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## Drones in Agriculture

The drone is an unmanned aircraft, usually with 4 rotors that creates uplift with its propellers.

Although quite similar to helicopters, the principles of steering and control are completely different. While a helicopter may be steered by altering the propeller's pitch, steering drones is generally done by changing the rotors' speed in order to advance in the desired direction. That is one of the reasons for the drone's ease of control compared to a helicopter.

Gat Fertilizers has recently acquired a dedicated drone to improve and raise the company's level of customer service.

What makes the drone such a popular decision-supporting tool in agriculture?

First, it's easy to operate. Most modern drones are equipped with a GPS system which enables automatic stabilization of the drone, and a preprogrammed flight path. The operator need only maintain eye contact and ascertain that its path is free of obstacles. Some drones on the market also have sensors that help it to avoid contact with obstacles.

Second, is its cost relative to alternatives. Now that the technology is available and inexpensive, an appropriate drone can be purchased on a budget of a few thousand dollars. When used efficiently, this tool can quickly earn back its investment. Third, is its work capacity. Even the smallest drones are capable of carrying a camera or another dedicated load such as a spray container or a bait dispenser for pest control. A job that used to require a worker to photograph or run around fields with a hand dispenser, can be performed thoroughly and very efficiently.

Fourth, clean energy. The drone, as opposed to alternatives, runs on electricity – inexpensive, available, and essentially clean energy.

How can a drone, even a simple one with a camera, serve today's farmers?

The drone can easily locate irrigation malfunctions in the field or orchard – whether detecting leakage or damage to the irrigation system, or using thermal photography that enables identification of thirsty plants in the field and ensures efficient, optimal irrigation.

Using a drone, an initial visual survey can be performed, to model the soil before planting, and to verify that the soil model is representative of the area.

Thus, soil modeling will optimally characterize the condition of the field. The drone can be used to monitor deficits in the field. Generally, iron or phosphorus deficiencies will be most visually prominent, so that after viewing from up above, it's possible to go directly to remedy the deficiency, precisely and simply.



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Drones now serve agriculture in a variety of sectors: monitoring and pesticide use, soil surveys, monitoring irrigation problems, identifying lack of uniformity in the field, as well as fruit picking by the drone!

At Gat Fertilizers we have also identified the many latent advantages of this tool, and now every trial or observation we run is accompanied by constant drone monitoring, from choosing the right field for conducting the experiment to timing its final stage. Using the thermal camera, we can offer diagnostic service for non-uniformity problems in the field, and examine various solutions for improvement.

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