



# Drone Technology for Whitewashing Greenhouses

## The Issue

Whitewashing of commercial greenhouses during summer is a common practice aimed at reducing heat stress in crops. The whitewash reflects sunlight and enables a more stable, cooler growing climate.

Traditional methods of whitewash application include manual spraying or aerial spraying via helicopter. Each of these methods can be relatively costly and involve inherent health and safety risks.

## The Technology

The XAG P30 Agricultural drone is a remote-controlled aerial spraying system. The drone is equipped with a fully automated flight control system. When combined with GIS data, this system enables the user to spray precisely and only where needed.

The drone holds 16l of liquid spray and the size and flow rate of the atomized droplets can be easily adjusted to match the spray medium and required coverage rate.

## The Trial

This trial involved a qualified contractor using a XAG P30 drone to spray whitewash medium over 7ha of commercial greenhouse rooves in the Bundaberg region.

The grower had previously employed both manual and helicopter-based spray methods.

## Findings

The drone performed reliably during the entire trial and was successful in spraying a consistent 10mm thick coating of whitewash over the entire greenhouse roof at a rate of 2000m<sup>2</sup> / hr.

The coating was more consistent than that of traditional methods and downdraft from the system's propellers significantly reduced spray drift, especially compared to aerial spraying.

The volume of whitewash medium required by the drone system was less than both the manual and aerial systems due to more consistent application rates and less drift.

## Costs

At time of publication, the cost comparison for various methods of whitewash spraying, per 1ha of roof area, in Bundaberg, were:

- Aerial (Helicopter) Spraying           \$30,000  
(Includes flight time from base)
- Manual spraying                               \$11,200
- Drone Spraying                               \$ 1,000

The above costs are exclusive of whitewash medium. Additional savings using the drone system are gained from efficiencies in spray application and reduction in spray drift. For this trial, the volume of whitewash medium used by the drone system was 40% less than the manual method and 60% less than the aerial method.

Return on Investment (RoI) calculations for any whitewashing practice need to consider increases in crop profitability (volume and quality) gained from more stable growing conditions and less heat stress within the greenhouse. These gains vary according to the crop type, area and management practices.

For this trial, the grower indicated that the whitewashing resulted in 20% - 30% greater crop profitability.

## Grower Feedback

Upon trial completion, the grower provided the following combined feedback:

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I see value in this technology					✓
I intend purchasing this technology					✓
I recommend this technology to other growers					✓
The system provided greater comfort and safety to pickers					✓
I am satisfied with the service and support provided by the AgTech company					✓

The grower noted the significant cost savings as the greatest benefit of the technology over traditional spray methods.

He also noted that staff could continue working in the greenhouse during the drone spray operation. This was not possible with aerial spraying, due to flight regulations and excessive spray drift.

## Other Considerations

In addition to its cost benefits, the drone system is a safer and healthier option for both operators and farm staff. Manual whitewashing on fragile greenhouse structures is inherently dangerous and time-consuming. The XAG P30 can also be automatically filled, avoiding direct contact between the operator and the spray medium.

An additional benefit of the drone system's portability and local operation base is the ability to re-spray on short notice, for example, after extensive rainfall events. It can also be used to remove the whitewash prior to cooler seasons.

## Further Information

For further information on this trial, including details of participating growers, please contact:

Dean Collins.  
Communications and Engagement Manager  
Hinkler AgTech Initiative  
M: 0427 538 270  
E: [d.h.collins@cqu.edu.au](mailto:d.h.collins@cqu.edu.au)

For further information on OzTech Drones services and the XAG P30 Agricultural drone, please contact:

Jamin Fleming  
Director  
Oztech Drones  
M: 0429 778 875  
E: [jamin@oztechdrones.com.au](mailto:jamin@oztechdrones.com.au)

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