



WE HAVE A HELICOPTER DOING AERIAL APPLICATION ALSO.....

In an effort to continue to be your leading provider for your Agricultural Aerial Application needs we continue to run 2 helicopters along with our fleet of 7 Airplanes. The decision to run the helicopters was based on the desire of some customers who have historically been using one. Throughout our operation we have been asked a few questions that you may also be interested in.

Just before we answer those. I would like to remind you. Our goal is to provide a top level annual service, Our goal is to remove stress from your life as we partner with you on your work. We want to go to great efforts to make life easier on you and make hiring aerial application a cost effective, reliable way to get the jobs on the farm completed that you need. Although we are available in emergency circumstances, we work consistently for the same growers on an annual basis, and have the equipment to do so in a timely manner. But, the way I see it, as soon as we are not meeting our goal of removing stress from your life and giving you peace of mind, we have not completed our job. We welcome any communication from Airplane, or Helicopter customers as we plan ahead to make sure we have the equipment and men in place to fill your needs in an effective way!

HOW DO YOUR PILOTS LEARN HOW TO SPRAY?

This is something we pride ourselves in. Our pilots specialize. Clayton Air Service is very dedicated to the Ag industry. Ag is 100% of the work our company does! Our Pilots for the airplanes and helicopters have taken training courses and have been mentored over the years for countless hours learning how to spray safely, accurately, and efficiently. There are some companies where aerial spraying is an extra job among many that they do, they may have spent very little time around agriculture. WE SPECIALIZE. Our pilots most often have thousands of hours of strictly spray time, following a GPS, and working with chemicals and managing drift!

DOES THE HELICOPTER DO A BETTER JOB?

NO. The answer to this question is simple. Same as any piece of equipment on your farm. Old versus new. JD vs. Case vs. Massey.



The truth is when comparing an airplane to a helicopter, it boils down to the operator. Both the airplane and the helicopter when operated properly at appropriate water volumes, correctly setup and with an experienced applicator at the controls will do the same job.

DOES THE HELICOPTER DRIFT MORE?

NO. This basically goes back to the first question. The helicopter does not drift more than the airplane. In general spraying with an aircraft takes more managing and caution than a ground sprayer. But both the airplane and the helicopter spray pattern act the same manner, when calibrated, operated, and managed correctly. However any spray equipment not setup or operated correctly has higher potential to drift. We spray fungicide different than we spray insecticide, different than we spray roundup. That may be managing nozzle settings for different droplet sizes for given application, temperature, wind, or humidity. Or adding water volume at our own cost in effort to make larger droplets while still attaining coverage, and controlling drift.

DOES THE HELICOPTER HAVE BETTER PENETRATION BECAUSE OF THE DOWNWASH?

NO. While a helicopter is hovering, it has downwash. While a helicopter is spraying at speed, the aerodynamic forces, and airflows are essentially the same as an airplane. In forward flight the helicopter has similar resultant airflow characteristics as the airplane. It is the airflow and air disturbance that aerodynamically create lift. The air movement, and air disturbance is what can often be a beneficial characteristic to aerial application, as the air disturbance aids in penetration.

Picture this. You have a 3000 lb helicopter flying across the field level. For the helicopter to fly level, neither climb nor descend, it needs to aerodynamically displace 3000 lbs of air to maintain straight and level flight, creating air movement and air disturbance.

A 10,000 lb spray plane flying straight and level across your field neither climbing, nor descending needs to aerodynamically displace 10,000 lbs of air to fly straight and level.

It is only under control input or inducing a climb that one creates downwash, this is true for both the airplane and the helicopter alike.

Any advantages around "downwash" come only from air movement and air disturbance. Aircraft of any kind creates air movement and disturbance which is why when operated correctly they can do a great job spraying. It is for these same reasons that spraying experts and chem companies recommend not spraying in dead calm conditions but having at least a 5 kilometer an hour wind to aid in disturbing the crop canopy to achieve extra penetration.

DOES THE HELICOPTER COST MORE?

YES. The helicopter generally cost 15-20% more than the airplane. There are extra operating costs, higher maintenance costs and a mobile water truck to follow the helicopter which need to be accounted for.

DOES THE HELICOPTER PUT ON LESS WATER?

NO. Both the airplane and the helicopter both have the capability to put on the same water volume. Our baseline for fungicide application is 3 gallons per acre. We have the ability to do 4 or 5 gallons at an additional cost. We feel the most economical gallons

per acre applied by air is 3 gallons an acre, while 4 is very acceptable. But at the end of the day it is what YOU WANT. We will do what you want and quote a price accordingly.

WELL WHAT ARE THE ADVANTAGES OR DISADVANTAGES TO EACH MACHINE?

This is a broad question. The short answer is there is no advantage per-say. But every tool has a place. Some items of discussion are as follows:

- When we get down below 120 acres per quarter section (160 acres) the airplane becomes less productive. We have the ability to spray any field size. However, the airplane will spend much more time doing headlands and clean-ups. Sloughs are not so much an issue with the airplane or helicopter, but

trees and the need to dive in and out of the field can create significant challenges. If trees are present, the helicopter can sometimes get into those areas easier at slower speeds than the 140 mph airplane. Anything 130 acres plus per quarter within 25-30 miles from an airport is more economical to use the airplane.

- When we can't send the airplane within the necessary time line, we have the ability to offer the helicopter.
- When a customer prefers the helicopter, we have the ability to send one for them.
- When we have an airstrip that is not within an economical distance from the field that needs application (generally 25-30 miles) we can then send the helicopter to the job and

work right beside the fields with the mobile water truck.

- Minimum job size. Generally for the helicopter depending on travel distance is 500-1000 acre minimum job size to move the helicopter and water truck to a work site.
- Extra logistics with helicopter: With the airplanes, the chemical and water comes to one central location. A job can be 25 miles west, and then 25 miles east on the next load. When working for different customers with the helicopter, much effort is put into making sure every job's chemical makes it onto the truck or is picked up or delivered to the truck at the field. Any wait time in this program greatly effects the productivity and cost of operation of the helicopter. Keeping it operating efficiently with chemical, water, fuel and the driver is much more difficult than with the airplane.



CONCLUSION:

All said, we feel the helicopter has a place in agricultural spraying. Whether it be pasture spraying to row crop spraying throughout the season, we will continue to operate the helicopter for those that want to use it on their farm. It is another tool in the tool belt and it can have a fit.

Helicopter aerial application may not be the most economical way to get farmland sprayed, but it can be used in those areas where it has a fit or for those that desire or require it.

Please feel free to contact us with your feedback, ideas, or requirements for the coming season, so that we can be prepared