

What is a good Adjuvant? Adjuvants play an important part in improving efficacy and reducing loss of crop protection products in the field. Several different mechanisms and functionalities are involved; to help choose the optimal solution for your needs, Nouryon has divided and measured the different functionalities.

Adsee AB 650 (tank-mix) and Adsee AB 615 (in-can) are multipurpose adjuvants with good bio-efficacy improvement for all pesticides

Our Adsee™ product portfolio contains a variety of solutions to increase bio-efficacy of pesticides by improving functionalities such as droplet retention, rain fastness, drift and penetration.

- Adsee AB 650 (tank-mix) and Adsee AB 615 (in-can) are multipurpose adjuvants with good bio-efficacy improvement for all pesticides
- Adsee C80W and Adsee C-70A is a new range of adjuvants suitable for most actives and are highly compatible with different herbicide salts and mixtures
- Ethylan 995 is superior with Triazoles
- Adsee 611 is a special development for Rice protection and Adsee 1250HV increases viscosity and bio-efficacy for Paraquat

- Adsee 978 is our choice for Peat & Turf applications with excellent re-wetting properties
- Adsee 900 can be used as a tank-mix or built-in adjuvant. A good wetting agent and increases penetration of many actives with logP>1

Functionalities	Methods
Drift	Particle size analyzer (<150 µm)
Retention	Tilted Plate method (run off angle)
Wetting	Draves test Contact angle
Rain fastness	Rain flush over dry droplets
Humectancy	Moisture uptake
Penetration	Franz diffusion cell Greenhouse/Field trials

Adjuvant	Drift	Retention	Wetting	Rain fastness	Humectancy	Penetration	Use
Adsee™ 611	-	+	+	0	++	+++ Rice	Tank-mix
Adsee™ 900	--	++	+++	0	+	+++ High LogP	In can
Adsee™ 973		++	0	+	++	+++ Low LogP	In can
Adsee™ 1250HW	+	+		+++	++	+++ Paraquat	In can
Adsee™ 978	-	+++	+	0	+	0	In can
Adsee™ AB 615	-	+++	++	0	+	+++ Multi	In can
Adsee™ AB 650	0	+++	++	0	+	+++ Multi	Tank-mix
Adsee™ C-70A	-	+	0	+	++	+++ Multi	In can
Adsee™ C80W	-	++	0	+	+	+++ Multi	In can
Ethylan® 995	++	++	++	++	0	+++ Fungicide	In can

Impact: - negative, 0 = no impact, + good, ++ very good, +++ outstanding

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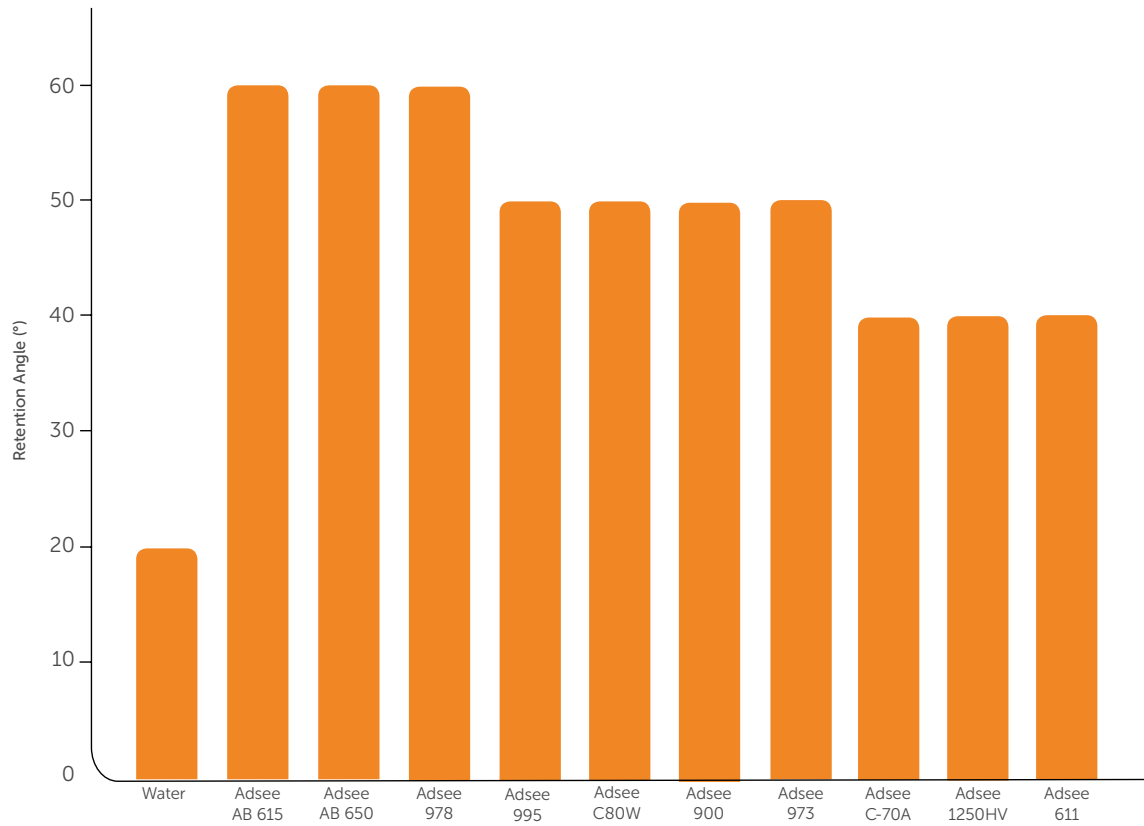
# Retention angle

Good retention of droplets on plants is important to avoid pesticide loss that can reduce the efficacy of the formulation.

Adsee DR22 is a bio-polymer that is outstanding in reducing drift and improving retention/deposition but does not affect the penetration through cuticle.

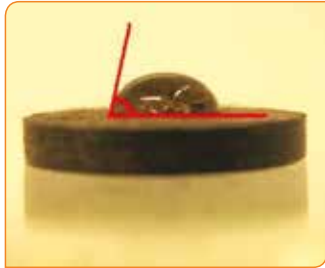
Adsee AB 650 increases retention at the same level and improves penetration without reducing drift.

The retention angle is measured by the "Tilted plate" method. A parafilm surface is tilted and the max angle is recorded were a water droplet, containing 0,5% adjuvant, sticks to the surface without any run-off.

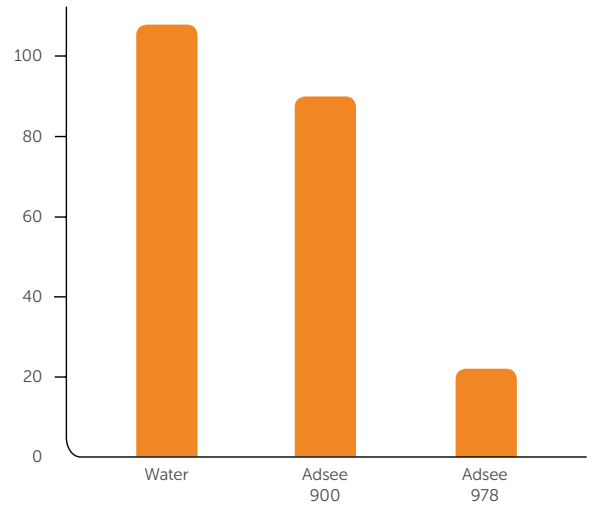


## Contact angle of water on pre-treated peat

Adsee 978 is suited to turf & peat applications with excellent re-wetting properties. The graph shows the contact angle of a water droplet on peat after treatment with the adjuvant. In addition, Adsee 978 has shown to have minimal impact on root and grass toxicity.



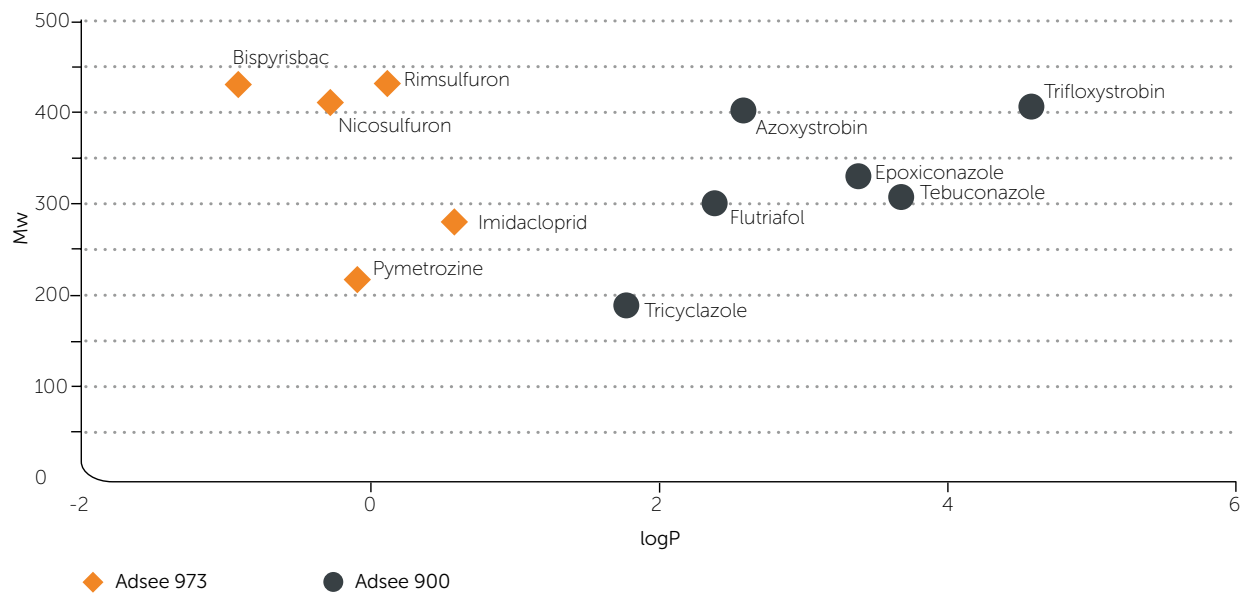
Drop on a peat tablet, the red lines indicating how the contact angle is measured.



## Field trial results

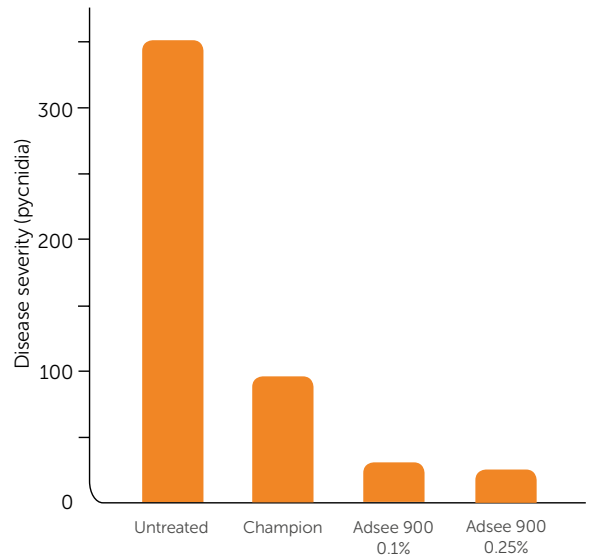
Adsee 900 and Adsee 973 increase bio-efficacy and penetration of most pesticides dependent on the water solubility (log P) of the active. (As reference, Glyphosate

has a logP of -4,6). The data shows the best adjuvant rated from field and green house trials.



## Adsee 900 greenhouse trial

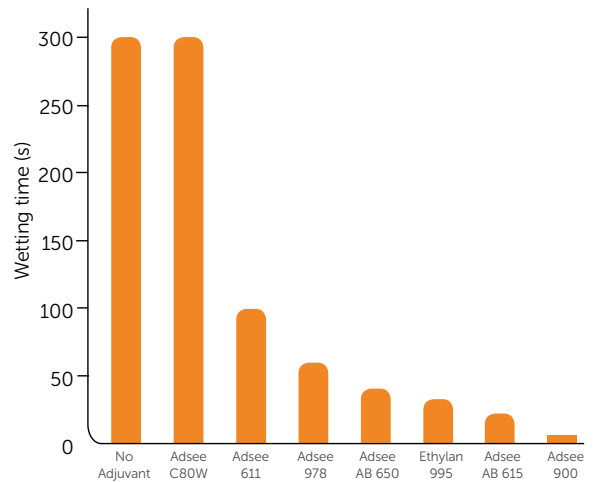
Adsee 900 was added to the fungicide formulation Champion (epoxiconazole + boscalid). Wheat was inoculated with *Septoria tritici* and treated with Champion, Champion + 0,1% Adsee 900 and Champion + 0,25% Adsee 900. Disease severity was assessed by counting the amount of pycnida. The graph shows that addition of 0,1% of Adsee 900 increase the efficacy of Champion by 20%.



## Wetting properties

Wetting properties of different adjuvants according to Draves test. The time it takes for a piece of yarn to sink to the bottom of a cylinder containing a solution of 1% adjuvant in distilled water is measured (max 300 sec).

The data shows that Adsee 900 is the adjuvant with best wetting properties.



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