

## Glyphosate and the use of adjuvants

Pesticides notebook  
by Colin Palmer



### Why use adjuvants?

Glyphosate is our workhorse weedkiller, and with certain limitations is pretty reliable.

However, there are occasions when assistance from an adjuvant can make the difference between a good result and failure. Typically, these will be in showery weather conditions, or for the control of vegetation with a waxy cuticle such as rush, rhododendron or ivy.

The addition of adjuvants will assist by improving rainfastness, helping the glyphosate to spread or stick over the leaf surface, and disrupting the wax platelets to allow more effective penetration into the sap.

### How to choose an adjuvant

There are around 150 adjuvants marketed in the UK, and choosing the best option can be far from easy, unless, such as with Roundup labels, a product, in this case Mixture B NF, is recommended on the label. But what if you are concerned about the operator and environmental hazards associated with this particular adjuvant? How can you identify a suitable alternative?

A possible first port of call is the CRD (The DEFRA/HSE Chemicals Regulatory Directorate) list of approved adjuvants: Visit <https://secure.pesticides.gov.uk/adjuvants/search.asp> and click on "Get results" for a full listing. Providing the adjuvant permits use on non-edible crops, it is then likely that it may be used in forestry. However, there is little guidance on suitability, so for guidance check the suggestions later in these notes.

Adjuvants are regulated by a much lighter touch than pesticides, requiring no data on crop safety or efficacy. The list also excludes products such as dyes and water conditioners which are not classified as adjuvants.

However, there is an element of confusion, as scrutiny of a number of product labels, including Roundup, will throw up the phrase *Do not tank mix Roundup Pro Biactive with adjuvants, pesticides or fertilisers except as advised by Monsanto* - and Mixture B NF is the only adjuvant currently on the Roundup recommended compatibility list. Does this mean that you cannot use any other adjuvant with Roundup? Well ..... no!

On raising the issue with Monsanto, they agreed that the statement was misleading and promised to modify on future labels to clarify that any approved adjuvant may be used - but at the users risk and discretion.

### Some useful adjuvants

#### Mixture B NF / Biosyl

Mixture B NF is a mixture of oil soluble and water soluble chemicals which ease the glyphosate through the cuticle, and then assist with translo-

cation through to the sap stream. The original Mixture B was withdrawn as safety requirements were tightened, and replaced by Mixture B NF which has shown useful performance in use, albeit still with a number of operator and environmental safety concerns.

Biosyl works similarly, but is a little different in that the chemicals used can tackle the 'soft' and 'hard' waxes found in and on waxy leaves.

#### Phase 11 and Toil

These adjuvants are based on rapeseed oil, and as a result have a big plus point in that they present virtually no hazard to operator or environment, and are a cheap and cheerful means of penetrating waxy surfaces. However, they are possibly too good at this function, as this can result in rapid cell damage leading to reduced translocation through the weed.

This disadvantage is overcome by products such as Validate.

#### Validate

Validate is a mixture of rapeseed oil and a lesothin derivative.

The rapeseed oil is as above, while lesothin is a pretty amazing compound which act as a sort of high tech lubricating oil within the plant (and also in human medicine) to assist the herbicide to reach its required destination. Validate has a good operator and environmental profile, and has been successfully used for some years by some forest management companies as an alternative to Mixture B for improved glyphosate performance.

#### T80 and Katalyst

The once popular ethoxylated tallow amines such as Frigate have now left the market due to relatively high aquatic and operator hazard compared with other alternatives, although some products such as Clinic Ace do still have this material in their formulations.

Ethoxylated tallow amines have largely been replaced by the alkoxyated tallow amines such as (Newmans) T80 and Katalyst which have an improved safety profile, but are classified as irritants and harmful as well as being toxic in the aquatic environment - so should be used judiciously.

The big plus point for both types of adjuvants are that they are strongly cationic and strongly assist the glyphosate to bind to the leaf surface for improved rainfastness as well as assisting the herbicide through the leaf cuticle. To explain: Cationic products are positively charged, while the leaf surface is negatively charged. If you cast your mind back to those interminable physics electric charge lessons of your youth, you will recall that like poles repel and unlike poles attract. Hence the value of a cationic product which makes the glyphosate stick to the leaf like iron filings to a magnet.

#### X-Change and Strada

These are water conditioners (and not listed as

Two glyphosate products, but with very different profiles.



**Clinic Ace** is inexpensive and uses highly effective well proven, if dated, technology. **Roundup Probio** is a premium product with modern adjuvants having superior operator and environmental characteristics. But which works best in showery conditions? Following field trials, Confor hopes to tell you later in the year.

adjuvants) and are particularly useful with some glyphosate products such as Clinic Ace, but also with Roundup products in hard water areas.

They work by preventing the glyphosate being deactivated by cationic metals such as the calcium, magnesium, iron and aluminium ions found particularly in hard water. To be effective, they **MUST** be added and thoroughly mixed prior to adding the glyphosate.

### What not to add

Do not add silicon wetters such as Slippa and Silwett - these antagonise the glyphosate and reduce effectiveness.

Anionic wetters will prevent the glyphosate adhering to the leaf surface.

## Handling guidance

There has been confusion in recent months, regarding the requirement for training when handling trees treated with pesticides, plus a requirement to ventilate all bags of treated trees for an hour.

This was leading to guidance that anyone planting treated trees, must hold a PA1 certificate, which is designed for individuals applying pesticides, which would have had a huge cost implication.

Working with our members and Colin Palmer, we have prepared an alternative proposal which has now been accepted by HSE.

This proposal, which focussed on awareness raising and PPE will now be developed further, and will hopefully be part of the FISA guidance note revision process. The requirement for ventilation of planting bags, has been fine tuned to only apply to trees treated with Alpha C 6ED.

This is an important result for Confor, and demonstrates the value of coordinating the industry and working with experts and the regulator, to get the desired result **Andrew Heald**

### CONFOR | CHEMICAL ADVICE HELPLINE

Confor members may contact Colin Palmer for free advice and information on pesticides. Call 01531 633500 or email to [forestry@branchline.demon.co.uk](mailto:forestry@branchline.demon.co.uk)