



Capability Statement: Weed control using drones

Introduction

At Sky Land Management we take a holistic approach to providing solutions to our clients' needs. Sky Land Management commenced operations in 2014, adopting the capabilities of high payload Unmanned Aerial Vehicles (UAV), more generally referred to as drones. Since 2014 we have primarily provided aerial spraying services for weed control around agriculture, mining, forestry, infrastructure and in natural areas. As UAV / drone technology has rapidly evolved, we have changed and moved with it.

Our drone fleet comprises the latest XAG P30, high payload battery powered units, with a take-off weight of 38.5kg. An advantage of these drones is that multiple aircraft can be flown simultaneously, known as 'swarming'. Where the site size and conditions permit, this brings economies of scale to our spraying operations.

Our fully integrated Remote Piloted Aircraft System (RPAS) enables us to accurately survey, then identify and treat areas with either liquid or granular pesticides, with precision. This is achieved using our fully integrated XMission survey drone or ground based (RTK) mapping to pinpoint and plan for targeted weed control by our P30 agricultural drones.

The Sky Land Management approach is designed to bring greater precision to weed management, reducing waste, costs and environmental impacts. For example, in the case of weed spraying, the precision of the drone ensures targeted application, reduced herbicide and water use, when compared to ground application, and the ability to customise areas such as 'No Spray Zones'.

Safety

Operation of our drones on steep, unstable and uneven sites significantly reduces, or in many cases, eliminates the need for personnel in these hazardous areas, eliminating the risk of injury. For aquatic environments, such as dams, wetlands or wastewater treatment ponds, we are able to treat weeds without the need to have personnel on the water, again a significant reduction in risk.

Our system is set up to minimise the potential for exposure to chemicals, thus reducing the risk to our team. This is achieved through strict safe operating procedures which includes:

- operation of a closed transfer system container refill station;
- personnel are remote from the point of application, eliminating the potential for contamination by spray drift;
- careful pre planning and risk assessment including establishment of buffer zones, no spray zones, which means these areas can't accidentally have herbicide applied;
- drift management through strict weather condition monitoring, a low operational height of 2-5m above ground level and fully adjustable spray nozzle micron at the touch of a button, from super fine to ultra-coarse.

Sky Land Management is fully licenced by the Civil Aviation Safety Authority (CASA) and has been operating high payload UAVs / drones since 2014. As one of the first in Australia to adopt this technology for land management, we have pioneered UAV use across many sectors, providing safer and more cost effective solutions in vegetation management.



Above: P30 UAV spraying plantation forest compartment prior to planting, Mid North Coast NSW.

Environment

The potential environmental benefits for your operation are many. For example, the precision of the drone ensures targeted application, reduced herbicide and water use and the ability to customise areas such as 'Buffer Zones' and 'No Spray Zones'. No spray zones may be a sensitive area such as a water body, drainage line or significant vegetation that are defined in the mission planning phase and ensures no chemical is sprayed in that area.

Our drones also enable our clients to more effectively manage their weeds, particularly in areas where safety and logistics for use of traditional ground spraying may mean that weeds are left unmanaged. In effectively managing these areas the weed potential on site is reduced.

Culturally sensitive areas may mean that access for weed management is restricted or not at all possible, however with our Remote Piloted Aircraft System (RPAS) we can survey, map, plan and execute weed control without impacting on the site.



Wetland covered in the aquatic weed Salvinia. Picture shows first of two 50% herbicide spray using drone, several weeks apart, to ensure de-oxygenation of the water does not occur to the point which may impact on aquatic fauna.

Cost Effectiveness

As a result of our approach, cost savings both in the short and long term can be expected. By having zero impact on the ground, savings can be achieved through no loss of crop due to vehicles traversing field for example. More efficient and precise application also brings about chemical cost savings.

In many cases there are also potential cost savings associated with reduced risk of harm to personnel and environmental risks where weeds are being managed in hazardous area such as on steep, unstable or uneven ground or indeed aquatic environments.

Case Study: We have been weed spraying the wall of major water supply rock faced dam 1-2 times a year since 2014, has been achieved without a single lost time injury (LTI). Previously when the client used ground sprayers lost time injuries were a common occurrence. Apart from zero LTIs on this site, we have constantly produced far superior results and used significantly less chemical and water, a cost saving and benefit to the environment too.



Above: P30 UAV spraying weeds on wall of major water supply dam, Hunter Valley NSW

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