

# Information Sheet

## 10. WEEDS

### 10.4 **Spraying herbicides with low volume, controlled droplet application (CDA) systems**

**T**he CDA system uses centrifugal force to deliver pesticide by means of a spinning disc. The most commonly used models are battery driven and the chemical is delivered to the disc by gravity, as shown in the photo below.

#### General

The term ‘controlled droplet application’ refers to the size of the drops that are ‘thrown’ off the edge of the disc as it rotates. These drops, unlike those delivered from hydraulically operated nozzles, are relatively uniform in size; hence the term ‘controlled droplet’. The average droplet size is 250 microns (one micron = 1/1000 mm in diameter). Droplets delivered from hydraulic systems can vary from one to 1000 microns in size.

Although CDA systems are less prone to drift, droplets are still more likely to reach the target if spraying is carried out in relatively calm conditions. Very small droplets, particularly at high pressure, are more susceptible to evaporation and drift, as they can remain in suspension for long periods. Large droplets are prone to splashing and can bounce off the target, which may result in less product uptake by the plant.

The hand-held CDA system is light and easy to handle on steep terrain. A vehicle mounted CDA system is also available and is being used in the industry on four wheel motorcycles (ATVs - all terrain vehicles). This method has the advantage of being able to cover very large areas rapidly, due to wide spray swaths and the savings in refill time.

**Note:** Read the herbicide label to check that the product is registered for use with the CDA system.

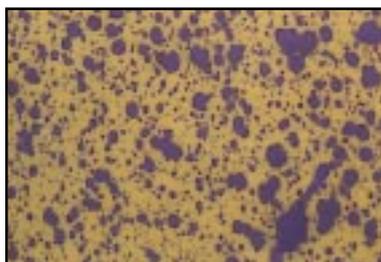


*Typical gravity fed CDA system. Insert: spinning disc applicator.*



*ATV mounted CDA system.*

Lurmark AN 4.0 nozzle



CDA applicator red nozzle



*Differences in droplet size and distribution between a typical floodjet nozzle and CDA.*

## Advantages of CDA systems

- Equipment is light and easy to handle, making it attractive to labour.
- CDA equipment is easier to handle on steep terrain, as the operator has one hand free for support (no pumping required).
- One operator can treat about two hectares per day, which is approximately double the area normally covered by knapsack operators. The number of operators could thus be reduced. Vehicle mounted CDA can also cover a larger area per day compared with conventional tractor mounted hydraulic systems.
- The CDA system is usually designed to deliver the product in water volumes ranging from 20 to 50 litres per hectare. In many cases water could be delivered by LDV, and the use of heavy, conventional water tankers could be avoided.
- A conventional pressure system can easily be converted to CDA as any tank can be used. Growers then have the option to convert back to the original system if necessary.
- reported that a CDA system can normally run for  $\pm 40$  hours on a set of four torch batteries.
- A blockage may go unnoticed, due to the low volume of liquid being applied.
- Being gravity fed, the system is restricted to a specific operating height and cannot be used to treat tall weeds.
- CDA droplets do not have the velocity and momentum of those sprayed with pressure systems, and therefore have less penetration. In addition, CDA causes less physical disturbance, which suggests that small weeds may be sheltered from the spray by larger plants.
- The number of herbicides registered for use with CDA equipment is at present limited.
- Due to the high concentration of product in the spray mixture, highly toxic unregistered products such as paraquat (Gramoxone) should not be applied with this system.
- The CDA spray swath is set and cannot be adjusted.
- Labourers using CDA equipment need to be conscientious and skilled for the system to be successful.

## Disadvantages of CDA systems

- Batteries need to be changed (or recharged) periodically, and theft could be a problem. It is

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