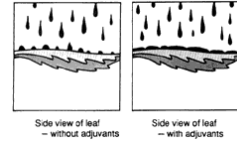


BIO-90™ Nonionic Surfactant and Antifoaming Agent	FOAM-DYE™ Concentrate for Higher Visibility Foam
Principal Functioning Agents Alkylphenol ethoxylate, propylene glycol, tall oil fatty acids...90.0% Constituents ineffective as spray adjuvants.....10.0% Total.....100.0% <small>All ingredients are exempt from the requirements of a tolerance under 40 CFR 180.</small>	CA Reg. No. 4 WA State Reg.
BUFFER-X® pH Buffer-Spreader-Activator	
Principal Functioning Agents Alkylaryl/polyethoxyethanol, free and combined fatty acids, glycol ethers, di-alkyl benzenedicarboxylate, isopropanol.....74.5% Constituents ineffective as spray adjuvant.....25.5% Total.....100.0% <small>All ingredients are exempt from the requirements of a tolerance under 40 CFR 180.</small>	

Adjuvants

- A material added to a tank-mix intended to modify the activity of a herbicide or the physical characteristics of the mixture
 - Utility Modifier Adjuvants
 - Activator Adjuvants



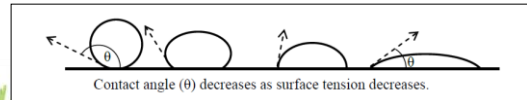
- Increase herbicide efficacy
- Increase foliar wetting
- Increase resistance to rain
- Increase penetration
- Improve compatibility
- Increase crop safety
- Reduce drift hazard
- Decrease volatility

Adjuvants

- Utility Modifier
 - Compatibility Agents
 - Defoaming Agents
 - Drift Control
 - Deposition Agents
 - Water Conditioning
 - Acidifying Agents
 - Buffering Agents
 - Colorant
- Activators
 - Wetter-Spreader
 - Sticker Adjuvants
 - Humectants
 - Penetration Agents
 - Herbicide Modifiers

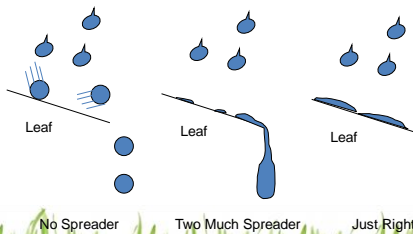
Activator Adjuvants

- Wetter-Spreaders
 - Reduce droplet contact angle, allowing droplets to spread out to cover more surface area
- Stickers
 - Help keep products on leaf surface
- Humectants
 - Retain moisture to keep more herbicide bioavailable
- Penetrants
 - Break through leaf cuticles and allows for herbicide absorption



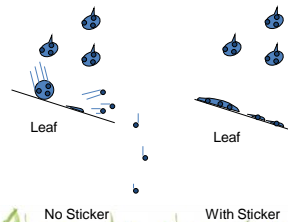
Wetter/Spreader

- Reduces water surface tension



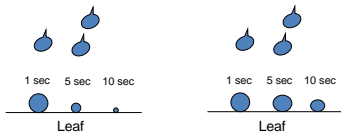
Stickers

- Increase stickiness of particles



Humectants

- Decrease evaporation of droplets



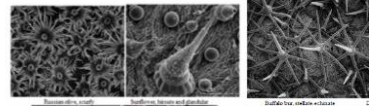
No Sticker

With Sticker



Penetrants

- Break down waxy barrier to absorption



Examples

- Non-ionic surfactants
 - No net electrical charge
 - Water is polar and non-ionic surfactants won't interfere with polarity of water
- Crop oils
 - Used when AI is oil soluble
 - Enhance foliar activity
 - EX: Atrazine/ crop oil for enhanced control of quackgrass in corn
- Organosilicone surfactants
 - Penetrants
 - Rain-fastness

