

What is CDA?

CDA stands for Controlled Droplet Application which is the generic term that also covers variants such as ULV or Ultra Low Volume and Total Droplet Control.

In essence, all of these refer to droplets produced from a liquid that is fed onto a spinning disc where it moves outwards by centrifugal force until it reaches the edge when it forms even sized droplets that are then flung off the rotating disc.

The concept was first noticed by its inventor when following traffic on a wet road. The spray droplets that were produced from vehicle wheels were almost even in size as they arrived on the windscreen.

The crux of the system is to produce small droplets of a relatively even size that are not too small, so that they will drift in wind and not too big. There must be adequate ground coverage with minimal spacing between droplets avoiding large droplets tend to bounce off a target weed. The big thing that differentiates this system from conventional water based sprayers is that CDA uses no pressure. All pressurised sprayers produce a much wider range of droplets from just a few microns, like feathers in the wind, up to maybe 1,000 microns that are cannon balls that tends to bounce off.

A good, even droplet spectrum produced by CDA means that a herbicide can be applied more evenly and effectively so that a large amount of carrier or water is no longer needed. This in turn means far less weight for operators to carry and much less down time stopping to find water and refill, as is the case with knapsack sprayers where half a working day can easily be lost in non productive trips to return, mix and refill.

There is a lot of science involved in CDA disc design, with smaller and larger discs, lower or higher speeds of rotation and more or less serrations on the edges of discs. The flow rate, its viscosity and surface tension of the liquid being applied also play a part in how many droplets are produced and of what size. With traditional CDA the target is mostly to have the maximum number of droplets around the 200 micron size. Droplets under about 50 microns are virtually eliminated but some up to about 350 microns may also be produced. These sprayers usually work using oil or polymer based carriers applying from 10 litres per hectare up to about 25 litres per hectare. The carriers act as stickers and usually carry a white titanium dioxide pigment, so that the droplets can be seen on treated vegetation.

ULV (Ultra Low Volume) is another variant of CDA but uses, as its name suggests, very low volumes. In the case of Mankar ULV this can be as low as just one litre per hectare of glyphosate, though more commonly two litres of neat herbicide. In this case, droplets generated are smaller than CDA and in the range of 40 to 150 microns. This means more, smaller droplets to increase weed coverage. It also uses a hooded sprayer to reduce the

impact of wind and a downwards projected fan shaped spray pattern designed to hit the ground or target foliage before droplets lose momentum.

CDA sprayers on the whole produce a circular spray pattern that is in the shape of an umbrella. This is good for spraying around passing obstacles like lamp posts, but not so safe to use in a tightly planted shrubbery where the herbicide, as it is projected in all directions can contaminate foliage. A hooded ULV sprayer that can be held close to the ground is much better for shrubberies as its hood shields the foliage while the spray goes vertically downwards under it to treat the weeds.

The traditional circular CDA pattern is also rather more susceptible to cross winds than the hooded ULV variant because its droplets lose momentum as they are thrown outwards until they fall by gravity downwards. At this point a cross wind will tend to move them sideways, but not as badly as the tiny unseen droplets from a pressurised hydraulic sprayer. So hooded ULV gives the least down time due to wind conditions, CDA next and conventional sprayers the most down time lost to windy weather, or spray most damage!

On the down side, CDA and ULV tend to have a very limited range of pesticides available and often from limited sources of supply. However if all you want to do is kill weeds with glyphosate, which is what many users do all the time then CDA or ULV makes great sense as they save huge amounts of labour, always by far the biggest cost in any weed control operation and in the case of ULV can save 50% or more on chemical used as well.

One other difference in ULV and CDA is that ULV, working at just two litres per hectare does not produce enough bigger droplets to make it clearly visible on vegetation as does CDA with its white marker. Most users quickly adapt to this but a few cannot seem to do so, even when told those white marker droplets can often be costing as much as £100 extra for every hectare sprayed!