



**How to choose the correct adjuvant and when you should consider their use. Correct tank mixing sequences.**

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# What I will cover

- **Adjuvant purpose – Activator or Utility?**
- **Plant morphology and crop growth**
- **PPP specific adjuvant needs**
- **Utility adjuvant choice**
- **Tank mixing and sequence**

# Adjuvant purpose

- ✓ Most important consideration
- ✓ Legality of use of the adjuvant with the PPP
- ✓ Crop risk considerations
- ✓ Spray equipment, water volumes and spray quality
- ✓ Water quality and spraying conditions



# Plant morphology and crop growth





# PPP specific needs

- ✓ READ THE LABEL AND THE EAMU!
- ✓ Formulation of the product
- ✓ Active substance nature!
- ✓ Mode of Action and Group



Mode of Action	Mode of Action	Mode of Action
1 Inhibition of Acetyl CoA Carboxylase (ACC)	13 Inhibition of Cytochrome b5 reductase (CPR)	25 Inhibition of Glucanase (GLC)
2 Inhibition of Acetylcholinesterase (AChE)	14 Inhibition of Cytochrome P450 (CYP450)	26 Inhibition of Glucanase (GLC)
3 Inhibition of Amino Acid Transporters (AAT)	15 Inhibition of Cytochrome P450 (CYP450)	27 Inhibition of Glucanase (GLC)
4 Inhibition of Amino Acid Transporters (AAT)	16 Inhibition of Cytochrome P450 (CYP450)	28 Inhibition of Glucanase (GLC)
5 Inhibition of Amino Acid Transporters (AAT)	17 Inhibition of Cytochrome P450 (CYP450)	29 Inhibition of Glucanase (GLC)
6 Inhibition of Amino Acid Transporters (AAT)	18 Inhibition of Cytochrome P450 (CYP450)	30 Inhibition of Glucanase (GLC)
7 Inhibition of Amino Acid Transporters (AAT)	19 Inhibition of Cytochrome P450 (CYP450)	31 Inhibition of Glucanase (GLC)
8 Inhibition of Amino Acid Transporters (AAT)	20 Inhibition of Cytochrome P450 (CYP450)	32 Inhibition of Glucanase (GLC)
9 Inhibition of Amino Acid Transporters (AAT)	21 Inhibition of Cytochrome P450 (CYP450)	33 Inhibition of Glucanase (GLC)
10 Inhibition of Amino Acid Transporters (AAT)	22 Inhibition of Cytochrome P450 (CYP450)	34 Inhibition of Glucanase (GLC)
11 Inhibition of Amino Acid Transporters (AAT)	23 Inhibition of Cytochrome P450 (CYP450)	35 Inhibition of Glucanase (GLC)
12 Inhibition of Amino Acid Transporters (AAT)	24 Inhibition of Cytochrome P450 (CYP450)	



# PPP specific needs



## THIOPRON®

MAPP No. 19147  
MARCH 2022

### TANK-MIX COMPATIBILITIES

Please note that the following tank mixes have been tested for physical compatibility with **THIOPRON** at recommended rates of use and will mix in the sprayer tank. Physical compatibilities may not be approved tank mixes. These tests have not been undertaken to check for any adverse crop phytotoxicity or for the biological efficacy of the individual products when applied as a tank-mix. UPL Europe Ltd (UPL) accepts no liability for physical compatibilities; therefore use is at grower's own risk.

UPL will support the tank mix of **THIOPRON** with any one of the following products.

#### FUNGICIDES

Adekas	Consul	<b>IDDUS</b>	Mirror	Sakura	Toledo
Affix	Decoy 250 EC	Jaunt	Myresa	Serpent	Topguard
Amistar	Elatus Era	Justice	Mystic	Silra Xpro	Tucana
Angle	Elatus Plus	Juventus	Ortus P	Silver Xpro	Univoq
Asira Xpro	Escolta	Karma	Phoenix	Skyway 285 Xpro	Vantaro Xpro
Aviator 235 Xpro	Flyer 200	Kavatur Plus	Priavor EC	Swift SC	Vegas
Bogile Xpro	Helix	Kestrel	Priori Gold	Synex	Vivando
Bogile Xpro Plus	Impact	Lamyor Duo	Proline	Talus	Zephyr
Ceratavo Plus	Imtrex XE	Librae	Prosano	Tobacur 250	
Concorde	Imtrex	Mirador Xtra	Revystar XE	<b>TOKYO</b>	

#### PLANT GROWTH REGULATORS

3C Chloromequat 75D	Canopy	Flagstaff	Terpal
Adjust	Chlormephon	Moddus	
Bogota	Cleancrop Alatrín Evo	Pallade	

#### NUTRITION / BIOSTIMULANTS

<b>ARY-AMIN</b>	GroPlan P	NP PGA	Proleaf Manganese Extra
BridgeWay	Human 250	PreKacid	Proleaf Quattro
Cosarim	Magistrate	Proleaf Boron 15	Proleaf Rock
Copper (FMC)	Master mag TE	Proleaf Gate	Tytant
Epsotop	Mensa CU	Proleaf Jettain	

#### HERBICIDES

Ally Max SX	Easel	Chello	Topik
Ambicet	Hatra	Pacific plus	Zypar
Axial Pro	Horus	Palko	
Broadway Star	<b>MINISTREL</b>	Prostar EC	
Duplosan KV	Monleth	Starane Hi-Load	

#### INSECTICIDES

Aphok	Kusti	Sumi-Alpha	Teppeli
Clayton Sparta	Mavrik	Sven	

#### ADJUVANTS

Activator 90	Arma	Biopower	Tonto
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Page 1 / 4

Do not mix with wetters, stickers or other authorised adjuvants.

When applying 'Amistar' 'Amistar' should not be mixed with any adjuvant. Do not apply 'Amistar' at temperatures...

AQ10 works best if applied when the humidity is high, such as early morning or late evening. It is recommended that AQ10 is applied with Nu Film P (adjuvant A0635) at a rate of 0.3 litres/ha. The efficacy of AQ10 may be improved when applied using this adjuvant.

Spray when aphids are first seen. Repeat if necessary. Add a non-ionic surfactant adjuvant that is not an organosilicone in accordance with the manufacturer's instructions.

Overdosing can result in transient yellowing of leaves, especially where high rates of a composting or wetting agent have been used.

# PPP specific needs

- ✓ Water conditioning
- ✓ Know your water parameters
- ✓ Stability and miscibility





# Utility adjuvant choice

- ✓ Single purpose adjuvants are easy to use
- ✓ Multi-purpose adjuvants are risky
- ✓ Often too many benefits = poor result
- ✓ Many require good knowledge of chemistry





# Utility adjuvant choice





# Utility adjuvant choice





# Utility adjuvant choice

## Anti-evaporants:



### Spray droplets

Without anti-evaporants



With anti-evaporants

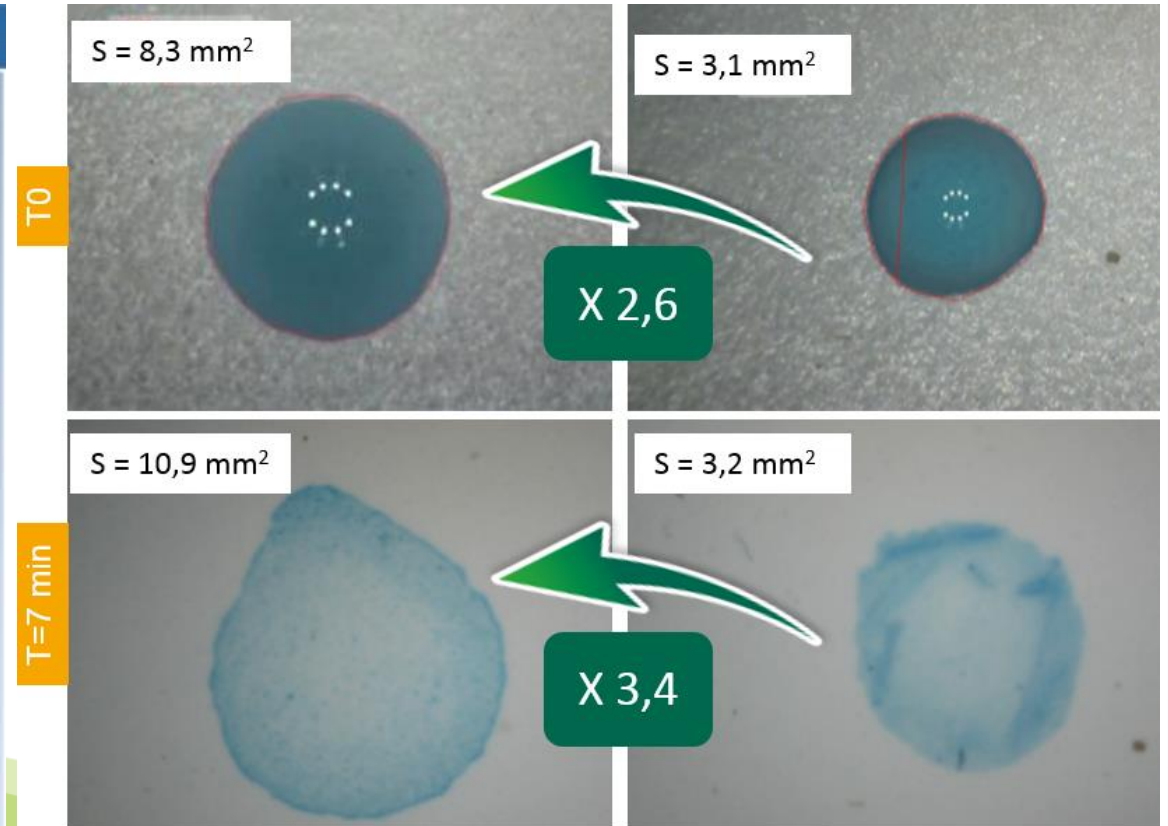


The addition of WUXAL<sup>®</sup> foliar fertilizer efficiently reduces evaporation time of the spray solution. Applied spray mixture remains plant available.

**BENEFIT:** Quick absorption and higher application efficiency

## KARMA

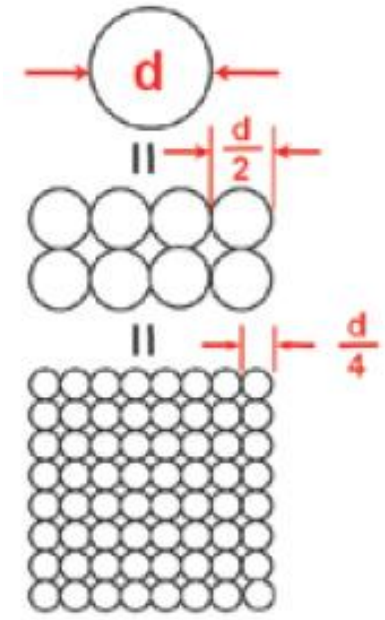
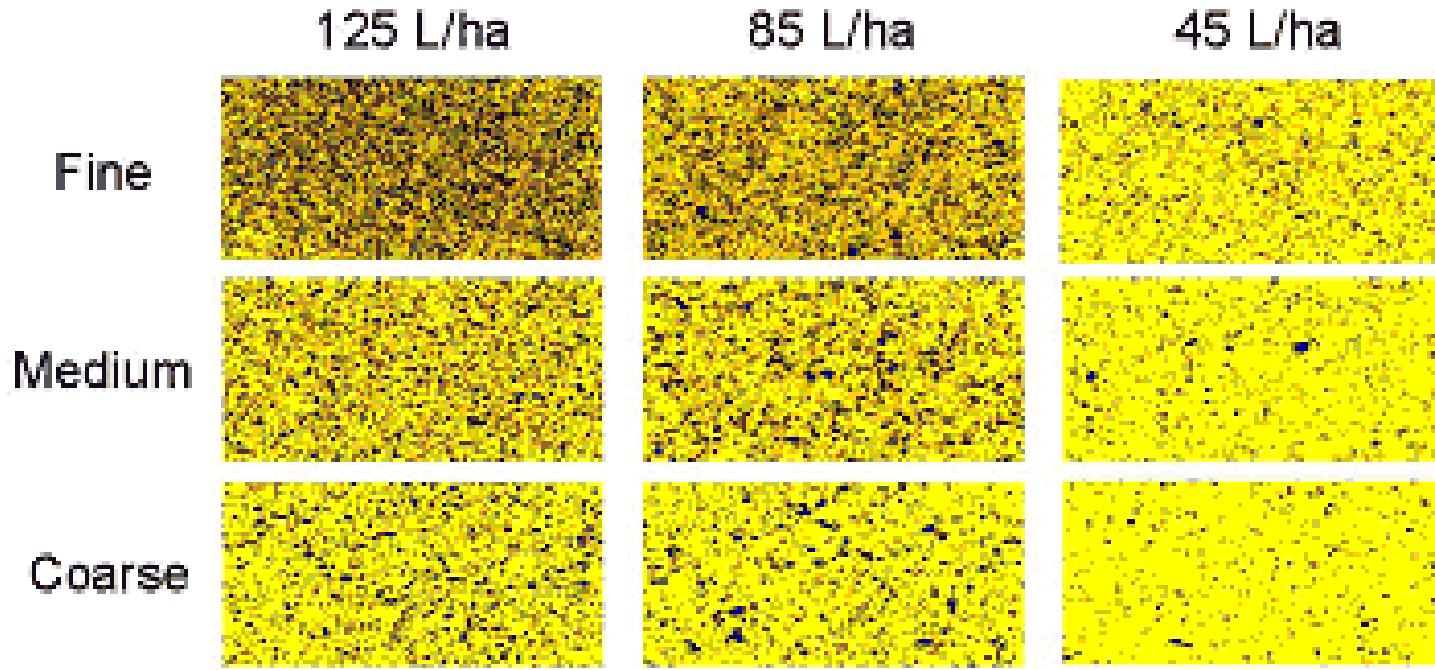
## Pot.bicarb + adjuvant



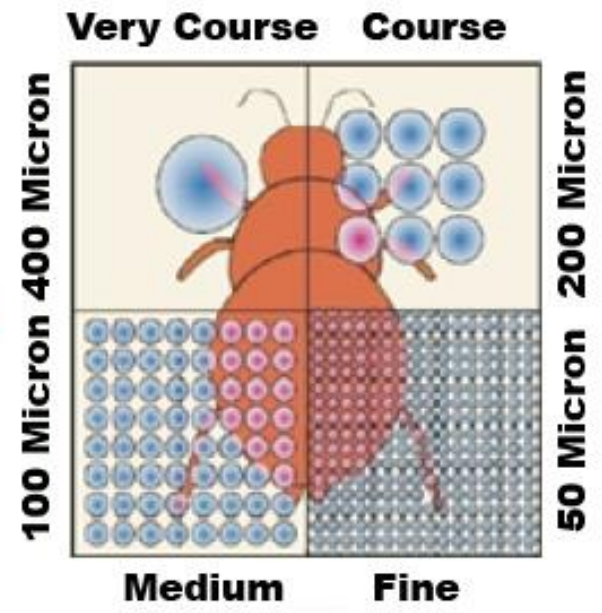
Dose : 5 Kg/ha dans 200 L

Dose : 5 Kg/ha dans 200 L

# Utility adjuvant choice



Size and quantity of droplets for the same volume of liquid.



Matthews, 2000; Hardi, 2003



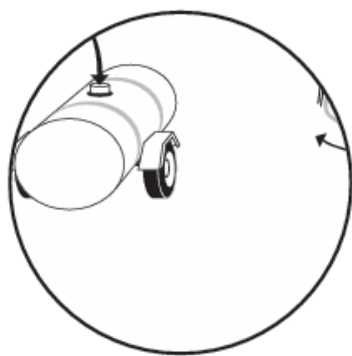
# Tank mixing and sequence

## TANK MIXING BEST PRACTICE

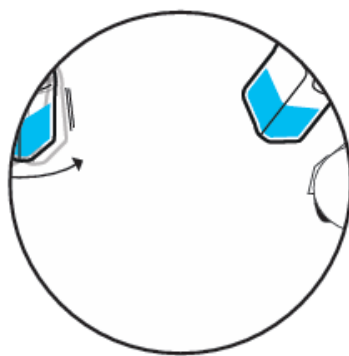
Suspension concentrate (SC) formulations are a solid active ingredient dispersed in water and/or other solvents. Prior to use, it is recommended for SC products to be thoroughly agitated by vigorous shaking of the container. For optimum product performance please follow the guidelines below and adhere to the D.A.L.E.S guidance for tank mixing.



**1.** Shake full container vigorously before opening.



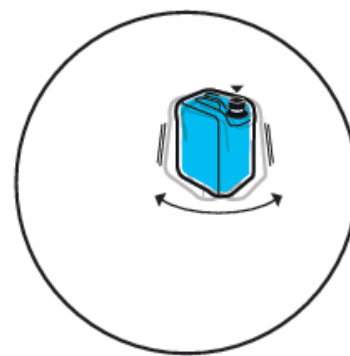
**2.** Empty ½ of the container into the tank.



**3.** Close and shake up the rest of the container.



**4.** Empty the rest of the container into the tank.



**5.** Triple rinse the container, drain and dispose of appropriately according to the recommendations on the label.

# Tank mixing and sequence



Other	1		Add any required water conditioners
Solids	2	WG	Water Dispersible Granules less than 100g/ha
	3	WB	Water Soluble Bags
	4	WG	Water Dispersible Granules more than 100g/ha
	5	WP	Wettable Powders
Liquids	6		Compatability Agent
	7	SC	Suspension Concentrate
	8	SE	Suspo-Emulsion
	9	EW	Oil in Water Emulsion
	10	EC	Emulsifiable Concentrate
	11	SL	Soluble Concentrate
	12		Other Adjuvants
Other	13		Micro-nutrients / Foliar feeds

# SUMMARY

- **PURPOSE**
- **LOCATION OF TARGET**
- **PLANT MORPHOLOGY AND CROP GROWTH**
- **CROP SITUATION**
- **PLANT PROTECTION PRODUCTS**
- **TIMING OF APPLICATION AND WEATHER CONDITIONS**
- **WATER QUALITY AND SPRAY QUALITY**
- **TANK MIXING AND SEQUENCE**
- **APPLICATION AND WATER VOLUME**

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