

2021 Fly Safe Messages

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Fly Safe Campaign



MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 5 ag accidents including 1 fatal accident so far this year.

FIRST FLY SAFE FIRST IN 2021

The 2021 aerial application season got off to a rough start with a fatality occurring in January. At this point the NTSB has only released a preliminary report, but it appears to be a CFIT (controlled flight into terrain) accident, with the pilot striking a utility pole or power lines on the edge of the field he was spraying. The pilot had 48 years of experience as an ag aviator. Let's make this fatality the first and last of 2021. While 2020 had the lowest total number of ag accidents ever at 50, there were 10 fatal accidents, the highest number since 2016.

Put safety first in your priorities this season. Establish personal minimums and then stick to those minimums no matter what the situation. Do not give in to the temptation to cut safety corners in order to get a job done quicker. If you attended the 2020-2021 PAASS program, you are well aware that cutting corners can lead to a normalization of deviance. Over time, your normal safe procedures are replaced with more dangerous procedures you have rationalized as being safe because you've never had an accident while performing them. Sooner or later, this will catch up to you and can result in an accident, and, using last season's ratio, a 20% of being deadly.

Intense pressure from customers, a large volume of work on the books, and other internal and external factors can all cause you to push yourself beyond your limits in order to get a job done. By keeping safety first in your priorities, it will be easier for you to observe your minimums and stay within your limits. The original title for this Fly Safe included the phrase "first fatality." This implied there will be more fatal accidents in 2021. While history indicates there likely will be, there doesn't have to be, but only you can make that happen. Next off-season, we'd all like to see you at PAASS, not in PAASS' "In Memoriam."

Check Temporary Flight Restrictions (TFRs)

Always check TFR NOTAMs before flying! Make sure you have proof of a preflight TFR briefing from sources such as FSS or <https://www.1800wxbrief.com>.

Make a "Fly Safe" Resolution Now!

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MAINTAIN ACCIDENT AWARENESS

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NTSB has reported 5 ag accidents including 1 fatal accident so far this year.

INCREASE YOUR MARGIN FOR ERROR

Increasing one's margin for error provides more room for making a mistake that doesn't result in an accident. Why is increasing your safety margin for error critical for ag flying? Ag flying is highly repetitious with pilots making the same maneuvers all day long, all season long. In a 400-hour season a pilot might make over 600 loaded takeoffs and over 18,000 spray turns, field entries, and field exits. Not all these maneuvers will be performed with the same level of competency. Some will be done very well, some poorly, and the rest somewhere in between. When the inevitable drop in performance occurs, an accident can happen. A pilot needs to maintain a suitable margin for error to prevent this from happening. If little to no margin for error exists for an ag pilot when performance drops and an error occurs, the results will likely be catastrophic.

Doing hammerhead turns is an example of leaving no margin for error. All it takes is one missed recovery and a pilot can end up in a fatal stall spin accident. If a pilot tried hammerhead turns on a third of his turns over the course of a season, they could well be making over 6,000 attempts to kill themselves. Ag flying is a risky business. It's not because flying a plane is so hard. It's because making flying at low altitude around ground-affixed obstacles leaves nearly no time for recovery when a mistake is made.

In NAAREF's [Stall Spin Avoidance video](#), Wayne Handley discusses the benefits of backing off from the edge and adding 10% more time (or distance) to each turn. This 10% extra time for each turn augments the safety of the pilot by increasing his margin for error while adding only minutes to the total flying time required during a full day. The 10% allows you room to be a little bit off in your turning procedures without stalling the aircraft. Review your operations and study up on ways you can increase your margin for error. Then develop personal minimums that always provide that increased margin for error.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 6 ag accidents including 2 fatal accidents so far this year.

CONTROLLED FLIGHT INTO TERRAIN ACCIDENTS CLAIM TWO MORE LIVES IN 2021

The 2021 ag aviation season has begun much like 2020 – ag pilots are colliding with obstacles and dying. While the NTSB reports for the two 2021 fatal accidents are not yet final, both appear to be Controlled Flight Into Terrain (CFIT) accidents. CFIT includes collision with the ground as well as obstacles attached to the ground, such as power poles, wires, towers, and trees. Over the previous 10 years, 29% of all ag accidents and 51% of fatal ag accidents have been CFIT. The most commonly hit objects are power lines, and it appears both of the 2021 fatal CFIT accidents were the result of hitting power lines.

Know when to say no to a job that has more obstructions than you feel you can safely handle. Scout all of your fields thoroughly and then make a plan as to how you intend to treat the field safely. If there is a particular obstacle that concerns you, such as a pole without evident wires, investigate before you begin the application. Yes, stopping will take additional time, especially if you have to send someone out on the ground to check it out. However, taking the time to inspect an area could add time to your life and will take far less time than the time your family would need to arrange your funeral, or to repair or replace a wrecked aircraft.

No matter how busy you are, your life depends on you keeping track of obstacles during an application. There are many different layers of distraction in ag aviation, especially in the busy part of your season. These can include worrying about other jobs you have to do that day, equipment malfunctions, personal problems, and countless others. Be especially wary of cockpit distractions. When you're in a pass, do not allow your attention to be diverted. The more distractions you have, the more likely it is your brain will focus on those problems instead of the what's in front of your aircraft, and the more likely it is you'll lose track of an obstacle and have an accident. Forgetting about an obstacle won't make it go away.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 8 ag accidents including 2 fatal accidents so far this year. There has been 1 fatal accident not yet reported by NTSB bringing the total to 3 fatal accidents.

LANDING WITH A LOAD SAFELY

Once an ag aircraft has been loaded with product and water, the goal is to apply that load to the target field. Sometimes however, weather or other factors such as equipment malfunctions can lead to the need to abort the application after the aircraft has already taken off. This requires the aircraft to be landed fully loaded which can be more difficult to accomplish. There is an excellent video available with tips on how to safely land with a load on the [NAAREF Safety and Education Videos website](#). The video features Fran de Kock of Battlefords Airspray in Canada in both classroom and dual cockpit settings.

Fran advises that when you must land with a load, everything has to be done correctly. Control inputs must be perfect with no overreaction. You need to be aware of the difference in the required airspeed because you can get behind the power curve quickly. No matter what type of aircraft, about 20% additional airspeed needs to be added during the approach when landing with a load. It is better to approach a little too fast rather than a little bit too slow. Most aircraft should have a recommended speed in the handbook for landing loaded.

The angle of your approach needs to be reduced and you need to give yourself extra room on the approach as well. If you don't make a good approach, you're not going to make a good landing. If something gets a little off during the approach, go around for another attempt. You also want to make sure your tailwheel lock is functioning properly. Fran recommends raising the flaps once the main gear is firmly on the ground to prevent the wing from flying again. If your normal landing strip is shorter or rougher than what you feel comfortable with for landing a loaded aircraft or has a crosswind component at the time you need to return with a load, consider using an alternative strip that is longer and smoother and doesn't have a crosswind that increases the difficulty of the landing.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 12 ag accidents including 4 fatal accidents so far this year. There has been 1 fatal accident not yet reported by NTSB bringing the total to 5 fatal accidents.

EMERGENCY FLY SAFE: FIVE FATAL ACCIDENTS ALREADY IN 2021 – KEEP AN EYE ON WIRES

There have already been 5 fatal ag accidents in 2021, 4 of which involved wire strikes. One of the nonfatal accidents was also a wire strike and another was a collision with a power line pole. From 2011-2020, there has been an average of 9 wire strike accidents a season, which is 14% of all ag accidents. On average 2 wire strikes are fatal every year, accounting for 16% of all fatal accidents. Wire strikes are Controlled Flight Into Terrain (CFIT) accidents. CFIT also includes collisions with towers, which claim an average of 1 life a season. Tower collision accidents are fatal 65% of the time.

PAASS recommends you review the [Wires and Obstructions](#) video available online from NAAREF which has many tips from other ag pilots on avoiding wire strikes. Inexperience, diverted attention, and complacency are leading factors related to wire strikes. Consider an emergency stand-down to watch now as an operation to learn from and discuss to keep these deadly contributors to accidents at bay. Complacency can occur on every job once you've completed enough work to get comfortable with the site. Remind yourself every pass there's a wire at the end of the field because "the ones you hit are the ones you forget." The sun and terrain can cause blind spots that make it even more difficult to spot wires so use helmet and cockpit visors to reduce glare and avoid making passes adjacent to wires when you are flying into the sun.

Circle every field before you begin the application to look for wires and other obstructions. Look for things that will likely signify the presence of wires, such as poles, roads, pump jacks, buildings, and anything else you think may have power. These objects are much easier to spot than a wire. The way the field has been worked by a farmer can also help you spot poles or guy wires, as there will be a visual indicator the farmer has worked around an obstacle. Set limits as to the work you're willing to do around wires and make extra clean up passes to ensure safety. No job is worth your life – don't be number six.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 13 ag accidents including 5 fatal accidents so far this year.

NORMALIZE SAFETY AND DO NOT DEVIATE FROM YOUR PERSONAL MINIMUMS NO MATTER WHAT

One of the subjects covered in the 2020-2021 PAASS program was the normalization of deviance. All ag aviation tasks have normal, safe protocols to follow, but stress can cause you to consider using a less safe shortcut. This is called a deviation from normal—you consciously chose a quicker but less safe procedure. If it works, you accomplish the task and survive the deviation from normal. The next time you encounter a similar situation, it is more likely you will once again deviate from normal safety protocols. Over time, as you are rewarded for taking the shortcut by accomplishing work with no negative consequences, the deviation from safety becomes your new normal. You have now normalized deviance and no longer consider the quicker unsafe practice to be dangerous anymore.

There are many temptations that can lead a pilot astray from normal, safe procedures. Ag pilots want to maximize productivity and spray as many acres as possible each day. Demanding customers will sometimes attempt to talk you into doing jobs you don't feel safe doing or work in marginal weather that could lead to an accident or drift incident. Some parts of the country are currently receiving excessive rainfall and aerial applicators are the only option for treating cropland in those areas. When you combine the wet ground with high commodity prices, it means growers are putting intense pressure on aerial applicators to get their work done.

Again, this pressure can tempt you to deviate from normal, but this compromises safety, risks an accident, and markedly increases an ag pilot's chances to be fatally injured. Establish your personal minimums now, and a safe procedure to conduct all tasks related to flying an ag aircraft and making aerial applications at your operation. Make a commitment to undeterredly stick with those procedures. At the first sign of wavering, remind yourself what can happen if you start down a normalization of deviance path. If you deviate, you die.

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Make a "Fly Safe" Resolution Now!

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 14 ag accidents including 5 fatal accidents so far this year.

AGE AND EXPERIENCE DO NOT MAKE YOU INVINCIBLE – FLY SAFE EVERY LOAD

Age and experience are no guarantee for preventing an accident. From 2011 to 2020, the average age of a pilot involved in the accident was 46 years old, and the average total flight time was 8,159 hours. For fatal accidents during that period, the average age was 48 years old and average total flight time was 10,507 hours. Seven pilots who lost their lives in this period had 25,000 or more hours; four pilots had less than 1,000 hours. The 2019 NAAA survey shows 55 years old is the average age for operators while pilots average 47 years old. Operators have an average of 12,404 hours of total flight time and pilots have an average of 9,564 hours of total flight time.

The fatal accidents in 2021 included young pilots with little experience as well as pilots with many years and hours of experience in ag aviation. In the 2020 season, a brand-new pilot, an experienced pilot, and a seasoned ag aviation veteran all died in stall spin accidents. It is impossible to know what caused the turn to be made in an unsafe manner. It could have been a cockpit distraction, a health issue, or complacency and a belief to deviate from the normal turning process without fear of an accident.

If the latter is complacency, this is often caused by the very things that should prevent an accident – experience, training, and knowledge. It creates a sense of feeling safe and secure and occurs when someone is very familiar with their work, especially work that involves repetitive tasks. Fatigue and stress can increase risk of complacency and lead to deviating from safety protocols. An accident can happen to anyone at any time. It doesn't matter if the load in the hopper is your first ever, or the last of your 30th season. Keep your mind on the task at hand, always stick to your personal minimums, and always fly the aircraft as if your life depended on it. Because it does.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 15 ag accidents including 5 fatal accidents so far this year.

WATCH YOUR WEIGHT AND THE WEATHER FOR A SAFE TAKEOFF THIS SUMMER

Almost every year several ag aircraft crash during takeoff. From 2011 to 2020 there have been an average of six takeoff accidents every season. A potential cause for some of these accidents is an aircraft overweight for the weather conditions at takeoff. Filling the hopper to its maximum capacity reduces your margin for error and can result in a failed takeoff if you do not account for changes that occur during the day such as temperature and wind direction. Temperature can be especially dangerous during the hot summer months when aerial applications are at their peak.

As temperature increases it increases the density altitude, which means the aircraft will perform like it is at a higher altitude. This occurs because higher temperatures decrease the density of the air, similar to what happens as altitude increases. Less dense air results in less lift generated by the wings and reduced propeller efficiency, both of which will increase the distance needed to safely takeoff. Know how to calculate density altitude and make sure you track it throughout the course of the day as temperature increases. Plan your work to get as much done as possible during the cooler part of the day, and plan on taking smaller loads during the hottest part of the day to reduce your risk. It might take longer but will still require less time than an accident.

When working on unfamiliar airstrips start with smaller loads until you are comfortable and be even more mindful of changing temperature and wind directions throughout the day. Knowing the wind direction is always important but a tailwind can be especially dangerous on takeoff. A light crosswind can subtly change direction and become a tailwind. A heavily loaded aircraft, with high temperature and a tailwind can mean your next takeoff won't end the same as your earlier ones that day. Don't let density altitude take years off your life.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 16 ag accidents including 5 fatal accidents so far this year. There have been 2 fatal accidents not yet reported by NTSB bringing the total to 7 fatal accidents.

ONLY YOU CAN PREVENT CFIT ACCIDENTS

Controlled Flight Into Terrain (CFIT) accidents have claimed 4 lives this season, all 4 being wire strikes. Hitting [wires and other obstructions](#) can be prevented by you - locate all obstacles before an application and do not forget about them during the application. Conduct a thorough preflight for every job. Review all available maps, databases, and Google Earth. Make sure you brief pilots new to the area. If you have any questions or concerns about a potential obstacle, visit the field by ground to do a more thorough recon.

When you arrive at the field, conduct both a high and low reconnaissance survey of the area. Different obstructions are often more visible at different altitudes. Look for traps such as hidden polls and wires cutting corners. Even if you've sprayed a field before, resurvey it every time you treat it, especially if you're going to spray the field in a different manner than the last time you applied to it. If possible, make your first pass into the wind with the sun behind you. Do not make your first pass next to an obstruction. Keep an eye on the tops of poles and both sides of the aircraft. When treating a field with tower guy wires, work the field in whichever direction gives you the best visibility even if it means working it the slow way. Guy wires are sometimes easier to see at spray level than up higher in the air.

If there are multiple wires at the end of a pass, make sure you are focusing on the right wire and not the wrong one. Be aware of wires that change elevation going across the field. An increase in the tail wind while you're treating the field will reduce the time you have to climb over obstacles –don't attempt a pull up at the last moment. Inform other pilots at the operation of any tricky areas in the event they are assigned that field later. As PAASS presenter Randy Hale stated during the emergency [NAAREF virtual safety meeting](#) on May 31st, "we have to get rid of the attitude that we're going to hit wires." Make a commitment to yourself and your family that your goal is a career with 0 wire strikes. If you've already above 0, make your last CFIT accident your last CFIT accident.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 17 ag accidents including 5 fatal accidents so far this year. There have been 3 fatal accidents not yet reported by NTSB bringing the total to 8 fatal accidents.

FLY SAFE OR DIE

The ag aviation industry has lost eight pilots in 2021. While NTSB investigations into these accidents are ongoing, at this point it looks like four were wire strikes. One happened recently and there are no details yet. The other three appear to be stall spin accidents, one of which looks to have occurred after buzzing. Turning safely is about energy management, and the safest turns are smooth and coordinated. Leave some energy in reserve for unexpected changes such as turbulence. In terms of wing over or hammerhead turns, these are aerobatic maneuvers. At the altitudes ag flying takes place at, there is no room for error or recovery. For a refresher on turning safely, watch this [NAAREF video](#).

If you observe another ag pilot flying in an unsafe manner, say something to them. Your willingness to speak up might save their life. For newer pilots, when you are given **safety** advice from a more experienced pilot, listen to them. A pilot killed in a 2017 stall spin accident had recently been fired by his previous employer because he would not heed repeated warnings about the dangers of making tight turns. He moved on to another operation where his failure to listen cost him his life. Ask questions, listen, and learn. Don't assume that because you're flying a turbine in your second season that you know all there is to know about ag aviation. You may be impressed with your flying skills – gravity is not.

If you insist on flying unsafe, please make sure you have your affairs in order. Have a life insurance policy that will meet your family's financial needs after you're gone. Make sure you tell them how much you love them every day because if you fly aggressively, you never know when it will be the last chance you get to let them know how you feel. Ensure all your work activities are well documented and someone in the operation can quickly get up to speed. Be sure to provide your farmer-customers the contact information of your competitor so that he won't be left without a professional to conduct his aerial application services. Or you can save everyone the anguish and trouble and FLY SAFE.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 18 ag accidents including 5 fatal accidents so far this year. There have been 2 fatal accidents not yet reported by NTSB bringing the total to 7 fatal accidents.

SPRAY MIXTURE FOAMING FROM HOPPER CAUSES ANOTHER ACCIDENT SIMILAR TO 2020 FATALITY

A spray mixture of foliar fertilizer and glyphosate that foamed out of a hopper in flight, resulting in obstructed visibility, has caused another accident. While the pilot survived this recent foaming caused accident, in 2020 the pilot who experienced this foaming subsequently crashed in [a fatal accident](#). The mixture in both accidents contained a foliar nitrogen fertilizer and glyphosate. The [2020 NTSB report](#) has more details.

In regard to the recent accident, the ground crew had some trouble mixing the two but when they added a compatibility agent and defoamer it seemed to be alright. There were no issues on the 40-mile ferry to the field, likely because the pilot was not running the pump so there was no agitation. When the pilot turned the pump on to begin spraying the field, the agitation began, and the mixture started to foam up and eventually escaped the hopper. The foam ultimately caused the pilot to lose visibility. He opened a door in an attempt to see but shortly thereafter he impacted the ground, destroying the aircraft. This recent accident and a [jar-test demonstration](#) of what happens with this mixture done after the 2020 accident strongly suggest that the [foaming reaction](#) does not occur until the solution is agitated, and when it does the expansion of the mixture is dramatic. When you conduct a jar test to determine compatibility, it is essential you agitate the test mixture to verify whether or not foaming will occur.

The operation uses a different brand of foliar fertilizer for their aerial applications. The only reason they were applying the brand that caused the foaming was because a farmer dropped it off. He had been unable to get it out using his ground rig and therefore wanted the operation to put it out with an airplane. He dropped the fertilizer off in a trailer with no accompanying label. A post-accident review of the SDS revealed a caution statement for mixing the fertilizer with glyphosate as well as some other chemicals. Never accept an opened product from a customer or a product without a label. Use caution with new products.

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Don't become a statistic!

NTSB has reported 20 ag accidents including 6 fatal accidents so far this year. There has been 1 fatal accident not yet reported by NTSB bringing the total to 7 fatal accidents.

OPERATOR RESPONSIBILITIES FOR SAFETY

Several of the recent fatal accidents have involved pilots with limited ag flying experience. The current shortage of pilots and the high demand for aerial applications can put pressure on operators to move pilots into aircraft they may not be ready to fly, or to work in difficult fields beyond their capabilities. In an earlier Fly Safe this season, PAASS stressed to pilots not to be overconfident in their abilities because they were assigned to fly a turbine early in their career. However, it is equally important that operators properly mentor new to low-time pilots in a safe manner. Pilots may not understand the dangers of being turned loose in a high-capacity turbine aircraft before they're ready for it, but operators should be aware.

If your pilot is apprehensive over the potential for fog or field obstacles, listen and heed their concerns. Do not push them to do work they are not yet ready to do. While they may express confidence in their abilities, it is your responsibility as their mentor to be the final judge of what they are ready for. Assign work at a pace appropriate for their experience and closely monitor their condition so that they don't become overwhelmed, both physically and mentally. Make sure you check the fields you're planning on assigning to them ahead of time to be sure they don't exceed their skills.

Observe your pilot's performance when it comes to flying safe, not just the acres they are getting done. Regularly communicate to them that their mission is to ensure every flight is accident free and the application for the customer is accurate, effective, and safe. Make sure they understand all aspects of the flight should be based on that mission. It is your responsibility to tell them that turning too tight and fast is dangerous and bragging about how fast they turn compared to other pilots is not safe. Operators are responsible for creating and maintaining a safety culture at their operation. An operator's concern might be getting as many acres treated as possible, due to their customers' demands, but remind yourself and your customers that a dead pilot and a wrecked aircraft are not productive. Make sure your pilots can Fly Safe and are Flying Safe. Know that their Flying Safely is **YOUR** top priority and that they know that too.

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Fly Safe Campaign



MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 22 ag accidents including 6 fatal accidents so far this year. There have been 2 fatal accidents not yet reported by NTSB bringing the unofficial total to 8 fatal accidents.

SCOUT YOUR FIELDS THOROUGHLY EVERY TIME FOR PEOPLE AND OBSTACLES

Thoroughly scouting a target field and adjacent areas is critical for both others in the area and the pilot's safety. Orbiting a field to conduct reconnaissance for obstacles, people, and other hazardous situations should be done every time you treat the field, regardless of how many times or how recently you've sprayed it. Obstacles can change over time and not always at a rate that gives you sufficient warning time to observe their construction – a new wire or MET tower can show up in only a few days.

One thing that will likely change every time you spray a site is the number and location of people in and around the target field. While the presence and location of a house will be consistent every time you apply to a field, how many people are in or around the house can vary, based on day of the week or time of the day. Field workers also come and go in and around target fields. Examples include irrigation workers, corn detasslers, crop scouts, harvesters, and farmers. People working in fields are often difficult to see so look for other signs of their presence, such as trucks, tractors, buses, portable toilets, and tents. If applying near wind turbines, be aware of their maintenance workers. The [SeedFieldCheck](#) registry with [FieldWatch](#) allows seed companies to share where and when seed field workers will be present in seed production fields. At this time, SeeFieldCheck is only available in IA, IL, IN, MI, NE but it is expected to expand.

People can enter and exit your work area at varying speeds throughout your application. Cars, tractors, bicycles, ATVs, school buses, horse riders, and pedestrians all travel at different speeds. Regularly scanning for them needs to be done throughout the application, not just before you start. Spraying or drifting on someone is a label violation and can make you vulnerable to lawsuits. These incidents often get covered by the press which makes the entire industry look bad. Scout every field, every time, for everyone's safety.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 28 ag accidents including 7 fatal accidents so far this year. There have been 2 fatal accidents not yet reported by NTSB bringing the unofficial total to 9 fatal accidents.

USE CAUTION WHEN TRANSITIONING TO FASTER AND LARGER AIRCRAFT

On numerous occasions PAASS has referenced the increased risk of having an accident for pilots who have low time in the type of aircraft they are flying. This trend occurs for both inexperienced and experienced pilots. When you start flying an aircraft new to you, use extra caution as you get used to how it flies and operates. This can especially be true when the aircraft you're now flying is faster and heavier than your previous aircraft. Faster speeds mean that obstructions will be arriving much quicker.

At 120 mph you are traveling 176 feet per second, but at 160 mph that increases to 235 feet per second. If your target field is a square ¼ section, each pass will be 2,640 feet long. At 120 mph it takes you 15 seconds to make the pass. At 160 mph that time is reduced to 11 seconds. If you decide to look down at something in your cockpit to check a setting or make an adjustment, it might take about 5 seconds. At 120 mph you will cover 880 feet, or 33% of the pass, while you look down. At 160 mph, that will increase to 1,175 feet, or 45% of the pass. It's not just the end of the pass that will arrive quicker – obstacles will arrive quicker as will the the beginning of the target field when you are preparing to lay down your spray pattern. If you're focused on your lightbar trying to line up your pass, you won't have as much time to make adjustments before you're in the field.

Larger and faster aircraft have more inertia and consequently have higher wing loading in pounds per square feet. When entering a field, a heavier aircraft will not flair out as quickly as a slower and lighter aircraft will. When pulling up at the end of your pass, a heavier aircraft will need more room to clear obstructions so you'll need to begin your pull up sooner than you may have been used to in a lighter aircraft. Give yourself plenty of space for obstacle clearance as you get used to a larger aircraft. Don't be afraid to use trim passes to clean up the field instead of trying to treat everything in your primary passes.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 31 ag accidents including 9 fatal accidents so far this year.

FOCUS ON NOTHING BUT YOUR MISSION: AN ACCURATE AND SAFE APPLICATION

It's easy to get confused about what's important for being a good ag pilot. Who's flying the biggest aircraft, who's turning the fastest, and who's getting the most acres done seem to be prominent ways to judge success. The reality is none of these are the most important because none of them focus on the mission. The mission for every single aerial application flight should be doing the best quality job possible for the customer in a safe manner that returns you home every night to your family. You may fly the biggest ag aircraft there is and make the fastest turns, but if you don't provide a quality application and return home safe with an intact aircraft, you failed your mission and could quite possibly end up dead. If something doesn't relate to the mission, don't do it.

It is critical for your operation, your career as an ag pilot, and for the ag aviation industry that you treat every field as if it was your own. If those were your crops you're about to spray, and your livelihood depended on an effective application to protect them, how would you want the field treated? When you decide how to spray a field, don't always think about the fastest way you can get it done. Think instead about what will provide the best results for the grower and the safest application flight for you. Sometimes the best way to treat a target field is not the most productive or profitable, but it allows you to avoid obstacles that present both a risk to your safety and your ability to get the product precisely on target.

Buzzing your friends, turning tight to impress onlookers, and videoing yourself for social media are obviously not part of the mission. They can lead to accidents and complaints and offer no gain to your customer. It doesn't matter what you're flying – your mission is always the same: make an accurate and safe application that provides the application your customer needs to maximize their yield and ensures your continued success as a professional ag aviator. Ag aviation is not an airshow, it's a needed, professional service.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 34 ag accidents including 10 fatal accidents so far this year.

FASTEN UP, STRAP IN, AND SUIT UP FOR SAFETY

There have been reports of pilots showing up at operations in the Midwest for corn fungicide applications with nothing on their heads but headsets. While a good headset is great for protecting your hearing and facilitating accurate communications, it will do nothing to protect your head. While no helmet can guarantee complete protection in the event of a crash, you are certainly better off with a helmet than without one. A study on the effectiveness of helmets for U.S. Army helicopter pilots found that pilots without a helmet were 3.8 times more likely to sustain a severe head injury and 6.3 times more likely to sustain a fatal head injury. A helmet will also protect your head from bumps caused by maneuvering and turbulence.

PAASS is aware of fatal accidents in prior years in which the pilot was not wearing a seat belt or shoulder harness. In addition to being the law, use of a seat belt and shoulder harness is common sense. AOPA reports that wearing a shoulder harness reduces major injuries by 88% and fatalities by 20% in general aviation. Tests by the U.S. Air Force and Navy indicate shoulder harnesses would eliminate about 90% of injuries from aircraft accidents. According to Transport Canada, 33% of accidents that should have been survivable ended up resulting in a fatality due to a shoulder harness not being worn. As an example, say an aircraft impacts terrain at 140 MPH, coming to rest within 100 feet. The pilot could encounter peak deceleration of 13 G's, or approximately what is felt by a pilot strapped tight to a lit ejection seat. Do you want to be securely fastened to the aircraft during that deceleration or be free to move about the cockpit?

Another piece of safety gear strongly encouraged for ag pilots is a fire-resistant flight suit. Nomex®, the material that flight suits are made of, can provide protection against a fire, which could mean the difference between surviving an accident or succumbing to injuries. Make sure your hopper lids are as securely fastened as your helmet, especially when doing liquid work. There has been another report of foaming from a hopper lid, this time from one that wasn't properly secured.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 38 ag accidents including 10 fatal accidents so far this year. There has been 1 fatal accident not yet reported by NTSB bringing the unofficial total to 11 fatal accidents.

IT'S NOT OVER UNTIL IT'S OVER – STAY RESTED AND DON'T GET COMPLACENT

By all accounts it's been a busy season for ag aviators across much of the U.S. While the season might be winding down in many regions, applications continue, and safety remains paramount. Fatigue and complacency are two dangers to be aware of year round, but especially on the downhill side of a busy season. Fatigue can be both physical and mental and causes a decrease in attentiveness and the ability to perform even simple tasks with your normal efficiency.

Situational awareness can become very difficult to maintain if you are exhausted. Fatigue can also increase your reaction time and impair your memory. Factors that contribute to fatigue include length and quality of your last rest period, time on duty, disruption of your circadian rhythm, workload, stress, and your overall health. Make sure you stay well rested by taking every opportunity possible to sleep. Eating healthy and staying hydrated can also help battle fatigue. Most people are poor judges of whether they are suffering from fatigue, so make sure all crew members are trained and empowered to watch for signs of pilot fatigue and to let the fatigued know that they need to take a break.

Complacency is dangerous because it affects even experienced pilots. Complacency can occur when you are very familiar with your work, especially work that involves repetitive tasks that have been performed all season long. There are obviously numerous repetitive tasks involved in ag flying, and those tasks can begin to feel routine and mundane, which causes a feeling of safety and security because of your familiarity with the tasks. This type of complacency most often occurs after a period of intense workload. If you've been spraying wired up fields all day, your brain can get a little numb as to where the wires are in a particular field. Scouting for obstructions a second time when you get ready to spray your trim passes is a good idea all the time, but especially important when you find yourself becoming complacent.

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WIRES END SEVEN LIVES IN 2021

There have been 7 accidents involving wire strikes in 2021. All 7 of those wire strike accidents have been fatal, representing 64% of the 11 fatal accidents. Those 7 fatal wire strikes account for 18% of the total accidents in 2021. From 2011 to 2020, wire strikes accounted for 14% of the total accidents and 16% of the fatal accidents. In that ten-year period, the highest percentage of fatal accidents caused by wire strikes was 50%.

The time of day you make an application has an impact on how well you can see wires and other obstructions. If possible, avoid spraying fields when the sun is low during the early morning and late afternoon. Flying passes into the sun when it is low makes it more difficult to see wires and other obstructions. If you need to make applications early in the morning or late afternoon, try to select fields where you will be making passes to the north and south so you can avoid flying directly into the sun. Save your fields where you will be flying east and west for the middle part of the day when the sun is higher and less likely to reduce your ability to see obstructions. If you need to spray a field where you would normally make east-west passes when the sun is low, consider flying the passes north and south even though it will take longer. When you are making your clean up passes, do them with the sun behind you so that obstacles will stand out better.

Another thing that stands out in the 2021 accidents is the number of helicopter accidents. The 2019 industry survey indicates that helicopters represent 16% of the ag aircraft fleet in the U.S. At this point in 2021, helicopters were involved in 28% of the total accidents and 36%, or 4, of the fatal accidents. While the NTSB is still investigating all of the fatal accidents, it appears at this time that the pilots in 3 out of the 4 fatal helicopter accidents had minimal experience in the ag aviation industry. All 4 of the fatal helicopter accidents involved wire strikes. The busy season and shortage of pilots likely contributed to many pilots with little ag experience being brought in to make applications. It is important that if you are new to flying ag you seek out good mentorship to help learn to you fly safe.

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BE IN THE MOMENT - DON'T LET DISTRACTIONS TAKE YOUR ATTENTION OFF THE TASK AT HAND

There are numerous things that can cause an ag pilot to become distracted and result in them taking their concentration away from a critical task at hand. Ag flying requires extreme concentration and even a few seconds of diverted attention can result in an accident. Distractions can come from a variety of sources. Smart phones are an obvious one – whether you're trying to video your flight or trying to read a text from a customer, your focus is on the phone and not the flight. It makes no difference if it's for personal or business purposes.

Technology, both those that are essential to the application and those that are not, inside the cockpit can become a distraction. Many technologies, once learned, can reduce distractions by simplifying tasks and allowing pilots to focus more on flying. These include GPS, automatic rate controllers, mapping and application record keeping software, and ADS-B. However, if these technologies don't work correctly or cause confusion during their initial integration thereby affecting the application mission, it might be advisable to temporarily go back to the old method of doing things until a time when you can safely focus on the new technology.

Stress can also cause a pilot to focus on something besides their current flight. Customers demanding their work get done or complaining about work already done can be very distracting, and it can be hard to keep these things out of your head when you're flying. Similarly, turmoil in your personal life can cause the mind to focus on the wrong thing when you need it focused on flying safely. Remind your loved ones and the office to save any grievances and problems that aren't emergencies until you can deal with them on the ground so you aren't distracted from flying safe. Be in the moment every flight, every pass.

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MAINTAIN ACCIDENT AWARENESS

Don't become a statistic!

NTSB has reported 41 ag accidents including 11 fatal accidents so far this year.

END THE SEASON SAFE, PROFESSIONAL, AND ACCURATE

The season is coming to an end in many parts of the U.S. As your flying slows down, be careful not to let your guard down when it comes to safety. It is easy to get complacent once your workload decreases. Things you've put off thinking about during the busy part of the season now start to enter your mind, such as winter maintenance and problem customers. Don't let these items become distractions while you're flying. Even if you only have one load to do in a day, make sure that load gets your undivided attention.

Professionalism, like a safety mind set, is critical throughout the season and in every aspect of your flying and operations. Remember that the label is the law, and that following it is not only your legal obligation but your professional one as well. When it comes to the labeled gallons per acre (GPA) spray application rate, the label will provide a minimum and it is illegal to apply below that minimum. You may be aware of research or field data that shows a lower GPA provides equal or superior efficacy, but unless that rate is on the label, it's illegal to spray at the lower than labeled rate. If you violate the label and there are negative consequences such as poor efficacy or a drift claim, the fallout can damage the reputation of the entire aerial application industry, not just your business.

Now is also the time for cover crop seeding. Aerially seeding cover crops is the best option for both growers and the environment. The cover crops seeded by aerial applicators sequester 1.9 million metric tons of CO₂ equivalent annually, which would be the equivalent of removing approximately 412,000 cars with carbon-combustion engines from the roads each year. But if the cover crop does not develop into a well-established stand, or drifts into a seed crop field growers won't get the results they want and may tarnish the use of ag aircraft for cover crop seeding, or other work, in the future. And a poor or off-target cover crop stand provides very visible evidence of the work you do and will be used to judge your professionalism.

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