets, and leaf sampling for eggs, nymphs and adults. They recommend an at-planting application of neonicotinoid insecticide (seed treatment, in-furrow, or at-hilling) with a follow-up foliar insecticide application to target adult and nymph potato psyllids. It is critical to avoid insecticide resistance by not using the same product used at planting or hilling on the follow-up application.

There are many unknowns regarding the disease like the possible effects of storage, but experience suggests infected tubers won't rot in storage and potatoes infected late in the season may develop ZC symptoms in storage.



Andy Jensen, Regional Research Director, Potato Commissions of Idaho, Oregon & Washington.

Potato psyllid life stages: A. adult, B. eggs, C. nymph

POTATO VIRUS Y

The USDA's Agricultural Research Service says Potato Virus Y (PVY) is a virus that infects plants like potatoes and other nightshades. It can spread from several species of aphids when they feed on the plant, similar to how psyllids spread ZC. It replicates by taking over some of the plant's proteins and enzymes. Different varieties of potatoes have different levels of susceptibility.

The disease causes a yellow or green mosaic pattern on the leaves and the tuber can often have rings, spots or cracking, ultimately causing the plant to die. New strains of PVY have emerged making it hard to detect the virus in seed potatoes.

Historically the virus has been managed at seed production, and while this is still important it is also essential to slow the rate of the spread by controlling aphids. Doug Bowers of Maine Helicopters says, "PVY hasn't turned into a major threat, but there is a lot of concern about it in this area."

These viruses are not of any health safety risk and don't have any nutritional problems associated with them, but they can mean major losses for farmers with reduced yields and less-than appealing potatoes. For more information on these viruses visit a USDA website such as *www.potatoes.com/IPM-home.cfm* and see what timing and applications are recommended in your state. –C.I.

Zebra Chip Sources:

USDA National Institute of Food & Agriculture Integrated Pest Management: www.potatoes.com/IPM-home.cfm

1. *Article: Biology & Management of Potato Psyllid in Pacific Northwest Potatoes*
2. *Article: Idaho Recommendations for Potato Psyllid and Zebra Chip Management for 2012*

PVY Sources:

2012 USDA's Agricultural Research Service & Department of Plant Pathology—Information on PVY: www.potatovirus.com/index.cfm/page/PVYinfo.htm

USDA National Institute of Food & Agriculture Integrated Pest Management: http://www.potatoes.com/IPM-PotatoVirusY.cfm

timely. Nowadays more treatments are needed because there is more disease pressure than there used to be."

California doesn't have the disease pressure they have in other regions because of the dry climate. John Moore of White Wolf Potato Company & Moore Farms and brother of NAAA Executive Director Andrew Moore says, "We're pretty lucky here in Kern County. We've got a pretty mild climate, pretty much high desert, dry, we only get about six inches of average rainfall a year. Of course, everything is irrigated." He treats for blight and has insect pressures to a lesser extent. It's less common in his area to use aerial application, he says. "When you don't want to add more water and make the [disease pressures] worse, that's when we'll go to an aerial applicator."

Unlike the drier climates of the West, the high humidity areas around the Great Lakes require more blight treatments. In an ideal season applicators will apply 12 blight sprays per season and 15–17 if the disease pressure is intense. Aerial application is necessary in this region since the soil is often too muddy from heavy rains to get a ground-sprayer in the fields.

While farmers typically budget and schedule the fungicide, on really wet years like the summer of 2010 Reabe Spraying Service's Damon Reabe of Waupun, Wis., did a lot of what he calls "911 work."

Doug Bowers, a pilot for Maine Helicopters in Whitefield, Maine, shared the same stress in 2011 when record rains fell. The region got more than double its normal rainfall, and a late blight epidemic broke out. "It was rampant and completely wiped out some growers," he said. "So it was an incredibly busy season spraying for late blight; I was on a three-day cycle."

While Reabe said they typically start preventative applications in the Midwest during the first week of June, the timeline is also based on the University of Wisconsin's disease forecasting model. This model uses disease severity values, which is a measurement of temperature, humidity and rainfall and factors in the growth stage of the plant to determine when to apply product.

With three locations in Waupun, Plover and Plainfield, Wis., approximately 90% of Reabe Spraying Service's potato customer base relies on them to apply all of their fungicide applications. "We have core customers that actually park their ground sprayers and have us fly," Reabe said. "The University of Wisconsin has done extensive potato research. They recommend potato growers that perform preventative fungicide treatments with ground equipment harvest and store the potatoes on each side of the wheel track separately from the rest of the field. Their research has shown that the wheel track rows don't grade or store as well, resulting in extensive storage and grading loss. Ultimately, our customers have determined that the cost of aerial application is more than offset by the

savings in additional harvest costs, storage losses and grading losses."

Some Wisconsin growers maintain a fire-extinguisher philosophy when it comes to aerial application: they like having it available, but only reach for it in emergencies. As Reabe noted, "We've had growers explain that while they don't rely on us to perform their preventative fungicide applications, they would not raise potatoes without access to our services. These growers must know that there is an alternate means of treatment when soils get too wet for ground equipment."

As new varieties of potatoes come forth, so do the challenges of evolving pests and diseases, and aerial applicators are continuously striving to stay ahead of those threats. Their timely applications give them the upper hand and tremendous potential to prevent their spread. It's essential that farms and aerial applicators work together to combat the agricultural challenges they face in a season. It's this partnership and hard work that allows them to get good quality produce into the hands and onto the tables of millions of people worldwide.

Whether it be memories of Mr. Potato Head, eating mashed potatoes during the holidays, enjoying a loaded baker or fresh-cut fries at a state fair, pulling the trigger of a spud gun or using a potato in a science experiment, the potato is not simply a vegetable—it's deeply embedded in our American culture. ■

Colleen Isaacson is a freelance writer and graphic designer based in Boise, Idaho. This is her first article for Agricultural Aviation. Her father is NAAA Vice President Leif Isaacson of Desert Air Ag in Terreton, Idaho.

46TH ANNUAL NAAA CONVENTION & EXPOSITION

December 3–6, 2012
Savannah, Ga.

Georgia
on Our Minds, Again

It's back to Savannah for a second serving of Southern hospitality for NAAA's 2012 Convention

By Jay Calleja
Manager of Communications

NAAA's Annual Convention & Exposition is returning to Savannah, Ga., for a second serving of Southern hospitality Dec. 3–6 for NAAA's 2012 Convention. In 2010, the Hostess City of the South went out of its way to welcome NAAA, its exhibitors and attendees to Savannah. Two years later NAAA is still basking in the glow of that hospitality as the city continues to roll out the welcome mat.

During the time between NAAA's 44th and 46th convention the Savannah International Trade and Convention Center installed extra-large doors for the express purpose of appealing to NAAA and its aircraft exhibitors. In 2010, NAAA's airplane exhibitors set up shop in the oval driveway in front of the convention center entrance. This year NAAA's aircraft display will be on the trade show floor along with every other exhibitor. That, combined with the ability to land on a makeshift landing strip on the Westin Savannah's adjacent property, means attendees are in for one of NAAA's biggest airshows ever. Already NAAA has preliminary commitments for eight to nine airplanes and three helicopters on the trade show floor. (In 2011, there were two airplanes and one helicopter.)

Welcomed with open arms in 2010 and open doors in 2012—that's the difference between saying *we want you back* and showing it. NAAA's convention planners are equally committed to showing the aerial application community how much we want to see you in Savannah. From a bevy of booths to a cavalcade of concurrent sessions to a litany of Live Auction items, NAAA has BIG plans for the 46th Annual Convention & Exposition. Here's an early look at some of the things in store for our Southern charmer of a convention.

NAAA Convention Confidential

Theme: "Charting a Confident Course"
2012 NAAA Convention: Dec. 3–6
AgAv PAC Golf Tournament: Dec. 1–2
Start of Online Registration: July 9
Online Exhibit Registration: July 17
Cutoff for NAAA Room Block: Nov. 8

2012 CONVENTION SCHEDULE

GOLFERS, DON'T FORGET:
AgAv PAC Golf Tournament

Saturday, Dec. 1	Calcutta	6:30 p.m.
Sunday, Dec. 2	Tee Time	8 a.m.

Sunday, Dec. 2

- Aircraft into the Hall ..... TBA
- NAAA Board Meeting ..... 4 p.m.–6 p.m.
- Company Sessions ..... 8 a.m.–4 p.m.

Monday, Dec. 3

- Exhibitor Setup ..... 8 a.m.–8 p.m.
- Kickoff Breakfast ..... 8 a.m.–9:45 a.m.
- ASABE Technical Session .... 10 a.m.–12:30 p.m.
- Concurrent Session ..... 1:30 p.m.–6 p.m.
- Welcome Reception ..... 6:30 p.m.–7:30 p.m.

Tuesday, Dec. 4

- Exhibitor Setup ..... 8 a.m.–11:30 a.m.
- Business Meeting ..... 8:30 a.m.–9:30 a.m.
- General Session ..... 9:45 a.m.–12 p.m.
- Trade Show Hours ..... 12 p.m.–6 p.m.
- Auction & Reception ..... 5:30 p.m.–7 p.m.

Wednesday, Dec. 5

- Concurrent Sessions ..... 8:15 a.m.–9:45 a.m.
- Allied Industry Meeting ... 8:30 a.m.–9:30 a.m.
- Trade Show Hours ..... 10 a.m.–4 p.m.
- Silent Auction Closes ..... 3 p.m.–4 p.m.
- Exhibitor Teardown ..... 4 p.m.–10 p.m.

Thursday, Dec. 6

- Concurrent Sessions ..... 8 a.m.–4 p.m.
- Farewell Reception ..... 5:30 p.m.–6 p.m.
- Farewell/Awards Banquet ..... 6 p.m.

2012 Kickoff Breakfast: Stories from an Astronomical Career

For a convention boasting a buffet of programming, exhibits and networking, NAAA has whipped up the perfect starting dish to whet your appetite: the 2012 Kickoff Breakfast.

This year's Kickoff Speaker personifies NAAA's convention theme, "Charting a Confident Course," in the extreme. **Story Musgrave** has charted a remarkable course throughout his life and career—so much so that Dos Equis ought to seriously consider patterning its Most Interesting Man in the World commercials after *him*.

An astronaut with agricultural roots, Musgrave is a true renaissance man. He was born in 1935 on a dairy farm in Stockbridge, Mass. The dairy farm delivery planted the seeds for a lifetime of adventures. When he was five years old he rode combines and floated homebuilt rafts down the river. He drove trucks and tractors at 10 and was repairing them by the time he was 13.

Being inside the confines of a classroom must have felt terribly constraining at the time because Musgrave never finished school. Instead, he joined the Marines and served in Korea as an aircraft electrician and engine mechanic. He learned to fly with the Marines, and in the 55 years since, he has accumulated 18,000 hours in more than 160 aircraft. As a parachutist, he has over 800 free-falls.

Musgrave spent more than 30 years as a NASA astronaut and flew on six spaceflights. He performed the first shuttle spacewalk on the Challenger's first flight, conducted two classified DOD missions and served as the lead spacewalker on the Hubble Telescope repair mission.

Musgrave morphed from a young man without a diploma to a person in need of a double-sided business card to account

NAAA Kickoff Speaker Story Musgrave has enjoyed a storied career as an astronaut and in his post-NASA occupations.

for all his academic accolades. Some students graduate with a double major—Musgrave has *seven* graduate degrees in math, computers, chemistry, medicine, physiology, literature and psychology, as well as 20 honorary doctorates. *But wait! There's more!* Would you believe it if we said Musgrave worked on the side during his astronaut career as a part-time trauma surgeon? It's true.

Today, he operates a palm farm in Orlando, Fla., a production company in Sydney, Australia, and a sculpture company in Burbank, Calif. *But that's not all!* Musgrave is also a landscape architect, a concept artist with Walt Disney Imagineering, an innovator

Scene from NAAA's 2010 Trade Show at the Savannah International Trade & Convention Center.

Brisk Business: Rooms Going Fast at NAAA's Convention Hotels

It's Nov. 9 and you've registered for NAAA's Convention. Do you know where you are staying?

Take it from us—you don't want to wait until November to find out the answer to that question because you may not like the results. With five months to go, NAAA's room block at the Westin Savannah is already full. Aside from its terrific facilities and customer service, the Westin's coveted location next door to the convention center appealed to many early planners.

Business has been brisk at NAAA's two city-side convention hotels, but the Savannah Housing Bureau still has plenty of rooms available at the Hyatt Regency Savannah and the Savannah Marriott Riverfront. The Hyatt and Marriott are in the heart of the entertainment district and just steps away from great shops, restaurants and attractions.

Regardless of which side of the river you're staying on, crossing it will be quick and easy. The Westin, Hyatt and Marriott each have their own ferry docks, and a free ferry service will shuttle attendees across the river throughout the day and evening. This worked extremely well in 2010.

In addition, a free shuttle bus service will be available to transport guests at the Hyatt and Marriott to and from the convention center, and attendees at the Westin to and from the entertainment district.

The Savannah Housing Bureau is handling NAAA's hotel arrangements and has created a dedicated website for attendees to book their stay at NAAA's official hotels at *https://resweb.passkey.com/go/46thNAAA*. NAAA's hotel-registration website lets you book, modify or cancel your hotel reservations at any time. Booking through this secure website is required to receive NAAA's group rate. Standard rooms are $114 per day, plus tax, at all three hotels. Questions about hotel reservations should be directed to the Savannah Housing Bureau at 912-644-6465. Please do not call the hotels directly. The individual hotels cannot match NAAA's group rate or reserve a room in NAAA's housing block.

NAAA's three primary convention hotels are in proximity to the convention center and Savannah's entertainment district. A free ferry service will shuttle attendees across the river throughout the day. The Westin, Hyatt and Marriott each have their own ferry docks.

Three's Company

~~**Westin Savannah Harbor Golf Resort & Spa**~~ **SOLD OUT!**
~~One Resort Drive~~
~~Savannah, GA 31421~~

Hyatt Regency Savannah
Two West Bay Street
Savannah, GA 31401

Savannah Marriott Riverfront
100 General McIntosh Boulevard
Savannah, GA 31401

NAAA Room Rate: $114/night + tax (single or double)

Cutoff for Block Rate: Nov. 8, 2012

Savannah Housing Bureau: 912-644-6465

NAAA Hotel-Registration Website: *https://resweb.passkey.com/go/46thNAAA*.

with Applied Minds Inc. and a professor of design at Art Center College of Design in Pasadena, Calif.

Between the breakfast buffet and stories from Musgrave's astronomical life and career, NAAA's Kickoff Breakfast is sure to satisfy your physical and intellectual appetite. There are two ways to register for this event. Tickets for the Kickoff Breakfast and Farewell Banquet are included in the "with banquets" registration package. Anyone with a "without banquets" package can purchase tickets à la carte.

But Wait! There's More!

The Kickoff Breakfast is just the start of good things to come. Other goodies to take in include:

New ASABE Format: The ASABE Technical Session is getting a makeover at the behest of new organizer Brad Fritz of the USDA-ARS Aerial Application Technology Group. But all of the ASABE presenters agreed it was time for a change, Fritz said. "This session has typically focused on very recent research work being conducted by the presenters with more of a focus on the scientific process used with fairly minimal emphasis on how the results impact day-to-day operations. This year we are taking a different approach."

Rather than focusing on specific research projects, members of ASABE's Aerial Application Committee will address high-interest topics, including volume applications, the effects of active products and adjuvants on droplet size, booms setups for optimal performance and using models to improve applications. "Our challenge this year is to push ourselves to not only to present what scientific research has to say about each of these topics, but to go beyond that and actually interpret these results and provide guidance on how to apply them in the field," Fritz said. "Our hope is that over the next several years this session can evolve and grow into something applicators will see as a unique resource, providing them knowledge and tools that they can actually use." *(Some states allow CEUs for this session.)*

Concurrent Sessions: Several educational sessions are on tap throughout the week, including programming focused on application technology, chemicals, engine performance and maintenance, security and FAA regulations, helicopters and airframe sessions with Air Tractor and Thrush. The PAASS presenters—our roving safety instructors—moderate Com*paass* Rose, an information-sharing session geared toward low-time and prospective ag pilots. Audience members will have an opportunity to discuss ideas and philosophies about the business and interact with some of the industry's top operators.

General Session: An elaborate mock trial loosely based on a real-life case is in the works for the General Session. Attorney Geffrey Anderson has agreed to choreograph the proceedings with assistance from the NAAA Insurance Committee. The mock trial will potentially include all stages of a trial as well as videotaping two juries in advance so attendees can see what happens during deliberation. Real operators will be used as witnesses.

Trade Show: Although booth sales are just getting started for NAAA's

NAAA Taps YGS Group for Booth/Sponsorship Sales

NAAA is teaming up with **The YGS Group** for the third year in a row. As it did in 2010 and 2011, YGS will handle booth sales, sponsorship solicitation and assist with auction items for the 2012 Convention & Exposition. Booth sales begin July 17 through NAAA's exhibitor-registration website, which will be accessible from www.agaviation.org/content/trade-show. For more information on exhibiting or sponsorship opportunities, please contact YGS's **Marshall Boomer** (Ext. 123) or **Stephanie Bunsick** (Ext. 137) at 800-501-9571.

Trade Show Dec. 4–5, if the past three shows are a suitable barometer, attendees can expect another strong showing from the industry's allied industry companies. Indeed, the world's largest agricultural aviation trade show keeps growing even … well … *larger*. Last year, a record-setting 155 exhibitors displayed their cutting-edge goods and services at the trade show in Las Vegas. That was an 8% increase over the previous high of 143 exhibitors at NAAA's 2010 Convention in Savannah, which had topped the then-high-water mark of 124 exhibitors set in Reno in 2009. Whether you plan on upgrading your GPS and GIS hardware and software, are in the market for a new aircraft or simply want to investigate new crop protection products from different chemical companies, you'll find it and more at NAAA's 2012 Trade Show.

NAAA Hospitality: Between the Kickoff Breakfast, Welcome Reception, Live Auction, Farewell Reception, Farewell Banquet, private functions and informal get-togethers, there will be no shortage of opportunities for socializing and networking with friends and business acquaintances.

WNAAA Convention: The mix of business and pleasure at the WNAAA Convention is an amalgam of pleasurable business and fun-filled onsite and offsite activities, including the WNAAA President's Open House and President's Breakfast, the always informative Athena Program and other forthcoming surprises.

What else is there? Plenty. Too much for the confines of this issue, in fact. Look for more on NAAA's 2012 Convention in the weeks and months ahead! ■

NAAA Awards Season Around the Corner

The nomination period for NAAA's 2012 Annual Awards is officially open. Each year, NAAA recognizes a handful of members for outstanding contributions to the aerial application industry. This year's award recipients will be honored at the 2012 Convention & Exposition in Savannah, Ga. This industry is filled with exceptional people 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 NAAREF award, the Evans-Christopher Operation S.A.F.E. Award.

NAAA Award Categories

Agrinaut Award: Honors the 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 be or have been actively engaged in commercial agricultural application with an agricultural aircraft and the achievement cited should be a "state of the art" contribution for the benefit of the agricultural aircraft industry as a whole.

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

Delta Air Lines "Puffer" Award: Recognizes 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 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 their 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.

The Awards Nomination Form is available as print-only and fillable PDFs at *www.agaviation.org/content/naaa-annual-awards*. The form is also in the 2012 NAAA Membership Directory. To make a nomination, fax or email completed entries to NAAA at 202-546-5726 or *information@agaviation.org*. **The deadline is Sept. 10.**

Catch the Auction Fever!

The record proceeds NAAA took in from its auction in 2010 was the only benchmark from Savannah that didn't fall in Las Vegas last year. By raising more than $372,000, the 2011 Live Auction came close to the 2010 record, when NAAA raised $460,000. Nearly $200,000 of last year's amount came from Al and Mike Schiffer of Al's Aerial Spraying in Ovid, Mich., who came out on top in the bidding for Pratt & Whitney Canada credits for OEM parts and maintenance services associated with both a large and small PT6A AG engine.

We challenge our Allied Industry, State Associations and individual aerial applicators to beat 2010's auction tally. Support the aerial application industry by donating an auction item to NAAA, WNAAA or both organizations. The earlier you come forward, the more exposure you'll get. In exchange for contributing to the NAAA/WNAAA auctions, we will showcase your company's contribution to the aerial application community in Savannah and in the period leading up to the convention. Companies that contribute early will benefit from increased publicity as we tout the Live and Silent Auctions on our website and in NAAA's publications.

NAAA's fun-filled Live Auction makes grown men feel like kids again. At left, Illinois AAA Executive Director Rick Reed hoists a children's pedal plane. At right, 2011 NAAA President Rick Richter demonstrates the Cruzin' Cooler.

Donated auction items provide income for association projects and programs. With this year being an election year resources are needed to ensure support of aerial application issues and educate new government officials about the important role our industry plays in agricultural production and public health protection. Furthermore, in light of recent and continued budget-cutting efforts by the federal government, fundraising from within the industry is critically important since federal funding for programs vital to the aerial application industry is no longer assured.

To donate an auction item, contact NAAA at 202-546-5722 or *information@agaviation.org*. Big-ticket items are usually reserved for the Live Auction, with smaller items allocated for the Silent Auction, but final determinations are made on site once all the offerings have been inventoried. ■

SAMPLING OF AVAILABLE AUCTION ITEMS

COMPANY	AUCTION ITEM
Ag-Nav Inc.	2 (two) $1,000 gift certificates for any repair or product of any item at Ag-Nav
Ag-Nav Inc.	1 (one) Ag-Nav Guia GOLD complete, for helicopter or fixed-wing Certificate/display
Phoenix Aviation Managers	1 (one) matted print of "Leland's Legacy"
Southwest Turbine Inc.	1 (one) Part Number 3103496-1; 1 (one) Turbo Maxx Crossover Duct
AgAir Update	1 (one) Richard DeSpain pen & ink drawing; Lifetime subscription to AgAir Update

Thank you to our contributors! If your company has something of value to add, consider contributing it to the NAAA/WNAAA auctions.
For additional information, contact NAAA at (202) 546-5722.

46th Annual
NAAA Convention & Expo

Savannah, Ga. ◊ Dec. 3–6, 2012

Pre-registration must be received by Wednesday, Nov. 21, 2012. Use this form and register today!

MEMBER REGISTRATION: You must be the designated member of an Operator or Allied Industry Company, State Association Executive, or have a Pilot, Affiliated Operator, Affiliated Allied, Associate, International or WNAAA membership in your name, or be the spouse of an NAAA member to qualify for member rates.

Registration at the convention site will cost $50 more per person!

NAAA Members	Registration With Banquets	Registration Without Banquets
Member	$335	$230
Spouse	$280	$170
Child (under 12)	$115	Free

Non-NAAA Member	Registration With Banquets	Registration Without Banquets
Non-member	$460	$355
Spouse	$400	$295
Child (under 12)	$115	Free

Banquets: Kickoff Breakfast and Farewell/Awards Banquet

EXTRA BANQUET/RECEPTION TICKET FEES:

NOTE: Attendance at the Welcome Reception, Auction Reception and Farewell Reception are included in your registration fee. Purchase Kickoff Breakfast or Farewell/Awards Banquet tickets only if you purchased a "without banquets" package. Purchase extra Welcome Reception and Farewell Reception tickets only for guests with no registration package.

Monday, Dec. 5	Kickoff Breakfast	$45/each	# needed ___
Monday, Dec. 5	Welcome Reception	$45/each	# needed ___
Thursday, Dec. 8	Farewell Reception	$30/each	# needed ___
Thursday, Dec. 8	Farewell Banquet/Awards	$80/each	# needed ___

REGISTRANT: First Name _____ MI _____ Last Name _____

(Please print your name as you would like it to appear on your convention badge.)

Company _____ Phone _____

Address _____ City _____ State_____ Zip _____

Country _____ Fax _____ Email _____

SPOUSE REGISTRANT: _____

(Please print name as you would like it to appear on convention badge.)

ADDITIONAL REGISTRANTS:

First _____ MI ___ Last _____

First _____ MI ___ Last _____

First _____ MI ___ Last _____

First _____ MI ___ Last _____

PAYMENT:

Registrant Fee $_____

Spouse Fee $_____

Add'l Registrants $_____

NAAA Dues $_____

Banquet Tickets $_____

TOTAL DUE $_____

(*U.S. funds only, must accompany registration*)

Credit Card _____ or Check # _____

Card# _____

Exp Date: _____ Phone _____

Address _____

City _____ State _____ Zip _____

_____

"Signature is permission to bill Credit Card."

Mail payment and registration form to: NAAA – 1005 E Street SE – Washington, DC 20003
Print registration form at www.agaviation.org – Fax 202-546-5726 – Questions? Call 202-546-5722
E-mail information@agaviation.org. Online registration opens July 9 at www.agaviation.org.

Tee Up for the 2012 AgAv PAC Golf Tournament

The 46th Annual NAAA Convention & Exposition in Savannah, Ga., is just around the corner, and that means it's time for the NAAA AgAv PAC Golf Tournament. With 2012 poised as one of the most significant presidential and congressional election years in recent history, your donation to help strengthen NAAA's influence in Washington, D.C., and support candidates friendly to our industry is more important now than ever. What better way to do this than by having fun on the links with your fellow aerial applicators? So dust off your clubs and help support the ag aviation industry!

This year's tournament will again be held at the legendary 18-hole championship Club at Savannah Harbor which is part of the Westin Hotel and on its grounds. The Westin is one of the host hotels for the NAAA Convention. The lush course was designed by renowned architect Robert Cupp and golf legend Sam Snead. It features unparalleled views of pristine wetlands, the river and downtown Savannah, and in 2010 also provided AgAv PAC players with the unique perspective of ag planes landing adjacent to the course during play. The Club is the host site of the PGA Tour's Champions Tour Liberty Mutual Insurance Legends of Golf and listed as one of the top 100 golf courses in America by *Conde Nast Traveler* magazine.

The Westin Savannah Harbor Golf Resort & Spa is home to the 18-hole Robert Cupp/Sam Snead Championship Golf Course.

The 2012 NAAA Golf Tournament will consist of a four-member team scramble on Sunday, Dec. 2, with an 8 a.m. shotgun start. NAAA recommends players plan to arrive in Savannah in time to attend the Calcutta on Saturday, Dec. 1, at 6:30 p.m. The Club at Westin Savannah Harbor has clubs for rent (brand-new Callaway Razrs + 6 logoed balls) for $50. If you will need to rent clubs, please contact the pro shop at (912) 201-2240.

The NAAA Golf Tournament Registration Form below is required for each entrant.

NAAA AgAv PAC Golf Tournament Registration Form

Golf Package:

Name: _____

Phone: _____ E-mail: _____

Golf Handicap* (your golf score on a 72-par golf course): _____

*Required for registration

Meal Package:

Name: _____

Payment:

Amount: _____ Chose one: Check _____ Credit Card: _____

Card #: _____ Exp. Date: _____

Name on Card: _____

(signature gives permission to bill)

*Please register in advance and no later than **Nov. 21, 2012**. Advance registration is required to set the 4-member teams. Teams will be matched according to handicaps, and players cannot register as a foursome.

Please Make Checks Payable to AgAv PAC

All proceeds go directly to the AgAv PAC. Federal law requires all donations to be personal contributions. Corporate contributions are prohibited. PAC donations are not tax deductible. Payment can only be made by personal check or personal credit card only.

Tournament Schedule:

Saturday, Dec. 1
- 6:30 p.m. – Reception & Calcutta

Sunday, Dec. 2
- 7:15 a.m. – Continental Breakfast
- 8 a.m. – Tee Times Begin
- 1 p.m. – Lunch & Awards

Package Costs

$220 – Golf Package (per player)
Includes greens fee, Saturday reception and Sunday breakfast and lunch.

$110 – Meal Package (non-player/attendee)
Includes Saturday reception and Sunday breakfast and lunch.

Send entry forms and payment to NAAA by fax at (202) 546-5726 or e-mail at information@agaviation.org

32°04’52”N 81°05’28”W

SET YOUR COORDINATES FOR SAVANNAH

SUNDAY, DEC. 2

- AgAv PAC Golf Tournament
- Calcutta on Saturday night (12/1)
- NAAA & WNAAA Boards of Directors
- Check Website for Company Seminars

MONDAY, DEC. 3

- Kickoff Breakfast
- ASABE Technical Session (CEUs possible)
- NAAA Concurrent Educational Sessions
- Exhibitor Setup
- Welcome Reception

TUESDAY, DEC. 4

- NAAA Concurrent Educational Sessions
- NAAA Business Meeting
- NAAA General Session
  - -Mock Trial
  - -Update on NPDES Permits
- Trade Show Hours 12 p.m.–6 p.m.
- Live Auction & Reception

WEDNESDAY, DEC. 5

- NAAA Concurrent Educational Sessions
- Trade Show Hours 10 a.m.–4 p.m.
- Silent Auction closes 3 p.m.–4 p.m.
- Exhibitor Teardown 4 p.m.–10 p.m.

THURSDAY, DEC. 6

- Airframe Sessions
- NAAA Concurrent Educational Sessions
- Farewell Reception & Awards Banquet

JOIN NAAA FOR ITS 46TH ANNUAL CONVENTION & EXPOSITION DECEMBER 3-6, 2012

COME WITH CONFIDENCE. PLAN AHEAD!

CHECK AGAVIATION.ORG REGULARLY FOR INFORMATION ON:

- ✓ Complete Schedule
- ✓ Exhibitor and Attendee Registration
- ✓ WNAAA Convention Program Events
- ✓ Special Events and Convention Activities

OFFICIAL HOTELS

NAAA’s hotels are close to the convention center and Savannah’s entertainment district.

Convention Center Area

- Westin Savannah Harbor Golf Resort & Spa

Shopping & Entertainment Area

- Hyatt Regency Savannah
- Savannah Marriott Riverfront

The convention and entertainment areas of Savannah are bisected by the Savannah River. A FREE ferry service will shuttle attendees across the river throughout the day. Each hotel has their own ferry docks.

NAAA Room Rates: $114/night + tax (single/double)—Cutoff for Block Rate: Nov. 8, 2012

BOOK EARLY ONLINE AT

https://resweb.passkey.com/go/46thNAAA

to secure your preferred hotel quarters!*

* Booking through NAAA’s secure website is required to receive NAAA’s group rate. Questions may be directed to the Savannah Housing Bureau at 912-644-6465. Do not call the individual hotels directly.

NPDES INSURANCE CONCERNS

Penalties for violating NPDES PGP standards could be financially crippling for aerial applicators, but there are ways to contractually handle these uninsured risks

By Geff Anderson, Raven Atchison and Tim Bonnell Jr., on behalf of the NAAA Insurance Committee

There are several insurance concerns that have arisen due to the new National Pollutant Discharge Elimination System (NPDES) Pesticide General Permit. The Clean Water Act (CWA) imposes steep penalties on aerial applicators for minor violations and opens applicators up to joint and several liability, which essentially constitutes liability for all applicators working under a decision-maker, not solely the applicator who violates the CWA. Specifically, the NPDES provides that the CWA may subject an applicator to criminal penalties, civil penalties or administrative penalties.

Criminal penalties include the following:

- **Negligence:** The CWA provides that any person who negligently violates permit conditions is subject to criminal penalties of not less than $2,500 or more than $25,000 per day of violation, or imprisonment of not more than one year, or both. A second or subsequent conviction for a negligent violation subjects a person to criminal penalties of not more than $50,000 per day of violation or imprisonment of not more than two years, or both.
- **Knowing Violations:** Knowing violations carry a fine of not less than $5,000 or more than $50,000 per day of violation, or imprisonment for not more than three years, or both. Second or subsequent violations subject a person to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six years, or both.
- **Imminent Danger:** The CWA provides that any person who knowingly violates permit conditions who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury will, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. Second or subsequent convictions will subject a person to a fine of up

to $500,000 or imprisonment of not more than 30 years, or both. An organization (as defined by the Act), will, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

- **Tampering:** Any person who falsifies, tampers with or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit will, upon conviction, be fined up to $10,000, or imprisoned for up to two years, or both.

The CWA provides that any person who violates a permit condition is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. 2641 note) as amended by the Debt Collection Improvement Act (31 U.S.C. 301 note). The current maximum is $37,500 per day for each violation. The CWA provides that any person who violates a permit condition is subject to administrative penalties, as follows:

1. **Class I Penalty**—not to exceed the maximum amounts authorized by CWA section 309(g)(2)(A) and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. 2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. 3701 note). The current maximum is $11,000 per violation, with a maximum amount of any Class I penalty assessed not to exceed $37,500.

2. **Class II Penalty**—not to exceed the maximum amounts authorized by CWA section 309(g)(2)(B) and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. 2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. 3701 note). The current maximum is $11,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $157,500.

As one can easily perceive, violations of the new standards will be quite costly. This article addresses possible ways to contractually handle the risks.

An Uninsured Risk

Most aerial applicators' aircraft hull, liability and chemical liability policies will respond to a loss for Bodily Injury and Property Damage related to the application, provided the application was in accordance with the policy terms and conditions. These insurance policies, however, do not provide coverage for fines, including those related to the NPDES permit and CWA, or civil lawsuits unrelated to bodily injury or property damage losses. Some ways to address this uninsured risk are via risk avoidance, or refusing to make the application, and contractual agreements. If the decision is made to make the application, the applicator must address the risk contractually.

Aerial applicators' **insurance policies do not provide coverage for fines**, including those related to the NPDES permit and Clean Water Act, or civil lawsuits unrelated to bodily injury or property damage losses. As such, applicators should take steps to limit their exposure to this uninsured risk.

Historically, the majority of applicators do not have written contracts with their clients, but it would be prudent for applicators to start using written contracts in every application, especially in light of the new regulations. The contract should include an indemnity provision, whereby the client agrees to indemnify and reimburse the applicator for any statutory violations incurred during the application. Each state has different standards for assuring the enforceability of indemnity agreements. Many states require the complete risk for the loss, in this case the fine, be shifted clearly to the indemnifying party, regardless of fault. In other words, the client would be contractually obligated to pay the fine even if the applicator was the violator. Accordingly, please contact your attorney to determine what language is necessary in the states in which you operate.

With respect to the joint and several liability issue, the applicator should once again contractually protect the pilot and the business. The contract should include an indemnity provision, whereby the client agrees to indemnify and reimburse the applicator for any penalties incurred due to another's misapplication. Said misapplication would include those made by the client as well as those made by another applicator who the client has hired to make an application to the client's property. As mentioned, each state has different standards for indemnity agreements and many states require a complete shift in risk, which would require the client to be contractually obligated to pay even if the applicator

was at fault. Therefore, it is important to contact an attorney to determine what language is necessary for an enforceable indemnity agreement. Another option is to include a clause in the contract that prevents the client from using more than one applicator at a time and/or prevents the client from making any self-applications during the timeframe in which the applicator is providing services to the client. Such a clause will limit situations wherein joint and several liability becomes an issue.

Alternatively, the contract should include a clause whereby the client is required to disclose every other applicator, including the client (if applicable) who will be making applications on the client's property. This will allow the applicator to evaluate the risk in providing services for that particular client by considering the number of applicators being used, the name, and therefore the reputation, of each applicator being used, and the frequency of services provided by other applicators. That information may also lead to the possibility of the applicators contracting amongst each other. The contracts between the applicators should contain provisions that require the applicators to notify each other of each application and to agree to indemnify one another if it is reasonably clear which applicator violated the act. Once again, because each state has different requirements, in order for an indemnity agreement to be enforceable it is important to contact an attorney to determine the necessary indemnity language.

Historically, the majority of applicators do not have written contracts with their clients, but it would be prudent for applicators to start using written contracts in every application, especially in light of the new regulations.

Three keys to limit exposure and avoid liability under NPDES Clean Water Act regulations:

1. Keep meticulous records.
2. Provide exceptional training to employees.
3. Contract with clients and/or other applicators in the area to protect themselves against undeserving penalties.*

** Consult with an attorney to determine the necessary contract language for your states of operation.*

The new provisions in the CWA could be advantageous for insurance companies willing to take a risk and provide coverage for the possible penalties. The policy, for an additional premium, could provide coverage up to a certain monetary value or allow for a certain number of violations per policy term. The policy could offer coverage for just regulatory action penalties and misapplication, or just for paperwork violations, or for both. The policy could offer a limit of liability for each category, or if the policy covers all types of offenses, could offer an aggregate limit of liability.

The joint and several liability issue could also be addressed by insurance providers filling the gap by providing coverage for aerial applicators in these types of situations. The policy could contain a subrogation clause wherein the insurance company would be able to recover the amount paid to the insured. A subrogation clause would allow the insurer to stand in the shoes of the insured and pursue any claims the insured has against a third party, in this case the client or another applicator who actually violated the act, and any recovered amount would be kept by the insurance company. The policy could offer a limit of liability for total amount paid on the insured's behalf whether or not the insurance company is able to recoup their costs through subrogation. Or, the limit of liability could be a floating amount whereby each time the insurance company is able to recoup its costs the net amount recovered would be credited back to the policy limits for that term. Of course, the latter option would only be beneficial to long-term policies due to the amount of time it takes to resolve these types of liability issues.

The CWA has prompted many discussions about what options are available for applicators to avoid excessive and costly penalties. While it is possible insurance companies may eventually venture into providing coverage for these penalties, it may be years down the road. In the meantime, applicators should be proactive. They should keep meticulous records and provide exceptional training to their employees to avoid being liable under the regulations, and they should contract with their clients and/or other applicators in the area to protect themselves against undeserving penalties. ■

Test Your Knowledge

Agricultural Aviation continues its series of questions to quiz you on your knowledge of aerial application topics. Thanks to the National Association of State Departments of Agriculture Research Foundation (NASDARF) for permission to use selected questions from their chapter review questions from the Aerial Applicator's Manual: A National Pesticide Application Certification Study Guide.

See pg. 53 for an explanation of the answers and the page or pages in the manual where the topic is discussed. Hopefully this will introduce those taking the quiz to the contents of the manual which we encourage everyone to study in the quest for industry knowledge. The Aerial Applicator's Manual is now available in electronic format on NAAA's website at www.agaviation.org/content/aerial-applicators-manual.

—Ken Degg, NAAA Director of Safety & Education

How well will you fare? Let's find out!

1. **State pesticide regulatory agencies generally have the responsibility for:**

A. Certifying commercial pesticide applicators.
B. Determining the personal protective equipment required on pesticide labels.
C. Developing materials safety data sheets (MSDS).
D. Identifying endangered species.

2. **An up-to-date Standard Operating Procedures (SOP) document is useful to ground crew members especially when:**

A. The communication channel with the pilot is lost.
B. The pilot begins applying the pesticide in a manner inconsistent with the work order.
C. Trying to determine the best time for applying the pesticide.
D. The pilot applies the pesticide to a site not listed on the label.

3. **For protection of the surrounding community, a good reason for securing pesticide application aircraft and other equipment when not in use is to:**

A. Prevent weather damage to the equipment.
B. Protect employees from pesticide exposure.
C. Prevent intruder access to the equipment.
D. Comply with regulatory agency mandates.

4. **Managing off-target pesticide drift during an aerial application is:**

A. The ground crew's responsibility.
B. The property owner's responsibility.
C. The pilot's responsibility.
D. A requirement of a pilot's FAA licensing.

5. **The advantage of an electronic sprayer volume controller is that it:**

A. Maintains the same spray output as airspeed changes.
B. Reduces or increases the spray output as airspeed changes.
C. Maintains the same spray output as altitude changes.
D. Reduces or increases the spray output as altitude changes.

6. **If 1,700 ounces of material is collected from nozzles on a helicopter spray boom in 90 seconds, what is the total flow volume in gallons per minute?**

A. 4.42
B. 8.85
C. 13.28
D. 17.70

7. **Too wide or too narrow overlapping of spray passes will result in:**

A. Flight hazards.
B. Increased chances of off-target drift.
C. Uneven application patterns.
D. Disabling of the DGPS system.

8. **Which of the following would have little effect on the safety and effectiveness of an application if changes occur during the operation?**

A. Moving the operation to a different mixing-loading location.
B. Wind intensity increases.
C. Delaying the application until field workers leave the area.
D. Leaving a buffer area adjacent to a sensitive area.

The next two questions are aeronautical trivia. Can you come up with the answers?

9. **On Aug. 6, 1945, a U.S. Army Air Force B-29 Superfortress bomber dropped the first atomic bomb used as a weapon of war on Hiroshima, Japan. What was the name given to that airplane?**

10. **Many young aspiring aviators received their first introduction to flying through books like Fate Is the Hunter published in 1961. Who was the author? As a hint, this author also wrote The High and the Mighty and Island in the Sky.**

See answers on pg. 53

HARD LESSONS LEARNED THE HARD WAY!

"The definition of insanity is doing the same thing over and over and expecting different results."

By Jay Calleja
Manager of Communications

This famous maxim is widely attributed to Albert Einstein, although some say Benjamin Franklin originated it and still others believe Mark Twain said it first. No matter who came up with the idea, the concept is an apt one for aerial applicators because ag pilots as a group tend to get in the same kind of mishaps over and over. This is the case for the majority of agricultural aviation accidents resulting from human factors. If it's happened to you, chances are something similar happened to other ag pilots—and for very similar reasons. It doesn't have to be that way, not as often anyway. You can say, "It won't happen to me," or you can heed the immortal advice of Winston Churchill *(or was it Ben Franklin or philosopher George Santayana?)* when he said, "Those who fail to learn from history are doomed to repeat it."

To learn from their experiences, *Agricultural Aviation* consulted with veteran operators and pilots who shared some of their hard-learned lessons in the hopes that other ag pilots reading them can avoid making the same mistakes. The pilot errors described on the following pages range from the nuisance variety to an easily avoidable near-death experience. The names of the pilots have been withheld in some instances.

DISTRACTIONS CAN SPELL DISASTER IN A SPLIT SECOND

When working a field an ag pilot needs an almost Clint Eastwood-esque ability to focus on the task at hand—it takes that kind of steely resolve and intense awareness to get through the field safely and do a good job for the customer. But what happens when that concentration gets broken, even if it's only for a moment? Let's just say it won't make your day. Leonard Felix Jr. can attest to that.

The lesson I want to discuss is about not being distracted when working in the field. I operate both fixed-wing and helicopters, so I have been distracted in both and by the same type of distraction. Both times it was someone scurrying out of the house near the end of the field across the road. But that quick movement, and because it's a person, forces you be distracted and take a look to make sure they are not at risk. I learned from experience my reaction should be to shut off and pull up immediately. This procedure keeps me from hitting something on the ground like a tree or a power line.

The first time I had an incident I was flying my brand new AT-402B. It only had 50-some hours on it. I was spraying hay and this field had quite a few obstacles around it, but the worst was a dead snag right at the end of the field on the first pass. I saw the snag and made a mental note as I surveyed the field before making any spray passes, noticing it was difficult to see among with the trees that stood behind it. There was a house beyond the end of the field and no one appeared to be around when I checked the field. But just as I was putting the first pass on and getting to the end of the field someone came boiling out of the house to see the airplane and I was distracted for a split second. Wham! I hit the snag just above a fork in the tree and just outside of the propeller arc. I received two dents in the leading edge of the right wing, and because I pulled up so hard to miss it I dipped the horizontal stabilizer into the trunk of the tree making a hole all the way to the spar. All that for a one-second distraction? Ouch.

The second time I was flying the helicopter and dressing the ends of the field. A power line was on the opposite side of the road next to the field. I had already put one pass on the edge but decided it needed another, so I flew back to make a closer pass to the road and started another pass. This time a person came out of the house across the road very abruptly and caught my eye. I hesitated for an instant and forgot about the wire. I took it on the bubble and tried to do a quick stop. I almost made it but the bubble failed and the wire came inside and started sliding across the instrument panel. The wire had broken on the insulator farthest away and began running through the cockpit at what seemed like 50 miles an hour. My forward speed was nearly stopped, but I was still ascending. Finally, the end of the wire from the span came through and the insulator slapped the side of the instrument panel signaling the end. Ouch, a second time. Even worse than the damage inflicted on the aircraft, my pride was hurt again!

All it takes is a split-second distraction to spell disaster. As I said, now I shut off and pull up immediately. Without hesitation! I have managed to avoid any trees or power lines in my path since then.

Leonard Felix Jr. is the owner and operator of Olathe Spray Service Inc. in Olathe, Colo., a PAASS presenter and the recipient of NAAA's Outstanding Service Award in 2005. He has been an ag pilot since 1969. He has logged more than 29,000 hours of total time since then, including 15,000 hours of turbine ag time and 1,800 hours in helicopters, mostly for aerial application work.

THE WHIRLY BIRD CATCHES THE …

We've all heard the expression, "The early bird catches the worm." But what about the Whirly Bird? The worm wasn't the only thing Lee Turnquist caught. The owner and operator of Whirly Birds Inc. also caught flack for being a bit too eager one morning many moons ago. In this age of cell phone videos, the moral of his story is just as relevant today as it was the day it happened.

My learning experience happened about 25 years ago, but it still holds true today. I had spent all week working in an area spraying citrus groves. But before I could make the application on one of the grower's fields, I needed the wind to change directions to avoid any adverse effects. I started this job on Monday, and I was just waiting to finish the last field. There were about three houses on the west side of this grove. The wind finally changed to the northwest on Saturday morning, so I made the application about 5:30 in the morning.

Three days later, I got a call from the Department of Agriculture informing me of a drift complaint. I answered the drift complaint, and we went to the area and looked around. Of course, there was no drift; there wasn't any problem. I was completely within my right as an applicator, but the one thing I didn't take into consideration was noise pollution on a Saturday morning when people might be trying to sleep. I wasn't a very good neighbor, so to speak, as far as the noise was concerned. That's something I shouldn't have done, and I probably knew I shouldn't have done it, but I needed to get the job done because I was leaving the area and didn't want to come back to do it.

There wasn't a specific noise complaint, but in speaking with the inspector, I realized I shouldn't have been spraying that early on a Saturday. The woman who filed the drift complaint was a nurse. Normally, she gets up early and goes to work, but this just happened to be her day off. I can imagine that she wasn't too pleased about being woken up by a helicopter going by that early in the morning. Had it been during the week or maybe an hour or two later it probably wouldn't have been a problem.

In our zeal to get the job done, it's easy to jump the gun, but we still need to show consideration for the people around us. That's the neighborly thing to do.

Lee Turnquist is a retired operator living in Lake Wales, Fla. After 37 years as the owner and operator of Whirly Birds Inc., Lee has continued to serve the aerial application industry as a PAASS presenter and Florida's representative on NAAA's Board of Directors.

LOOK OUT! 198-FOOT MENACE LURKING AT 12 O'CLOCK!

Taking the time to circle a field to look for unforeseen obstacles is always a good idea, but how you circle is just as important as why. Gaylon Stamps got a not-so-subtle reminder of this when a surprising discovery forced a quick recovery. It was a heart-pounding moment, and he shares it here.

By circling, I was attempting to confirm that I had spotted the correct field and at the same time note any obstacles within it. Looking out the side window, I had completed about half my circle when I turned my attention forward. I was headed toward a MET tower! With the loaded airplane, I could not increase the bank to turn inside the tower so I banked hard the opposite direction. The stall warning "squawked" and the wind fluttered over the wings—the dreaded sign of a stall—but I cleared the guy wires, leveled the wings and all was well.

After a time, when my heart rate slowed and my adrenaline ceased its flushing, I thoughtfully considered the incident. What precautions must I take to keep out of that situation in the future? The two lessons I applied are these: 1) Not only clear the field, but also clear the perimeter, at least a half-mile out where the turns are to be made, and 2) When clearing a field, fly 250 feet AGL. That will keep me above the height of most of the lower towers, especially those dreaded MET towers! These are some of those little thoughts I try to keep in the forefront when I am flying.

Gaylon Stamps is the owner of Stamps Spraying Service in Panhandle, Texas. He is NAAA's 2012 Secretary and a longtime PAASS Presenter. This is his 40th season as an ag pilot.

A CLOSE CALL

Sometimes it's better to be lucky than good. The ag pilot who volunteered this story knows how fortunate he is to be able to share it, considering the "truly stupid" choice (his words) he made while flying 140–150 mph in a Turbine Ag-Cat. This lesson could save your life, so pay attention!

In July of 2007, I was making a fungicide application to a cornfield. I was making a cleanup pass on the east side of the field when my phone rang. I had it set to auto-answer so I didn't have to actually touch any of the buttons. A friend of mine was calling to see what I was up to, knowing full well what I was up to—we'd been busy for the previous 7 to 10 days spraying fungicide. As I was talking to him, I totally forgot about a guy wire that extended out in the field! There were actually three guy wires that extended out from the poles on the main three-phase wires running north and south. They're pretty tough to see, but I knew they were there because I've sprayed this field for 15 years. Suddenly, I caught the lower left-hand wingtip of the Ag-Cat in the outermost guy wire and started yawing directly toward the next big three-phase pole. I could see the pole was lined up exactly in the middle of the propeller spinner—*I was going to hit it*.

I used all of the opposite control available trying to get the airplane away from the wire when the guy wire finally busted loose from the top of the pole and let me go. I had clipped about five feet of the lower left wing off, so I didn't know if I would be able to land the plane. I climbed up to altitude and did a mock landing at 4,000 feet. Once I discovered what the aircraft's flying characteristics were with the missing portion of the wing, I knew I was safe to go into the airport.

I landed and everything turned out fine, but being distracted for that split-second could have killed me. It should have killed me, but I just got lucky. Had the guy wire not snapped, I would have hit the next set of poles and there wouldn't have been much

chance of surviving that collision. I changed my methods after that.

We still have a cell phone in the cockpit, but our pilots are prohibited from bringing their personal phone on board. We have a specific cell phone per airplane, and we block the phone number. If the pilot uses it to ask the farmer a question, the farmer can't pick it up on caller ID and call that number back. We won't even give the pilots the number. The only people allowed to have it are my wife the loader and me. That way, they can't use it for personal calls—it's strictly for business that must be conducted while airborne. The problem with two-way radio is it just doesn't work; we don't have any range with it because of the distance and low altitude, so the cell phone really is the only viable option for us.

We have put in a lot of restrictions, but in general, my advice would be to stay off the phone. I wasn't paying attention because I was talking on the phone and look what happened to me. If you must, use it strictly for business and don't use it out in the field. Climb to a safe altitude and away from obstructions and then use the phone. As for your friends, you'll have plenty of chances to catch up with them once you're back on the ground.

The pilot who survived this close call is a third-generation aerial applicator. At the time of the incident, he had 21 years of experience and approximately 9,000 hours of spraying time, including 4,000 hours in the Turbine Ag-Cat he was flying that day.

WRONG TURN

Wrong turns come in varying degrees. In a car it usually amounts to more of an inconvenience than anything else. "Recalculating," the automobile's GPS declares before recommending a course correction. The penalty is time lost and little more. When an ag pilot flies off course he wastes fuel and can fall behind schedule, but those aren't the wrong turns ag pilots need to worry about. The low-level airspace aerial applicators navigate is unforgiving, and sometimes a wrong turn can have catastrophic consequences. One of the worst-case scenarios is when a *turn goes wrong* because there is very little time for any sort of course correction. Eric Klindt, an ag pilot for Wilbur-Ellis Co. in Wahpeton, N.D., learned this the hard way when a lapse in judgment almost cost him dearly. Here is Klindt's account of what happened earlier in his career when a turn went wrong.

One day I was working around wires on small fields that were by a town. That wasn't the problem, even though there were a lot of obstacles. The problem was the turn I tried to make. I've seen other planes almost do a hammerhead turn before, which is when you pull straight up out of the field, flip it around and come right back into the field. I've heard other pilots talk about it too—"Oh, I can really get that plane turned around." At the time, I thought to myself, I've never really put the airplane to the limit, so I just pulled up instead of making a more gradual turn. I thought I could pull the aircraft around by banking it around or ruddering the turn, but I really wasn't watching what the airplane was doing flying-wise. All I was thinking about was where my spray was going, what my smoke was doing and the wires I was working around and took my attention off of flying. That's when a gust of wind made the bottom wing drop out. I felt myself starting to flip over and instantly went back to flying. I caught it quick enough and knew what to do fast enough that I was able to push the nose over and get the wing flying again, but I wasn't very high. I was probably 200 feet off the ground, maybe 300. I was just above the top of the wires when I recovered. It got my attention in a hurry. "Holy [*$#%!], I'll never do that again!" I said.

Now, instead of worrying about trying to get right back into the field, I give myself more time to do a 20- or 30-second turn, versus trying to compete with people who say they can turn their plane around in 15 seconds or whatever the case may be. I had never paid attention to how fast I turned until I started timing it, and I'm going, "Well, I'm up in the 20s or 25 seconds to turn. If these other people say they can turn this quick, maybe I can too." But it wasn't the right thing to do. Now I stick to the way I was trained, which is to say I give myself room and try not to put myself into a situation. Bigger turns are the biggest thing—and make sure you fly that airplane.

Eric Klindt has been an ag pilot for 15 years. He flies for Wilbur-Ellis and is a PAASS presenter.

CLOSE ENCOUNTERS INSTILL LASTING LESSONS

Robert McCurdy has accumulated a lifetime's worth of lessons during his 40-plus years in ag aviation, and the longtime instructor doesn't hesitate to draw from those experiences if he thinks they will increase his students' situational awareness. Students at Flying Tiger Aviation love to hear stories of his adventures as an ag pilot. Those stories are often laced with hard-learned lessons from his life—dos and don'ts, close calls he encountered and how to be a safe pilot in general. McCurdy said he could fill a book with all of the mistakes he's made over the years. If he were to take on such a book project, undoubtedly, one of the first lessons he would share would be the story of how a hotshot Navy pilot got his comeuppance—and nearly lost his life—when his Pawnee crashed and burned after colliding with a tree. McCurdy underwent 15 reconstructive surgeries and spent the rest of his first year as an ag pilot recovering in an Army burn unit. For a lot of people that chapter would have closed the book on what would have amounted to a very short career as an ag pilot. McCurdy grew from the ordeal. Realizing the error of his ways, he has been using the incident as a teachable moment ever since. Here is another lesson McCurdy learned early in his career about the difference between thinking and knowing what he could do as a pilot.

God only knows how many close calls I have had from which I learned very important lessons. Now I try to instill those lessons into my students so that they do not have to learn them the hard way, as I did on several occasions.

Many years ago, I had my flying service in the hills of Mississippi. I was a rookie and "bulletproof." I remember flying to a field for the first time that had a wire through the middle. I decided I could fly under the wire beginning at the pole. As I worked my way toward the middle of the field, the distance between the cotton and the bottom wire was getting smaller and smaller. If I could just make it to the middle distance between the poles and continue across the field to the next pole, that distance would begin to get greater and greater. As I neared the center, I remember thinking, *I think I can make one more pass.* WRONG! When I reached the point where there was no changing my dumb decision, I realized I was about to hit the wire and dropped down in the cotton just low enough that the deflecting wire on my Pawnee actually touched the bottom wire. Down in the cotton the airplane slowed to the point where I thought I was about to stall. I firewalled the engine, and as I exited the other side of the wire, I hauled back on the stick. The airplane did stall, but somehow I managed to stagger back into the air. *Thank you, Lord, I won't do that again!*

From this very close call, I learned some very important lessons, and this is what I tell my students. Begin by asking the farmer if there are any wires or other obstructions in the field. If he says yes, believe him. If he says no, then trust but verify! Check the field out thoroughly, especially in the corners. Wires that cut across a corner may be almost invisible, especially when the poles are across the street or hidden in some woods. If there are wires in the field and you *know* you can fly under them, begin at the tower (pole). Each time you fly under a wire, you should progress further away from the tower, which means the wires will be getting lower and lower. Right after you go under the wire is the time to decide if you can make another pass under it. When it gets to the point where you say, "I think I can make one more pass," don't do it! Only go under wires you *know* you can fly under! Fly your standard pass, and be STEADY, STEADY, STEADY. Do not get fixated on the wire—look ahead, maybe a quarter of a mile—and do not put your wheels down in the crop.

As the summer progresses and the temperature soars into the 90s, there is a lot more current running through those wires, so they may sag anywhere from 5 to 15 feet. The crop is getting taller too. A wire you could fly under at the beginning of the season may be way too low to clear later. Don't get tripped up like I did. Remember these tips whenever you're facing a down-to-the-wire decision in the field. ■

Robert McCurdy is the chief flight instructor at Flying Tiger Aviation in Oak Ridge, La., a regular contributor to AgAir Update and the recipient of the 2011 William O. Marsh Safety Award from NAAA.

Not every aircraft mentioned got the visual treatment in The Nation's Hangar, despite its wealth of photographs. This photo of the Grumman G-164 Super Ag-Cat comes straight from the book. The Huff-Daland Duster is mentioned but not photographed.

A Thing of Aviation Beauty

By Jay Calleja
Manager of Communications

A magnificent visual history from Smithsonian Books pays tribute to aviation's great flying machines, including the Ag-Cat and Huff-Daland Duster

On Oct. 22, 2008, a Grumman G-164 Super Ag-Cat was raised to the rafters of the Smithsonian National Air and Space Museum's Steven F. Udvar-Hazy Center to commemorate the first aircraft specifically designed for agricultural aviation. It was a seminal moment for NAAA member Ralph Holsclaw of Growers Air Service, Woodland, Calif., who had donated the Ag-Cat to the National Air and Space Museum three years earlier.

To see the Ag-Cat assume its rightful place alongside some of the most memorable aircraft in history is a sight to see and well worth the time for any aviation enthusiast visiting the Washington D.C. area. It remains on display at the Smithsonian's massive complex adjacent to Washington Dulles International Airport, just outside of the nation's capital, as does an original 1920s Huff-Daland Duster, one of the world's first crop dusters.

If you can't make it to the Udvar-Hazy Center in person, a new book offers the next best thing by bringing the museum to you in rich and vivid detail.

While worthy of display in your home or office, to call *The Nation's Hangar: Aircraft Treasures of the Smithsonian* a coffee table book would be selling it short. It's really a visual history and celebration of aviation's heritage.

Reading *The Nation's Hangar* almost makes it feel like you are embarking on your own private tour of the enclosed and connected hangars, only better because the book takes readers on a curator-led tour by F. Robert Van Der Linden through the massive collections housed in the Udvar-Hazy Center. There are so many artifacts on display at the National Air and Space Museum's satellite location—including 200 full-size aircraft—that Van Der Linden couldn't possibly cover them all. Instead, he highlights what the book jacket bills as "the most fascinating pieces in the collection." (Overall, the National Air and Space Museum has more than 370 aircraft and 60,000 other objects in its archives.) The Ag-Cat was one of the planes singled out for inclusion in the civil aviation chapter. Segueing from the Soviet Antonov An-2 to the ag aircraft, Van Der Linden describes the Grumman G-164 Ag-Cat as being as "ugly and practical as the An-2" as well as "one of the most successful" ag aircraft ever.

From there, the origins of the Ag-Cat, which came about when engineers at the Grumman Aircraft Company proposed the design "for a 'purpose built' crop dusting airplane as a means of fulfilling a pressing need by the agricultural community," are portrayed in concise, precise detail. The book also describes how it came to be that a 1963 Grumman G-164-A Super Ag-Cat with nearly 13,000 flight hours under its belt found its final resting place in the rafters of the Udvar-Hazy Center. Van Der Linden's account of NAAA's and Holsclaw's efforts gives testament to the fact timing is everything:

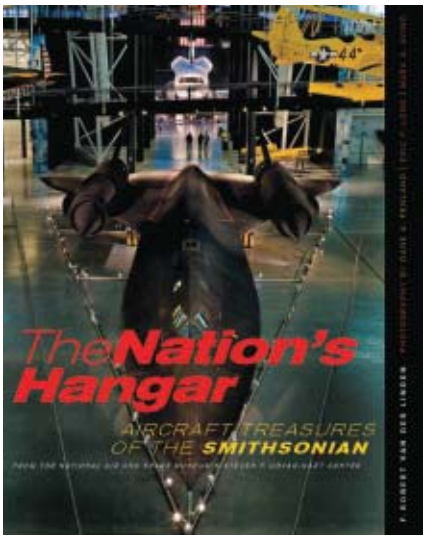
In 2004, the National Agricultural Aviation Association (NAAA) contacted NASM [National Air & Space Museum] regarding the potential addition of modern crop duster aircraft to the collection and learned that the Museum was indeed searching for an appropriate agricultural aircraft. The NAAA alerted the agricultural aviation community and, in August 2005, Ralph Holsclaw and Growers Air Service offered to donate their Grumman G-164A Super Ag-Cat. Growers delivered the Ag-Cat, completely cleaned of all chemical residues and restored, to the Museum in March 2008.

Van Der Linden traces the origins of agricultural aviation and covers the Huff-Daland Duster in a chapter about "The Golden Age of Flight," the period between World War I

and II. The moniker came about because of the tremendous growth in aviation over that 20-year span. The author reports that the Huff-Daland Manufacturing Co. based the Huff-Daland Duster on its military Petrel 5 design. A subsidiary, the Huff-Daland Duster Co., was the first company devoted to crop dusting operations and the precursor to Delta Air Lines. Delta employees restored and donated the Huff-Daland Duster on display at the museum in 1968.

The Ag-Cat and Huff-Daland Duster are in good company. Some of the other remarkable aircraft on display within the rarified air of the Udvar-Hazy Center are the Concorde; the *Enola Gay*, a Boeing B-29 Superfortress bomber; the Lockheed SR-71 "Blackbird"; and the Space Shuttle *Discovery*.

The lavishly illustrated *Nation's Hangar* would be a worthy addition to any aviation enthusiast's reading list. Smithsonian Books' 256-page softcover book may be purchased online at Amazon.com, BarnesandNoble.com and IndieBound (*www.indiebound.org/*). ■



The lavishly illustrated Nation's Hangar would be a worthy addition to any aviation enthusiast's reading list.

INTRODUCTION TO AGDISP, THE AGRICULTURAL DISPERSION MODEL

EDITOR'S NOTE: *While AGDISP is not currently available to the general public, the Aerial Application Technology Group hopes to have a system in place, through its website, apmru.usda.gov/aerial, by the end of the year where applicators can register and download the program for their own use.*

BY BRAD FRITZ
USDA-ARS Aerial Application Technology Group

If you have attended an ASABE Technical Session at NAAA's national convention over the last few years, you have probably heard mention of a computer program called AGDISP. The program is similar to AgDRIFT but with improved performance and additional capabilities such as additional aircraft types, dry material dispersion and the ability to handle more complex terrain. This article seeks to provide a very brief overview of its uses and demonstrate how it can help you be more efficient in your day-to-day practices.

The AGricultural DISPersion (AGDISP) Model is based on more than 40 years of data and was created through the efforts of the Spray Drift Task Force (an industry consortium), the USDA-Forest Service and EPA. Originally the model was intended to allow chemical manufacturers to model chemical spray movement as part of EPA chemical registration requirements without the need for expensive field trials. The AGDISP model has grown and become part of an arsenal of 33 different models used by EPA pesticide risk assessment (*www.epa.gov/pesticides/science/models_pg.htm*).

Aerial applicators can benefit from AGDISP by using it to quickly look at how simple changes in equipment setup, operational practices and ambient conditions such as wind speed impact spray movement. Exploring these changes before going into the field can provide valuable feedback on equipment setups and in-flight decisions that can be used to deliver the best application with minimal off-target deposition. In this article, we will model outputs to show how small changes in application practices can result in significant drift reductions.

AGDISP's opening screen (see Fig. 1) provides a roadmap the user can follow to enter all aircraft, spray system, weather and crop type information to be modeled. These include aircraft type and setup, spray height and number of passes, boom setup and droplet size, wind speed and direction, spray material ingredients, surface and canopy type and other more advanced settings.

For this summary we will focus on the effects of droplet size, wind speed and swath-offset. An Air Tractor 402 was set to apply at a 12-foot height at the furthermost downwind edge of the field. Two sprays (one with a Volume Median Diameter [VMD] of 300 µm and one with a VMD of 350 µm) and two wind speeds (5 and 10 mph) were used. Combinations of

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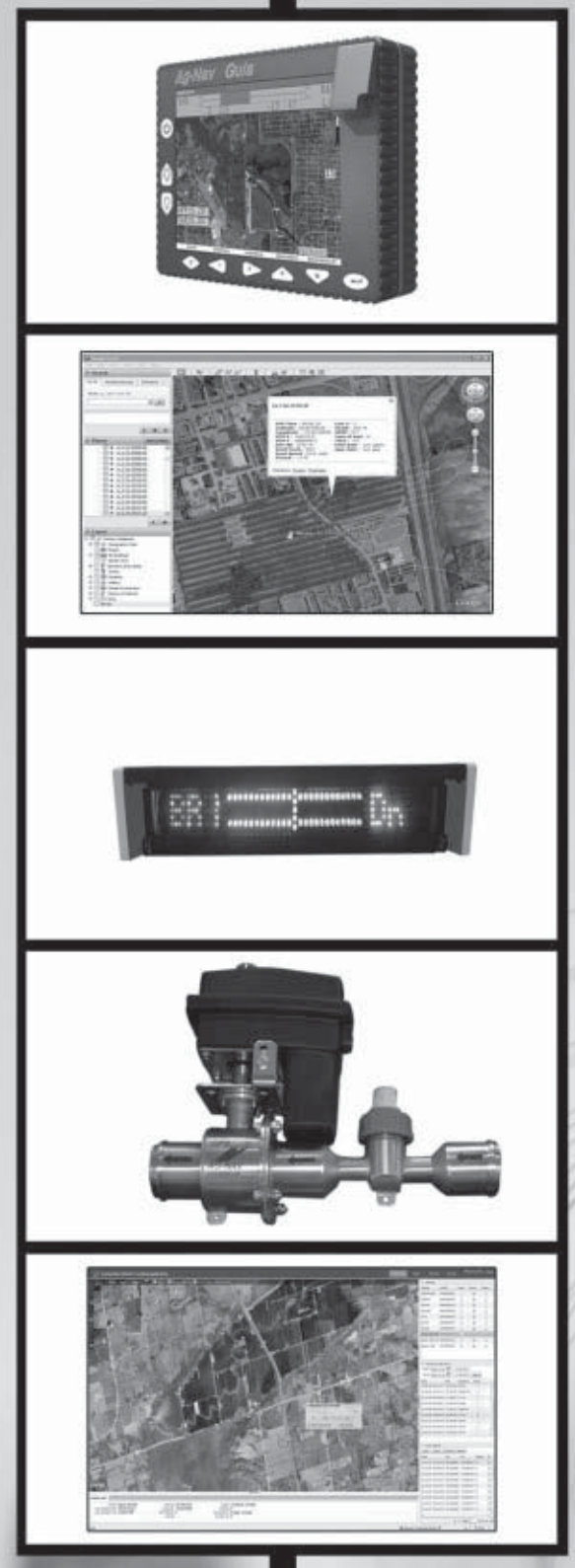

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each of these settings were modeled in AGDISP with and without a half-swath offset at the furthermost downwind spray pass. Past research has shown the three to five spray passes closest to the downwind edges of a field contribute to the majority of the total amount of spray material leaving the application site (Fritz et al., 2009; and Hoffmann et al., 2010). Given that, the results discussed here are based on modeled results from the three spray passes made from the downwind edge of the field.

Once the modeling was completed, and after comparing the results for total downwind deposition (material not deposited within the spray swath), a number of interesting results could be seen. An increase in droplet size from 300 to 350 µm reduced downwind deposition by more than 15%. Also, the use of a half-swath offset on the most downwind field edge for a given spray at the same wind speed reduced drift from that pass by 70–80%. It should be noted that these percentages only reflect spray from the three downwind field-edge spray passes. The total drift from all spray passes within an entire field is typically less than 1% of the total amount of spray volume applied.

Droplet size increases are easily accomplished through changes in airspeed. Using the USDA-ARS Spray Nozzle Models, a 4015 flat fan at 15-degree orientation and 60 psi will result in the desired increase in droplet size when airspeed is reduced from 150 to 135 mph. This information can be used to determine a strategy, prior to entering the field, to deal with spray passes at the downwind edge of a field. One option to significantly reduce off-target deposition is to simply slow down on these three spray passes. Another is to allow for a half-swath offset on the most downwind pass. These two options can also be combined for enhanced benefit. Finally, in situations where winds are judged too high to risk spraying near downwind edges, skipping three or more of these downwind passes and dressing them up when wind speed and direction improves can reduce all but the smallest fraction of total spray from potentially leaving the field. This is a very simple example of what the AGDISP model can do for you.

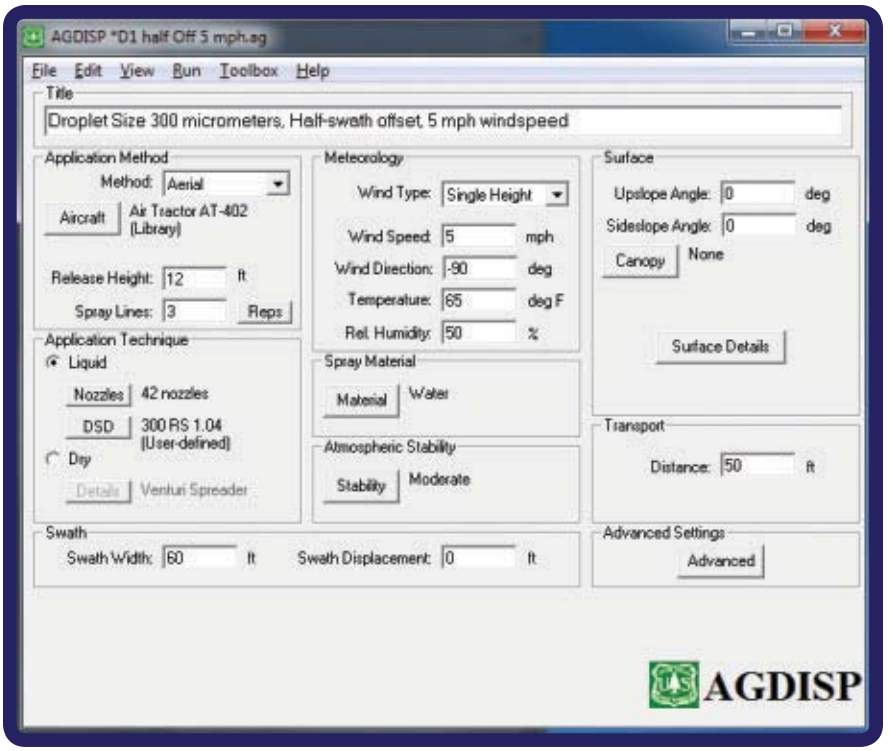

Fig. 1: Opening screen for the AGricultural DISPersion Model

We hope that by the time of NAAA's convention in December the model will be available during the ASABE Technical Session on a CD and possibly through a web download. ■

Due to security concerns, the AGDISP model currently is only available through a security vetting process.

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Memorials presented to the PAASS Program

NAAREF and the PAASS Program express sympathy to all those who have lost loved ones or friends and wish to have them remembered through a memorial. We are extremely grateful to those families who, during their time of grief, decided to request that memorial donations be made to the PAASS Program. Those memorials will be used in the production of our PAASS safety and educational program with the goal of preventing injury or death to those engaged in the aerial application industry. The memorials and donors listed below include those donations NAAREF received within the last year.

Steve Allen Memorial Fund
California AAA
Thiel Air Care Inc.

Darrel Bjornson Memorial Fund
North Dakota AAA

Casey Garcia Memorial Fund
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Bob Meier Memorial Fund
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Bill Spain Memorial Fund
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Thiel Air Care Inc.
Tulare Ag Flying Service

Index of Advertisers

Date	City	State	Aircraft Type	N #	Injury	Description of Accident
03/15/12	Cheyenne Wells	CO	AT-301A	7306C	None	Hit fence post on takeoff
04/02/12	Ganado	TX	AT-402A	4544S	None	Vision obscured by chemical, hopper vent turned wrong way
04/17/12	Palouse	WA	S2R	4971X	None	Fuel exhaustion
04/25/12	Arvin	CA	Bell 206B	969W	None	Hit powerline on second revenue flight
05/08/12	Sterling	IL	CeA188	3557Q	None	Lost control on landing with tailwind
05/09/12	Flora	IN	Bell 206B	1069Z	None	Unable to stop descent during turn
05/21/12	Nicholas	CA	G-164D	8267K	FATAL	Impacted the ground while dealing with GPS problem
05/23/12	Sedgwig	AR	AT-802A	4126T	FATAL	Mid-Air collision while applying
05/23/12	Sedgwig	AR	G-164D	996QC	Serious	Mid-air collision while applying

Test Your Knowledge Answers

Continued from pg. 33

1. **The correct answer is A.** Certain state, tribal, territorial and some federal departments or agencies are designated by the EPA for certifying applicators who intend to apply restricted-use pesticides. In addition, these entities may certify applicators of other pesticides as well. (Aerial Applicator's Manual: A National Pesticide Applicator Certification Study Guide [AA Manual], pg. 1)

2. **The correct answer is A.** A current SOP is valuable for ground crew members any time a procedural question arises but especially if communication is lost with the pilot. (AA Manual, "Communications," pg. 30)

3. **The correct answer is C.** One of the most fundamental security needs is preventing intruder access to chemicals, equipment and the facility. (AA Manual, "Aircraft and Pesticide Security," pgs. 18–19)

4. **The correct answer is C.** The answer to this question on the responsibility for drift during an aerial application lies with the last person in the application chain—the pilot. Truly "the buck stops here," and the pilot needs to take the responsibility seriously. (AA Manual, pgs. 33–34)

5. **The correct answer is B.** The electronic sprayer volume controller is capable of increasing or decreasing spray output as the airspeed or, more accurately, speed across the ground changes. This is accomplished by interfacing with data supplied by the GPS. (AA Manual, pgs. 53–54)

6. **The correct answer is B.** Calculate using the formulas in "Sidebar 1" on pg. 67 to first arrive at the number of ounces per minute applied. 1,700 ounces times 60 seconds/minute divided by 90 seconds of collection time = 1,133.33 ounces/minute. To change ounces/minute to gallons/minute, divide 1,133.33 ounces/minute by 128 ounces/gallon = 8.85 gallons/minute. (AA Manual, pgs. 66–67)

7. **The correct answer is C.** Flying the swath too wide or too narrow will result in uneven application patterns—the most common problems being light streaks from flying too wide and heavy streaks from excessive overlap caused by flying too narrow. (AA Manual, "Application Methods" pgs. 86–90)

8. **The correct answer is A.** Common sense tells us moving the operation to a different mixing-loading location would have the least effect on the safety and effectiveness of an application. The remaining answers can be eliminated because increased wind increases the possibility of drift thereby decreasing safety. Delaying application until workers leave the area and leaving a buffer adjacent to a sensitive area *increase safety* by protecting people and property near the application site. (AA Manual, "Introduction–Detailed Content Outline," pgs. 3–8)

Trivia Answers

9. **The name of the aircraft was the *Enola Gay.*** Then Col. Paul Tibbets and his 11-man crew ushered in a new era of warfare by dropping an atomic bomb known as "Little Boy" on Hiroshima, Japan, Aug. 6, 1945. The *Enola Gay* was named after Col. Tibbets' mother and is now on display at the Smithsonian National Air and Space Museum's Steven F. Udvar-Hazy Center along with two ag aircraft, a Huff-Daland Duster and an Ag-Cat, at the Washington Dulles International Airport outside of Washington, D.C. (The aircraft *Bockscar* dropped the second atomic bomb, codenamed "Fat Man," which was detonated over Nagasaki, Japan, by the United States on Aug. 9, 1945.)

10. **These books were written by Ernest K. Gann, a pilot for pre-war American Airlines flying Douglas DC-2s and DC-3s.** During World War II he flew as a civilian contractor with the Air Transport Command. These experiences provided ideas for his books. Mr. Gann became a highly acclaimed author who could bring the reader right into the cockpit and feel the triumphs and terrors experienced by early aviators. Several of his books were made into movies, although the 1964 movie *Fate Is the Hunter* starring Glenn Ford and Nancy Kwan had little similarity to the book. Mr. Gann was so disappointed with the movie that he asked to have his name removed from the movie's credits.

Welcome to New Members

As of May 14, 2012

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Robert Stallard
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Robert Friedl
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Jason Sessions
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Kyle Shawver
Knoxville, LA

Keith Strickland
Allen Aviation
Laurinburg, NC

Stephen Vanderbeek
Fender Air Service
Garfield, WA

2012 NAAA Membership Directory Augmentations

- CD Aviation Services has new phone and fax numbers. The Allied Industry Member's new phone number is (417) 206-2327. Its new fax number is (417) 206-2336.
- Schertz Aerial Service Inc., Hudson, Ill., has new phone and fax numbers. The new phone number is (309) 725-3340. The new fax number is (309) 725-3357. These changes affect the directory listings for Operator Scott Schertz, Associate Member Kathy Holiday and Associate Member Heather Pierson.
- In addition to being a member of Louisiana's state association, NAAA Pilot Member Gary Nobles belongs to the Arkansas Agricultural Aviation Association and the Nebraska Aviation Trades Association.

CLASSIFIEDS

NAAREF President's Message

Rod Thomas

Are PAASS Ideals Making Their Way Into Your Season?

As I type these thoughts my company is just getting going on our summer season, and I am reaping the rewards from all of the time and money we spent getting equipment ready. None of us like nasty surprises like broken hoses or leaky nozzles, not to mention an aircraft that isn't quite right. If you start your season with substandard machinery it is unlikely it will heal itself over the course of the summer.

Our goal is always to save a little time and money, and you will have done just that by this point in the season if the effort you put in on the front end of the season means not dealing with constant squawks from poor preparation. Benjamin Franklin's adage, "An ounce of prevention is worth a pound of cure," could not be truer.

If you prepared your mind and body the same way for the season as your equipment it should be running without squawks as well. Now, to finish the season smoothly I want you to think about what you learned last winter in the PAASS Program. I am sure some of you listen to the presenters talking about safe procedures you should be employing and sit there thinking, "Ya sure, sounds good until we get real busy. Bet you PAASS presenters take some shortcuts just like me." I can tell you the temptation exists when time seems to compress during hectic stretches for all of us.

It is as easy for us to give you those safety tips as it is for you to listen to them in the comfort of a hotel meeting room. The challenge for all of us is to do the "safe" and "right" thing every time regardless of how busy we are. David Starr Jordon, the first president of Stanford University, once said, "Wisdom is knowing what to do next; virtue is doing it." I am of the firm belief that, in the end, taking the time to do things right even when it isn't expedient turns out to be the most profitable and time-saving anyway. And isn't that what we all are looking for at the end of the day?

When you only have one field to spray and you are carrying a small load it is easy to survey the treatment area before beginning the application, but do you do that when you are loaded heavy and you have 10 fields to spray? If you don't, that is but one example of a shortcut that not only might not save you any time, it might cost you lots of money or your life.

Are there any of you who have tried to take off without the proper flap setting, hopper lid not latched, boom caps off, load hose attached, etc.? Those are all tricks I have tried at one time or another and I can report they are not time savers. Establish a constant and steady pace, vigilantly follow some sort of checklist before each load and use those flight procedures that have gotten you this far. Also, when it gets hot and you are getting tired it is even more important to stay ahead of the aircraft. That goes for your body as well. Take short rest breaks if you can, and keep yourself hydrated with plenty of fluids.

Finish your summer safely by carefully planning every load and preparing yourself mentally for the flight no matter how busy you are. Those lofty ideals we talked about last winter do work to save you time and money. ■


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