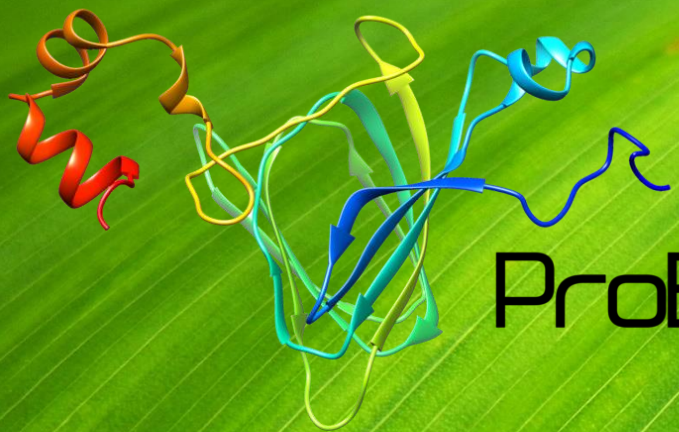
BanEco® 20 SL

TECHNICAL LEAFLET

BIOFUNGICIDE FOR POST HARVEST TREATMENT AGAINST BANANA CROWN ROT DISEASE



ProBLAD™ TECHNOLOGY

A NEW CONCEPT OF FUNGICIDE

BanEco® 20 SL

(BLAD 250 g/L)

TECHNICAL LEAFLET

MAIN POINTS

- **BanEco® 20 SL** is a Biofungicide formulated as a soluble concentrate (SL) for dilution in water.
- **BLAD** is the active ingredient used in the formulation marketed under the name of **BanEco® 20 SL**. BLAD means Banda de *Lupinus albus* doce.
- **BLAD** is a natural 20 kDa polypeptide generated during the process of germination of sweet lupin seeds.
- **BLAD** is generated during a short period during the germination process. After a specific stage it disappear. Active ingredient extraction is done via an aqueous phase at a very specific timing.
- **BLAD** is efficient against a wide range of fungi. No resistance acquisition phenomenon has been detected.

MODE OF ACTION

- In fungal pathogens, **BLAD** coats the cell wall, deforming the chitin structures, allowing the BLAD polypeptide to come in contact with the cell membrane.
- **BLAD** then coats the cell membrane by binding to its sugars.
- Once inside the cell, **BLAD** disturbs metal homeostasis, causing a cascade of negative effects on its nutrient transport, metabolism, cell wall synthesis and cell division systems.
- Within eight hours of exposure to **BLAD**, the cell cannot reproduce.
- Within sixteen hours of exposure to **BLAD**, the fungal cell is dead.

- This very complex mechanism and multi target mode of action has initiated the creation of a new FRAC category: **BM 01**.

ENVIRONMENTAL FATE AND ECOTOXICOLOGY

- As a polypeptide, **BLAD** is not be persistent in the environment and is quickly degraded by protease enzymes.
- **BLAD** breaks down into peptides and amino acids and the metabolites are indistinguishable from natural products.
- A biodegradability study has been carried out on BLAD and it shows that its degradation is rapid.
- **BLAD** and **BanEco® 20 SL** have low acute toxicity to non-target organisms and, due to their rapid degradation, chronic toxicity is not considered to be relevant.
- **BanEco® 20 SL** is environmentally friendly, presenting a low risk to birds, aquatic organisms, soil macro and microorganisms, non-target arthropods and beneficial insects.
- **BanEco® 20 SL** is non-toxic to mammals, pollinating insects and plants.

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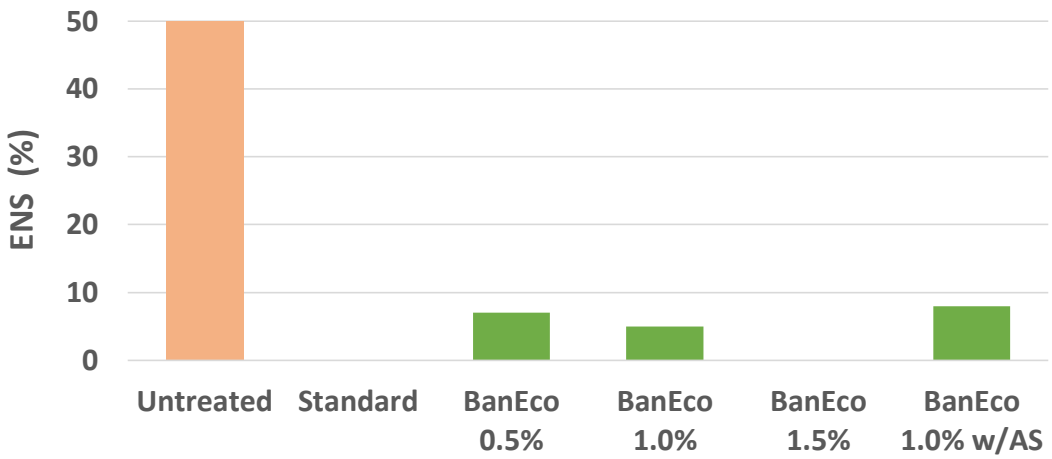
TRIAL RESULTS - CARBAP CAMEROON - BanEco® 20 SL

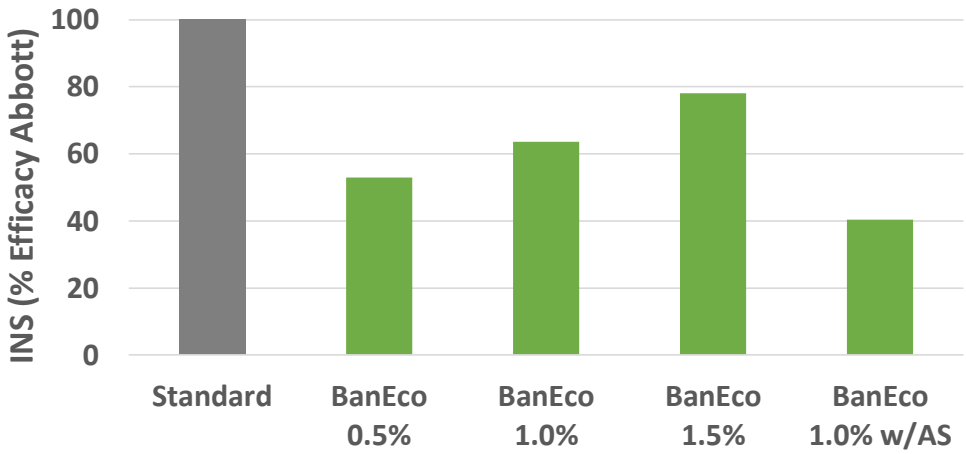
For each treatment, banana cluster of 4 fruits have been cut, sterilized and inoculated with spores of *Colletotrichum musae*. Three hours after inoculation the clusters have been sprayed during 1 minute with 2 liters of a solution containing water + fungicide + Aluminium sulphate. Fruits were packed in non-perforated polyfilms, placed in commercial boxes and stored for 10 days in a cold room between 12-14 °C.

T0	Untreated
T1	Standard (azoxystrobin + imazalil)
T2	BanEco 0.5 %
T3	BanEco 1.0 %
T4	BanEco 1.5 %
T5	BanEco 1.0 % without Aluminium sulphate

ENS (External Necrotic Surface) was measured 10 days after the cold storage of the boxes. Assessments were done on each cluster. Each commercial box contained 10 clusters (Fisher blocks design). The level of attack on the crown was evaluated in % of necrotic surface. Average % was obtained from 30 clusters per treatment.



INS (Internal Necrotic Surface) has been assessed 3 days after dipping each cluster during 5 seconds in a solution containing Ethephon and stored in a room at 20 °C. The length and the width of necrosis were measured by cutting the crown in 2 equivalent parts.



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BanEco® 20SL: FORMULATION

- Liquid formulation (SL): 250 g/L of BLAD.
- Preventative contact Fungicide.
- For best results apply the product as a preventative treatment.
- Coverage and quality of application are key factors that insure optimal results.
- Act by contact - non systemic.
- Safe and good resistance management tool.

DOSE AND METHOD OF APPLICATION

Post harvest treatment against Crown rot disease on Banana :
(*Colletotrichum musae*)

- Dilute **BanEco® 20SL** at the dose of **1.5 % (1.5 Liters of BanEco in 100 Liters of water).**
- In case aluminium sulphate is used in the solution it is recommended to first dilute aluminium sulphate and then add BanEco® 20SL.
- Agitate the solution.
- The solution is applied by spraying, dabbing or dipping the crowns depending on the practices in use. The solution must completely cover the crown of the fruits for a sufficient period of time to ensure optimal efficacy.
- Application techniques of the fungicide solution are different depending on the country and the farms. It is critical to respect the application dose. The use of aluminium sulphate has shown its interest during trials conducted by CARBAP in Cameroon.

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Belchim Crop Protection is the exclusive representative for BanEco® in **Cameroon**, **Côte d'Ivoire** and **Ghana**.

Product for professionals: be caution during handling , storage and application of agrochemical products . Read carefully the label and product information before use.

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