

The use of drones in agriculture

Facts & Figures



Weight
1,5kg

Wingspan
1,2m

Operability
Water resistant, operational under any weather conditions

Coverage capacity
One flight can cover approx. 12km² in 50min

How it works?



Capture of high resolution images



View of Data in real time



Data is processed in the cloud & translated into useful information



Maps providing different type of information from the field eg. Soil quality, plots size, plant health

What are the benefits for farmers combining Drones & Smart Machines?



Optimize inputs
Seeds, fertilizers, water



React faster to threats
Weeds, pests, fungi



Save time crop scouting
Treatments & actions



Improve Variable Rates Application
Real time mapping



Estimate yield
Precisely calculate field characteristics

Questions & Answers on the use of drones in agriculture

1. How high can an agricultural drone fly?

Drones fly around 50 - 100m high. Above 50m high, a special authorization is required.

2. Is any special licence required to fly agricultural drones?

Currently, flying agricultural drones depends on national laws. Nonetheless a training is normally required.

3. What are the best weather conditions to fly a drone over a field?

A drone can fly under any weather condition. Drones are water resistant, but image quality can be damaged if pictures are taken during rainy weather.

4. What distances can agricultural drones fly?

It depends on the drone capability and size. Fixed wings drones have longer flight time and can cover more field in one flight. For instance, 50 min flight time will cover up to 12km².

5. What makes the difference between images taken by a drone and satellite images?

Drones can take pictures with a resolution down to a few cm per pixel. A drone can get higher quality and higher precision of images in real time as they can fly below the clouds. Besides, a satellite only takes pictures once a week or once a month.

6. What kind of information can farmers get from the images?

Raw data collected by drones gets translated into useful and comprehensible information for farmers thanks to specific algorithms. Some of the information these images provide is:

- **Plant counting:** plant size, plot statistics, stand number, compromised plots, planter skips),
- **Plant height:** crop height and density
- **Vegetation indices:** leaf area, anomaly detection, treatment efficacy, infestations, phenology
- **Water needs:** damage/drown out

Drones ensure a permanent monitoring of the crop in the field from planting to harvest.

7. What are the main benefits farmers can get from the use of ag drones?

Drones can help farmers to optimize the use of inputs (seed, fertilizers, water), to react more quickly to threats (weeds, pests, fungi), to save time crop scouting (validate treatment/actions taken), to improve variable-rate prescriptions in real time and estimate yield from a field.

8. What are the advantages of combining smart agricultural machinery and agricultural drones?

As of today, drones cannot communicate directly with agricultural equipment. Drones fly over the field and take high resolution pictures. The data gathered is directly sent to the cloud/software and made available to the customer. Thanks to this data, the user can select the information wanted from the images and make different prescription maps depending on the operation the farmer wants to perform on the field. The maps can then be uploaded on the farm equipment which will adjust the amount of inputs (seeds, fertilizers, pesticides) that would need to be applied in the field accordingly.

9. What are the expectations for this market to grow in the coming years?

It is expected that the use of drones will grow significantly in farming as they offer a wide range of applications to improve precision agriculture.

10. How much does an agricultural drone cost?

A standard drone for public use starts at €1,300. In the agricultural sector, small drones without specific technology can go from €2,000 to €3,000. The higher technological drones used specifically for agriculture start at €20, 000.



www.cema-agri.org

“Drones can monitor any type of crop in any geographical area. Being a young technology in agriculture its market and use is expected to grow significantly in the coming years.”