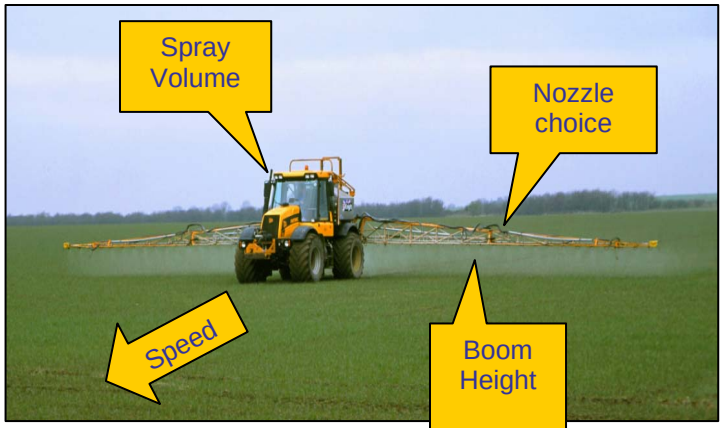
Autumn Spraying Pointers

The reduction in the number of active ingredients available for use and increasing resistance to herbicides and fungicides mean that we have to maximise the efficacy of all crop protection products. At the same time there is a need to minimise the environmental impact of any applied material. The following notes are an aide-memoire to help you get the best out of your sprayer



Limited spray days, especially in the autumn, place great emphasis on achieving high work rates. Increasing forward speed, reducing water volumes and using air induction nozzles can all increase timeliness of applications. But all have an impact on droplet size, coverage on the intended target and ultimately on the efficacy of the pesticide applied. The height of the spray boom is an additional factor that will influence coverage and most importantly spray drift. The 2 pictures below show the dramatic reduction in drift achieved by keeping the boom height at 50cm above the intended target

Using a boom height zip tie allows the boom height to be accurately judged and monitored

Quality of Application: Nozzle selection

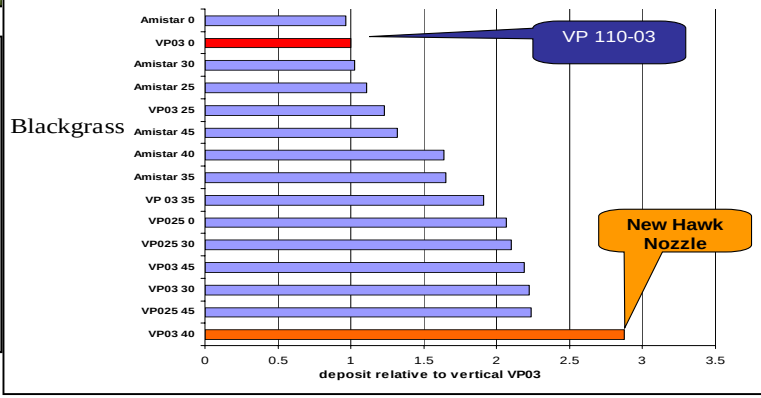
Flat Fan
11003
12 kph
100 L/ha

Air Induction
11003
12 kph
100 L/ha

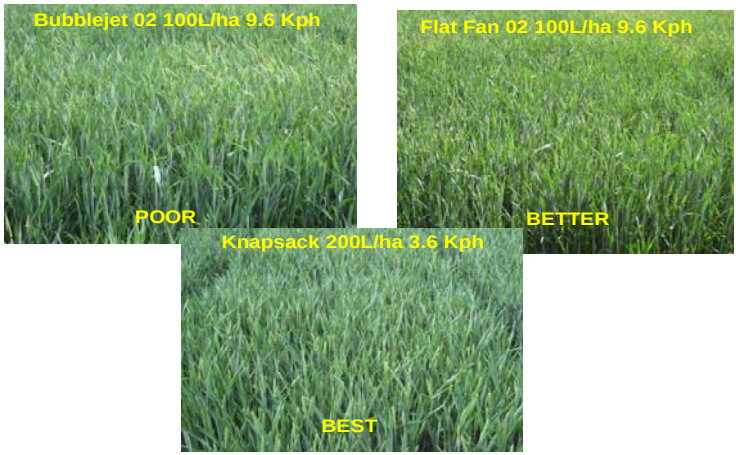
Air induction nozzles are another means to reduce drift and increase the number of available spray days. However, as shown by the pictures of water sensitive paper above they will alter the spray pattern and coverage considerably.
The pattern on the right may be adequate for residual herbicides where the soil is the intended target. But contact materials such as Atlantis being applied to small grass weeds need a fine/medium spray and should NOT be applied with Air Induction, Low Drift, Hollow Cone or other coarse nozzles for optimum efficacy

The graph on the right shows the improvement in spray deposition on small blackgrass plants when the angled Hawk nozzle is used compared with a standard vertical flat fan nozzle.
Spray deposition was improved by a factor of around 2.5.—which could be critical in optimising herbicide efficacy.

Silsoe - Deposition on 2 Leaf Blackgrass



Nozzles & Speed Effects



Forward speed has a major impact on droplet size and consequently target coverage. The slide opposite demonstrates how the control of blackgrass is improved by first switching to a flat fan nozzle and then by reducing the forward speed—in this example a knapsack sprayer in a small plot trial.

Some turbulence of the spray is important if the target is small e.g. 1-2 leaf grass weeds. But doubling the speed of travel will create a four-fold increase in turbulence and too much turbulence will force small droplets to move upwards and miss the target. Going too fast will also create a larger number of smaller droplets at the nozzle tip that will be less able to penetrate a crop canopy. Use slower speeds where it is important to penetrate the spray to the base of crop canopy.

A moving crop will create its own turbulence and will draw finer droplets into the canopy, improving spray coverage. Bare soil does not create this effect and a coarser droplet likely to fall under its own weight to the target is required.

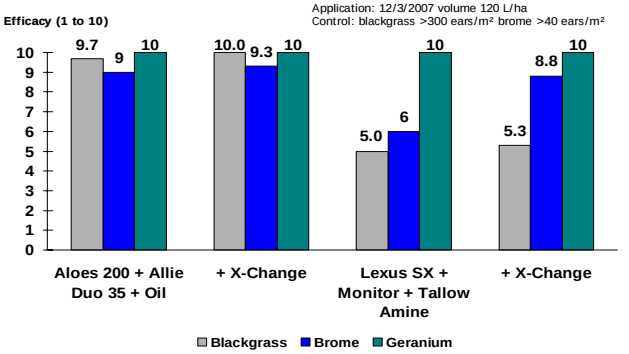
Generally, optimum spray deposition will be achieved with forward speeds in the 9-12 kph range

Adjuvants are products added to the spray mix to improve a pesticide's performance. Water conditioners e.g. X-Change are of interest in hard water areas. In alkaline water p.H. 7.0+ agrochemical performance can be reduced due to alkaline hydrolysis. Products such as pyrethroids, chlopyrifos and phenmedipham can be affected.

Another effect of hard water is that positively charged cations of e.g. Magnesium & Calcium in the water can lock onto a negatively charged pesticide and convert it into an inactive complex thus reducing the amount of active ingredient available and potentially affecting its performance. Products known to be affected in this way are glyphosate, the 'dims' e.g. Laser & Aramo and the sulphonyl urea herbicides e.g. Atlantis

The graph opposite shows some work from France demonstrating that Lexus and a version of Atlantis gave improved weed control when X-Change was used to condition the spray water before the herbicide was added. These benefits may appear small but all add to getting the best out of the product and help to minimise the risk of poor performance—vital when dealing with difficult to control grass weeds

X-CHANGE and Cereal Herbicides



Aloes = Iodosulfuron-methyl-sodium 30 g/kg + Mesosulfuron-methyl 30 g/kg

Allie Duo = Metsulfuron methyl 8.6% + Thifensulfuron-methyl 42.8%

Source: SOUFFLET, France 2007

With residual, soil acting products other adjuvants can be added to the spray mix to improve their performance. Water left to its own devices will follow the path of least resistance in the soil, often resulting in an uneven distribution of product within the upper soil profile.

Organosilicone products e.g. Silwet, SP 057 et al create a more uniform horizontal zone of product spreading the product around the surface of the soil particles.

This effect has a value when using soil insecticides such as chlorpyrifos but may have significant benefits with residual herbicides

Recent trials have shown improvements in blackgrass control of up to 10% with propyzamide and carbetamide.

When dealing with high populations of grass weeds a 10% increase in control could really make a difference!