



ReTenol

**RETAINER  
FIXATIVE  
ANTI-DRIFT**

**QUALITY IN FOLIAR TREATMENTS**

# RETAINER—FIXATIVE—ANTI-DRIFT CHARACTERISTICS

- Origin: Pine resin derivative 100% natural origin
- Obtained from pine resin
- *Emulsifiable concentrate (EC)*
- No PreHarvest Interval (PHI), only that of the plant protector applied with it
- Approved for Organic Farming

- **RETAINER**

  - Increases the amount of active substance on the plant.

- **FIXATIVE**

  - Increases resistance to active substance washing.

- **ANTI-DRIFT**

  - Homogenises droplet size, reducing drift.

# RETENOL: RETAINER (I)

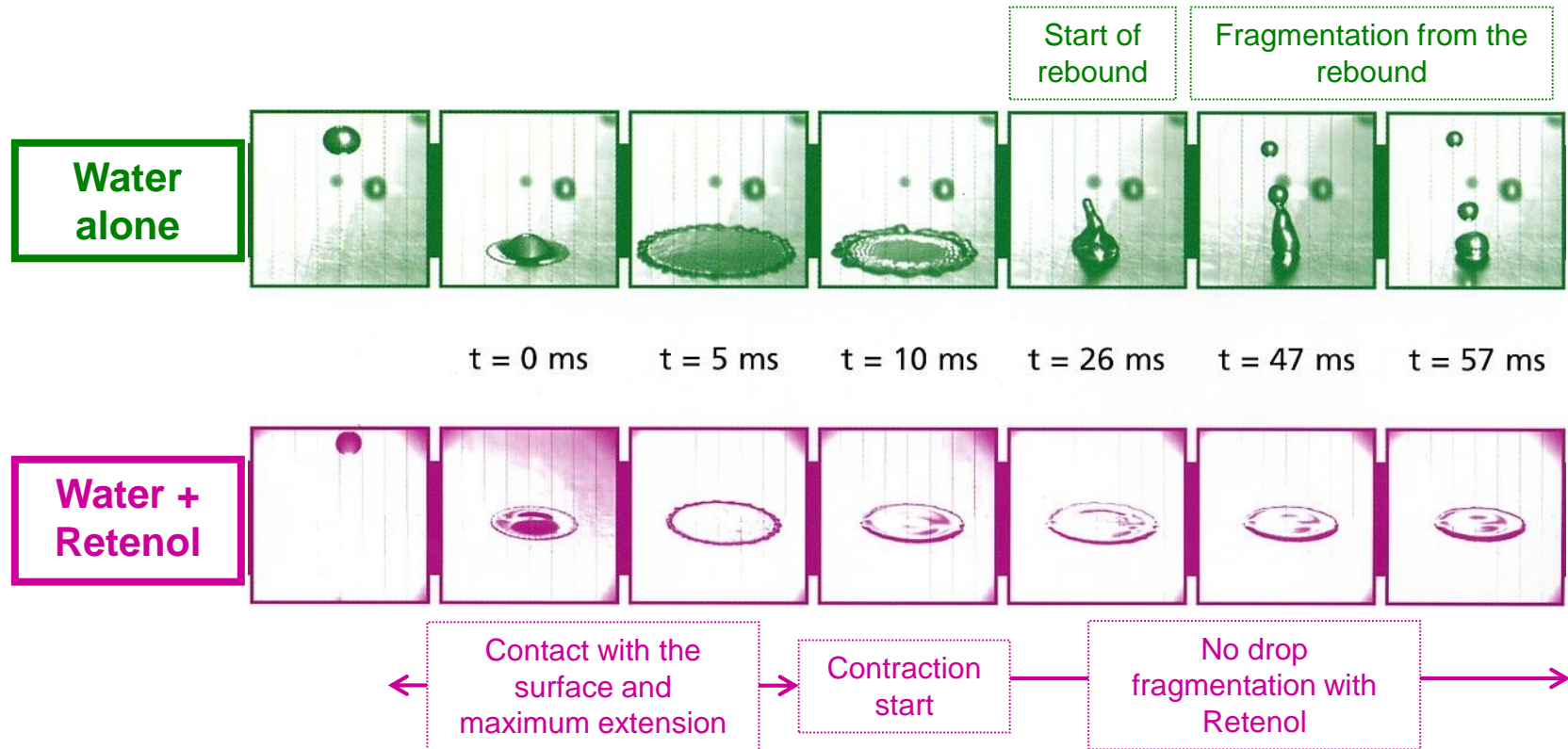
**Retenol** increases the amount of active substance on the plant.

The action mechanism is a strong decrease in the dynamic and static surface tension, allowing for retention of all size drops and reducing the rebound effect of the drop on impact with the plant surface.

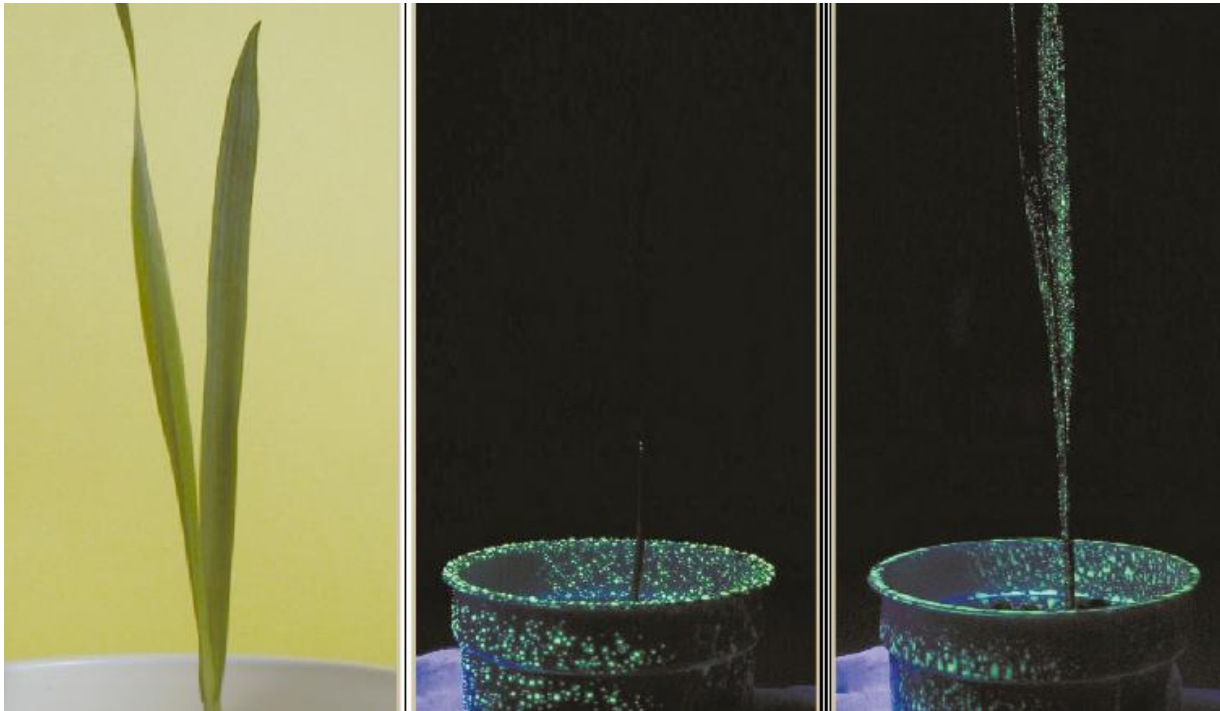
By reducing drainage of the drops on the plant surface, distribution of the plant protector active substance improves over the whole plant surface applied.

Retention is an essential factor in treatment efficiency, so much for contact, penetrating or systemic products (ISAA 2001 Congress)

# RETENOL: RETAINER (II)



# RETENOL: RETAINER (III)



Plant in daylight

Water

Water + Retenol

Plant in darkness, mixture sprayed with fluorescein

Retainer - Fixative

- Retention of the fluorescein on the oat plant is displayed (little wettable)
- With Retenol, all the drops take hold. Without Retenol, most slip off into the pot.

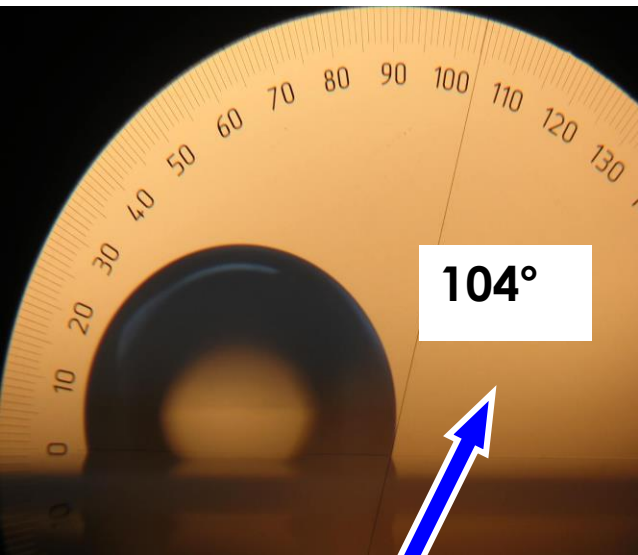
*Source: INRA Dijon*

# RETENOL: EXTENDER

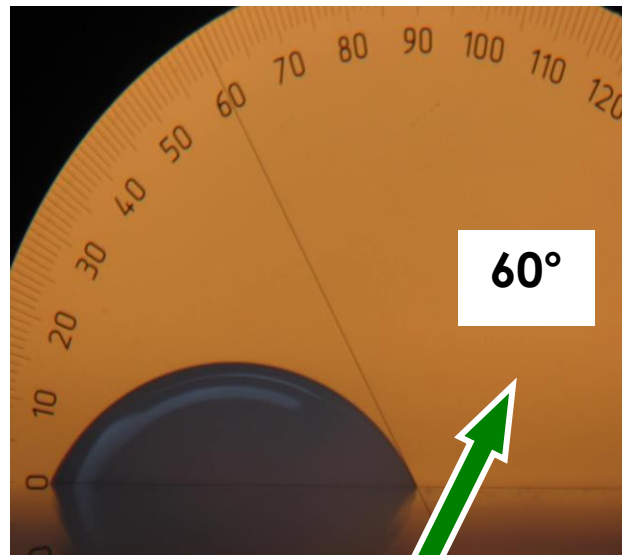
- Increase of the equilibrium contact surface.
- Value of the drop angle and increase of the contact surface with Retenol.

	Paraffin		Teflon	
	Drop angle	Surface factor	Drop angle	Surface factor
<b>Water</b>	108°	1	108°	1
<b>Retenol 0.5%</b>	61°	<b>2.3</b>	60°	<b>2.3</b>

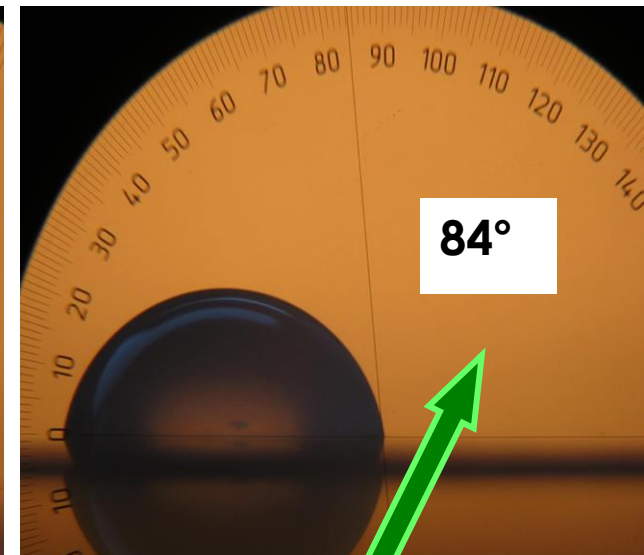
↓ Drop angle      ↑ Contact surface  
Measurement on Parafilm at 20 °C after one minute



**Water**



**Retenol**



**Pinolene**

A liquid is said to be wetting when angle is  $< 90^\circ$



# PENETRATION CAPACITY

- The penetration factor gives us an idea of the performance of Retenol with the herbicides it has to penetrate. Example of Retenol with an anti-grass herbicide for cereal crops.
- Measurement taken with the 2.4 D herbicide radiolabelled by INRA at Dijon
- Retenol increases 2.4 D penetration in an oat plant in relation to the reference (acetone - water)

Penetration factor

**1.52**

- Retenol has a penetration factor of 1.52 compared to the herbicide alone. Retenol favours herbicide penetration

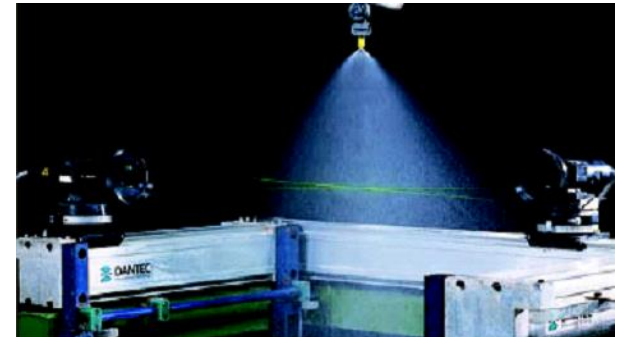
# RETENOL: ANTI-DRIFT (I)

Improves spraying quality

Drop size has a major influence on treatment success.

- very small (<150 microns) sensitive to drift and drop desiccation.
- very large (>550 microns) less sensitive to drift but causes loss of product through dripping.

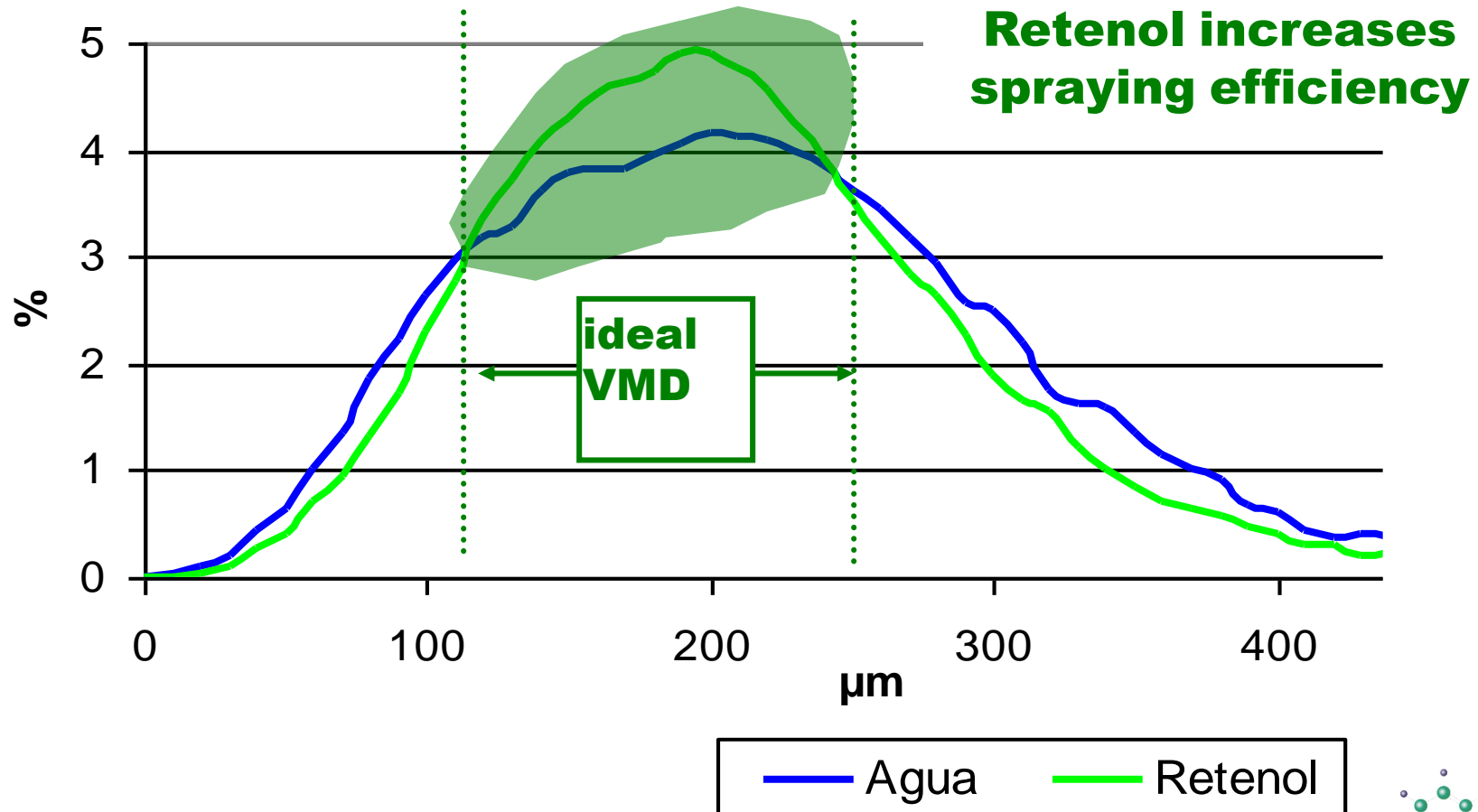
Retenol increases the proportion of effective drop size from 110 to 250  $\mu\text{m}$



Laser granulometer

# RETENOL: ANTI-DRIFT (II)

Volume distribution by drop size class



## RETENOL: ANTI-DRIFT (III)

- It is considered that drops with a diameter under 100 microns drift and those over 400 microns rebound.
- Retenol increases drops to an ideal size to cling to the leaf. Depending on the initial VMD (Volumetric Mean Diameter) provided by the specific nozzle.
- In the graph (previous slide), a classic nozzle with 200 microns VMD is used.
- Retenol covers a larger leaf surface area because it receives a higher number of impacts.

# RETENOL: ANTI-DRIFT (IV)



Simulation of plant protector application without Retenol.  
Side wind 7.5 km/h



Simulation of plant protector application with Retenol.  
Side wind 7.5 km/h

# Preserves mixture properties

- Retenol = neutral pH
- Interest of a neutral pH: in preparing the mixture, a change in the pH can cause a chemical modification in some of the molecules, resulting in reduced effectiveness.  
*(Example: sulphonylurea, organophosphorus compounds...)*

# BENEFIT TO THE ENVIRONMENT

- **Easily biodegradable:** *life average < 8 days*
- **100% natural origin**, approved for Organic Farming
- **Reduces losses in the soil** caused by retention
- **Reduces drift**
- **Increases the amount of active substance** on the plant



# RETENOL

## NATURAL EFFICACY