



Adjuvants

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Adjuvants are a group of substances that can be added to the spray tank to modify a pesticide and/or spray mixture's performance. If there are application issues with the equipment or product, then adjuvants can help to overcome these, providing enhanced efficacy. Although adjuvants are not classed as pesticides, they need to be registered with CRD because they are modified chemicals.

Adjuvants can minimise or eliminate issues with pesticides such as incompatibility, instability, foaming, drift, evaporation, volatilisation, degradation, adherence, penetration, surface tension and coverage. They are designed to perform functions such as wetting, sticking, spreading, emulsifying, buffering and dispersing. They may also have some positive effect on managing water hardness. However, no one adjuvant can do all these things – there are no miracle products. It is generally wise to ignore claims such as “keeps spray equipment clean” or “causes better root penetration”.

Make sure the adjuvant has been thoroughly tested and proven; test new products on a limited crop area before full-scale use. Certain pesticides need certain types of adjuvants. Use the correct type and use only an adjuvant of that type. Do not substitute an anionic type of surfactant when a non-ionic type is recommended. Check pesticide and adjuvant labels to make sure an adjuvant is suitable for the site and crop you plan to spray, the target pest, your equipment, and, of course, the pesticide you plan to use. Some pesticides have additional restrictions on product choice, to limit the risk to the environment.

Always check the pesticide label before using an adjuvant. Some products may already have them incorporated into their final solution e.g. emulsifiable concentrates. Other pesticides can have restrictions on what can be used, sometimes for reasons such as risk to the environment or to the crop. If a pesticide is formulated properly for your crop, using a wetter-spreader may not give better spreading or coverage. Rather, it could increase runoff, reduce deposit, and even severely damage the target plants.

Correct use of adjuvants does require some knowledge. If you know your particular needs and the limitations of the products you intend to use, adjuvants can prove to be a positive addition to the spray tank.

Use only adjuvants manufactured and marketed for horticultural uses. Do not use industrial products or household products with pesticides as they may contain other substances which may interfere with pesticide performance and may also not be approved.

Use plant protection products safely. Always read the label and product information before use

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The key adjuvant categories are as follows:

Acidifiers

These lower the pH of a pesticide product.

Acidifiers include Guide, Li-700 and Spraymac.

Buffers

These tend to stabilise the pH at a constant level. Most pesticide solutions are stable between pH 5.5 and 7.0. Pesticides diluted with hard water do not always penetrate the tissue so effectively.

Buffers include Companion Gold.

Compatibility agents

Products that facilitate more uniform mixing of liquid fertiliser and pesticides, or mixing of two or more pesticides in a tank mix with any liquid carrier.

Crop oils

Petroleum- or vegetable-based product generally containing 2% emulsifier and 98% oil.

De-foaming agents

Some pesticides cause foaming in the tank. This can be the result of the type of surfactant used or tank agitation. A de-foaming adjuvant can suppress both surface foam and trapped air in the spray mixture.

De-foamers include Companion Gold.

Drift retardants

Products used in spray mixtures to reduce drift. Include Silwet-L77, Designer, Li-700 and Guide.

Plant penetrants

Products that enhance a liquid's ability to penetrate plant roots, leaves, and stems. They can be quite specific to plant types. Some herbicides and translocated fungicides can be enhanced by penetrants.

Penetrants (for general crops) include Guide, Headland Fortune, Headland Intake, Katalyst, Li-700, Torpedo II and Wetcit.

Stickers

Adjuvants that increase the adhesiveness of finely divided solids to solid surfaces. They also decrease the amount that is washed off by rain or irrigation, reduce evaporation and in some cases, reduce the UV degradation.

Stickers include Addit, Asu Flex, Bio Syl, Biofilm, Biothene, Bond, Broad Flex, Companion Gold, County Mark, Designer, Desikote Max, Eco-Flex, Elan Xtra, Gateway, Gly-Flex, Gly Plus A, Grenadier, Headland Guard Pro, Impala, Intracrop Agwet GTX, Intracrop Boost, Level, Meco Flex, Nu Film P, Profit Oil, Sprayfast, Spray-Fix, Spraygard, Stika and Zigzag.

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Surfactants

These modify surface tension. Surfactants can influence the wetting and spreading of liquids, and can modify the dispersion, suspension, or precipitation of a pesticide in water. For a spray droplet to perform properly it must be able to wet the foliage and spread evenly over the surface. These products alter the size of the droplet and enlarge the area of coverage which is important for waxy and hairy leaves. There are non-ionic surfactants (no electrical charge), anionic surfactants (negative charge), and cationic surfactants (positive charge). Non-ionic products are used mostly with systemic products to help penetration. Cationic products are for specific purposes and should not be used generally.

Non-ionic surfactants include Activator 90, Mixture B NF, Intracrop Questor, Intracrop Saturn, Planet, Solar, Spraymac and X-Wet. Cationic surfactants include Jogral and Ryda.

Thickeners

Adjuvants that increase the viscosity of a spray mixture.

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