



# Adjuvants

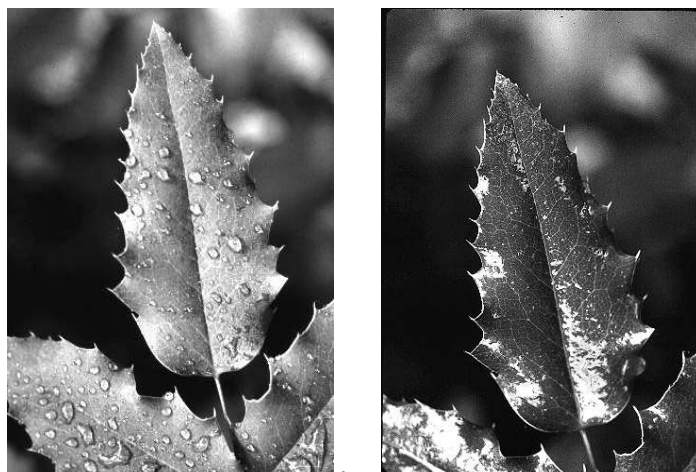
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**INTRODUCTION:** Adjuvants are substances added to the spray tank to modify a pesticide's performance, the physical properties of the spray mixture, or both. The right adjuvant may reduce or even eliminate spray application problems, thereby improving overall pesticide efficacy. Adjuvants themselves have no pesticidal properties. Some researchers claim that up to 70% of the effectiveness of a pesticide depends on the effectiveness of the spray application. Adjuvants can minimize or eliminate many spray application problems associated with pesticide stability, solubility, incompatibility, suspension, foaming, drift, evaporation, volatilization, degradation, adherence, penetration, surface tension, and coverage. Adjuvants are designed to perform specific functions, including wetting, spreading, sticking, reducing evaporation, reducing volatilization, buffering, emulsifying, dispersing, reducing spray drift, and reducing foaming. No single adjuvant can perform all these functions, but different compatible adjuvants can be combined to perform multiple functions simultaneously.

**Surfactants.** Also called wetting agents and spreaders, physically alter the surface tension of a spray droplet. Surfactants are particularly important when applying a pesticide to waxy or hairy leaves (Figure 1).

**Stickers.** A sticker is an adjuvant that increases the adhesion of solid particles to target surfaces. These adjuvants can decrease the amount of pesticide that washes off during irrigation or rain. Stickers also can reduce

evaporation of the pesticide and some slow ultraviolet degradation of pesticides.



*Figure 1 Holly leaves with (right) and without (left) surfactant. Note droplets of water on control.*

**Extenders.** Extenders function like stickers by retaining pesticides longer on the target area, slowing volatilization, and inhibiting UV degradation.

**Compatibility agents.** Pesticides are commonly combined with liquid fertilisers or other pesticides. However, certain combinations can be physically or chemically incompatible, causing clumps and uneven distribution in the tank. A compatibility agent may eliminate these problems.

**Thickeners.** Thickeners increase the viscosity of spray mixtures. These adjuvants are used to control drift or slow evaporation after the spray has been deposited on the target area.