



Adjuvants Enhance Herbicide Performance

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Adjuvants are commonly used in agriculture to improve the performance of pesticides. Broadly defined, an adjuvant "is an ingredient that aids or modifies the action of the principal active ingredient."

The use of adjuvants with agricultural chemicals generally falls into two categories: formulation adjuvants (present in the container when purchased by the dealer or grower) and spray adjuvants (added along with the formulated product to a carrier such as water).

The liquid that is sprayed over the top of a crop, weeds, or insect pest often will contain both formulation and spray adjuvants.

Formulation adjuvants are added to the active ingredient for a number of reasons, including better mixing and handling, increased effectiveness and safety, better distribution, and drift reduction. These traits are accomplished by altering the solubility, volatility, specific gravity, corrosiveness, shelf

life, compatibility, or spreading and penetration characteristics.

With the large number of formulation options available (solutions, emulsions, wettable powders, flowables, granules, encapsulated materials, etc.), adjuvants become even more important in assuring consistent performance.

Spray adjuvants are added to the tank to improve pesticide performance. Literally hundreds of chemical additives are now available that fall into this category. Spray additives can broadly be grouped into two categories: activator adjuvants that include surfactants, wetting agents, stickers-spreaders, and penetrants, and special purpose or utility modifiers such as emulsifiers, dispersants, stabilizing agents, coupling agents, co-solvents, compatibility agents, buffering agents, anti-foam agents, drift retardants, nutritional, etc.

Descriptions of the more common types of special purpose adjuvants follow and Table 1 lists some common products sold for these purposes.

Table 1. Selected trade names and manufacturers of special purpose adjuvants

Trade Name	Manufacturer
Compatibility agents	
Blendex	Helena
Combine	Riverside/Terra
E-Z Mix	Loveland Industries
Mix-Aid	Agway
Spray-Aide	Miller Chemical
Latron AG44M	Rohm and Haas
Unite	Loveland Industries
Drift reduction	
38F	Loveland Industries
Lo-Drift	Rhone-Poulenc
Nalco-Trol	Nalco Chemical
Chem-Trol	Loveland Industries
Sta-Put	Nalco Chemical Company
Target NL	Agway
Windfall	Riverside/Terra
Anti-foaming agents	
DeFoamer	Riverside/Terra
D-Foamer	Agway
Foam Buster	Helena
The Unfoamer	Loveland Industries
Buffers	
Buffer P.S.	Helena
Buffer Xtra Strength	Helena
Combine	Riverside/Terra
Latron AG-44M	Rohm and Haas
LI-700	Loveland Industries

ally organic phosphatic acid esters that are anionic and form emulsions resistant to strong salt concentrations. Unless the pesticide label states that it can be mixed with liquid fertilizers, a compatibility agent should be included.

Buffering agents — Buffers usually contain a phosphate salt which will maintain a slightly acid pH when added to alkaline waters. Citric acid has more recently been promoted for this purpose. These are added to higher pH solutions to prevent alkaline hydrolysis of some organic phosphate and carbamate insecticides.

Antifoam agents - Are added to suppress surface foam and minimize air entrapment that can cause pump and spray problems. Defoamers are usually silicones or siloxanes.

Drift reduction (thickeners) — These modify spray characteristics to reduce spray drift by minimizing small droplet formation. Drift inhibitors are generally polyacrylamide or polyvinyl polymers.

Activator Adjuvants

Activator adjuvants are by far the most common type of additives used to enhance herbicide performance.

Although some products are

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Special Purpose Adjuvants
Compatibility agents — Allows simultaneous applica-

tion of two or more ingredients. Most often used when herbicides are applied in liquid fertilizer solutions. These are gener-

President's Message

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your county agent about the 5 Acre Corn Club yield contest. You must be entered by July 1. We hope to see you at Ag Progress Days in August, if not before.

I think we are ready for the challenges of 1993. The course is somewhat familiar, though some of the hurdles may surprise us. We can be sure of one thing — the type of corn grower we will be tomorrow is being forged by the melting pot of experiences we face today.

Sincerely,

H. Grant Troop
PMCGA President

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