

NOZZLES and SPRAYING: Your Fairway to Green Spraying

TORO Count on it.

In 2002, about £19.2 million of herbicides, fungicides and insecticides were used in the UK amenity sector, almost all being sprayed with nozzles that – for the sake of following a few simple rules – can ‘make or break’ their performance. Bill Taylor of Hardi Limited covers some basic rules of nozzles and their performance.

*Continue
to learn*

Amenity pesticides will only do what they are intended to do if they are applied correctly. The goal is to apply the product only where it is intended, not in a neighbour’s garden, the nearest watercourse or over yourself. Less wastage increases the chances of you doing the best job but also reduces risks to the environment; an approach that must be welcomed by all your visitors.

The key to success is the correct use and calibration of nozzles. You will not only get the best out of the product’s performance but also increase safety and make the job more efficient.

NOZZLE TYPES

The most commonly used nozzle types are flat fans, hollow cones, flood jets [reflex] and those used for liquid fertilisers, each of which has its place with greenkeepers.

Flat fans are the most common and are used on spray booms to produce a uniformly distributed swath. Hollow cones have now been largely replaced by new flat fan designs capable of the uniform accuracy that is demanded today and produce the whole array of drop sizes required for differing tasks.

Flood jets remain very popular on knapsack sprayers as they enable a wide swath to be gained from one nozzle, and the large metering hole avoids nozzle blockages and can be used just a few cms off the ground.

Finally, the move to liquid fertilisers and the recognition that these products need to target the soil surface rather than plant leaves that could

be scorched, has triggered the development of dedicated liquid fertiliser nozzles, such as the Hardi Quintastream that produces five jets that penetrate the crop canopy to the ground below.

GROUND RULES FOR NOZZLES

Nozzles may be just small precisely formed pieces of plastic but they have to meet a number of critical functions for effective spraying.

The most important is to regulate the rate at which the spray liquid is applied; too much or too little and you will over or under dose the green.

After much use the metering part of the nozzle may wear so it is important to calibrate regularly and check the actual rate of emission. Modern sprays – unlike the older ones – are unlikely to cause rapid nozzle wear; a bigger wear problem can be caused by sand particles which have been swept from the mains with the water into the tank when filling. But even low wear will cost you dearly so be warned.

Since the rate of nozzle emission is influenced by spray liquid pressure, manufacturers quote ‘rated’ pressures in their literature which you should use. The sprayer needs to have an accurate gauge so that you know the pressure every time you calibrate and spray.

Different nozzle sizes emit smaller or greater quantities of spray liquid so consider what water volume rate you want to use. High volumes might be needed to saturate the ground but using them is very energy and time demanding.

Nozzles also have to distribute the spray so that on a boom you have uniformity of spray all the way across. Optimal distribution is dependent on the right boom height – normally 50cms – above the first point of contact for the spray, be it soil or the top of the grass on the green. If the boom is too high the risk of drift is increased; too low and you can cause striping.

The design of the nozzle influences the spray quality produced using terms that reflect their mean drop size: Fine, Medium, Coarse or Very Coarse. As a rough rule of thumb, Fine and Medium sprays are well retained by plant surfaces while Coarse and Very Coarse can be ideal for soil applications.



▲ Hardi standard flat fan nozzles are colour coded to quickly identify water volume rates and sprayer quality, from fine to very coarse

PERFECT RELIEF NO CONTACT EXPRESS DUAL



**Greener Grass
Faster Greens**

**TEST DRIVE A DUAL
CALL 01788 811600**



SHARPER SOLUTIONS...with BERNHARD
www.bernhard.co.uk



▲ The Quintastream liquid fertiliser nozzle ensures good crop penetration to avoid leaf scorch

NOZZLES FOR ALL AMENITY PRODUCTS

Advice on how to spray is often written onto the product's label and can determine nozzle selection so you will find that you can no longer do every job well with just one nozzle; you may need to have a range of types ready for use at your fingertips.

The label may tell you to use 1000 litres of water for every hectare or it can be as low as 100 l/ha – alternatively it may just say 'use a Medium' quality spray. Whatever is asked – you should try and deliver.

If you are given a range of volume rates or spray spectra then it will be much easier to use the lower water rate to avoid wasting time and energy carrying water. If you can use the larger drop size advised then drift risk will be reduced. Some labels might actually tell you to use LERAP rated nozzles such as the Hardi Injet if you are considering reducing buffer zone widths next to ponds, lakes and streams.

Hardi offers four types of nozzles for pesticide use, all of which will give you the full range of water volume rates needed but produce different spray qualities. In general – use Hardi Standard nozzles for Fine/Medium qualities, LowDrift for Medium and Coarse, Minidrift for Coarse and Injet for Very Coarse. Having identified the spray quality from the label – then found the best nozzle type – look at the nozzle tables to determine which size to use to get the right water rates at your preferred speed.

BENEFIT FROM THE PRODUCT'S APPLICATION ADVICE

Soil applications often advise the use of lower water volumes and coarser spray qualities that will avoid water cartage and reduce the risk of drift.

In contrast, a foliar applied grass weed killer or fungicide may require finer sprays to ensure the spray is retained where needed. Often these

products will work better in lower water volumes but this combination may give you drift problems.

To avoid this, a shrouded boom such as the LERAP 3 Star rated Hardi Defender should be used to virtually eliminate drift.

As a rule, many systemic products used in broad leaf weed control advise the use of Medium spray qualities so are easier and safer to apply than a 'contact' type as you can use larger drops and lower water rates.

However, a 'contact' type product or one that contains one part of a mix with contact action may specify Fine to ensure these drops are retained all over the plant surface.

Labels may also suggest that water volumes are increased when plant canopies become denser and very high water volumes might be recommended where the product needs to reach the soil surface on greens, as the higher volume will run off the leaves to the surface below.

EASY JET USE

Manufacturers have made the selection and use of nozzles much easier now. Bayonet fittings need just one quick flick of the wrist to fit nozzles and line them up automatically whilst colour coding means that at a glance you have the same size nozzles on a boom so you will apply the same dose.

By carrying three or four nozzle sets – one for each of your jobs – on special turrets they can be quickly snapped into position as you go from one use to another.

Even when the wind gets up half way through spraying, by switching nozzles you can simply switch to one with the same output – but producing a coarser spray – and keep spraying, avoiding the need to stop to recalibrate or go back to base.

Nozzles can also be individually turned off so that if you want to reduce the width of your swath as you spray around the outside of the greens, then just turn off those you do not want to spray.

'GREEN'ER SPRAYING

To get the best performance out of your products follow the advice that is offered on the label. In particular, identify any specific dose that you could use for the task in hand rather than use a higher 'catch all' blanket rate and then precisely time your spraying at the growth stage/pest levels described.

Good timing comes only with sound preparation. Calibrate the sprayer with clean water before you start, as you will save time, not delay the application, do a better job and reduce the risks of anything going wrong.

Many reported incidences of drift damage are due to boom heights being excessive. Booms are meant to work at 50cms and also remember to use boom cut-off sections to avoid overlapping a treated area and any ground that is not intended to be treated. You may be concerned at accidentally missed areas; the environmentalists are more concerned at those areas you have overdosed.

Any other advantages from better spraying practices? Wise operators will already know that when they use Very Coarse sprays or shrouded LERAP rated booms such as the Defender, anyone can very clearly see the much reduced drift. Although total volumes may be quite small – like Scottish midges in June – these small losses are becoming hugely troublesome to the bystander!



▲ Flood jets are commonly used on knapsack sprayers as they provide a wide swath and are less prone to nozzle blockages

More information on nozzles, sprayers, calibration and all the latest spraying news is on the Hardi International A/S (www.hardi-international.com) and Hardi Limited (www.hardi.co.uk) websites or write to Hardi Limited at Unit 1 Europark (A5), Watling Street, Clifton-upon-Dunsmore, Rugby CV36 0AQ.



▲ Foliar applied sprays often require a finer spray, which are more prone to drift. A shrouded boom will virtually eliminate this problem