Dear Editors:

While there is no question exciting possibilities exist for the use of drones in agriculture, in “Automating Farming from the Sky,” contributing editor Ed Darack couldn’t be more incorrect in his assertion that “Drones are increasingly replacing traditional aircraft in crop dusting.” Certainly in the United States, that’s simply not possible now or for the foreseeable future. The notion drones are superior to manned crop dusters in terms of efficiency, accuracy and costs to the farmer is also far-fetched. Mr. Darack’s statements about the perceived advantages unmanned agricultural aerial applications have over manned aerial applications don’t square with the speed, efficiency and economic benefits America’s agricultural pilots provide to their customers, nor with the size and scope of the farms they treat by air.

Looking outside the U.S., Yamaha’s RMAX helicopter drones have been spraying crops in Japan for more than 20 years, but Japanese agriculture bears little correlation to agriculture in America. Japan’s 1.63 million commercial farms manage small plots—only 4.8 acres, on average, according to the USDA’s Economic Research Service. In contrast, with an average size of 442 acres, U.S. farms are more than 90 times larger.

In the U.S., it is not uncommon for ag pilots to cover hundreds of acres in a single load and treat thousands of acres per day. For example, a 500-gallon ag plane can treat a 100-acre field in 20 minutes or less—far faster than a drone equipped for aerial application. Researchers at UC-Davis conducted field tests using a remote-controlled RMAX helicopter that sprayed about five acres per hour. Therefore, it would take the UAV 20 hours to treat what an ag plane could do in 20 minutes. Thinking of hiring a fleet of UAVs instead? It would take 60 UAVs to complete the work in the same 20 minutes as the 500-gallon ag plane, and each UAV would need to have a separate licensed drone pilot operating it and a significant number of troops to constantly reload and refuel the UAV fleet. If that sounds like a lot of labor costs, you’re right. In either instance, using a single drone or a fleet of them to treat a field instead of manned ag aircraft is going to be much more expensive for the farmer.

The claim drones can apply crop protection products more precisely than professional ag pilots also is false and absent of any credible study attesting to such a benefit. Flying “lower and slower than manned crop dusters” does not give drones a leg up over manned ag aircraft or even ground rigs in terms of coverage, deposition or accuracy. All aircraft, both fixed-wing and helicopters, push air down toward the ground and away as they fly. Any wing, be it fixed or rotary, creates downwash. The amount of air pushed down is exactly proportional to the weight of the aircraft the air is holding up. A 140-pound helicopter drone does not displace much air. With ag planes typically weighing around 10,000 pounds or more fully loaded, a manned ag aircraft can generate far more downward air pressure. Helicopters operate on the same principle as a rotorcraft UAV, but at a much greater weight and a corresponding increase in spray product moving down into the crop canopy, increasing plant coverage and protection.

Finally, there is much more to performing aerial application work safely and effectively than UAV evangelists may think. There is no substitute for the experience, mindfulness and judgment it takes on the part of the pilot to minimize the possibility of drift. Notwithstanding the positive hype and publicity surrounding UAVs’ potential commercial uses, there is simply no comparison between the efficacy of manned aerial applications versus unmanned ones.

Sincerely,

Andrew D. Moore
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