

A circular inset image of a yellow rose, positioned behind the main text.

Biosiembra®

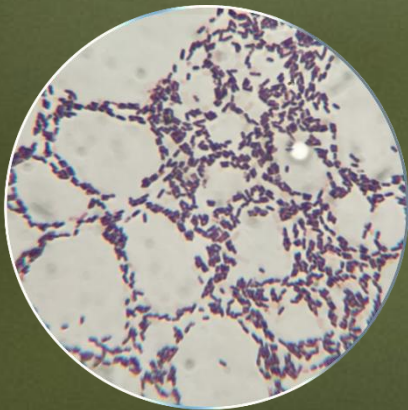
Efficacy and compatibility

Study between biological and chemical
products for Botrytis control in roses

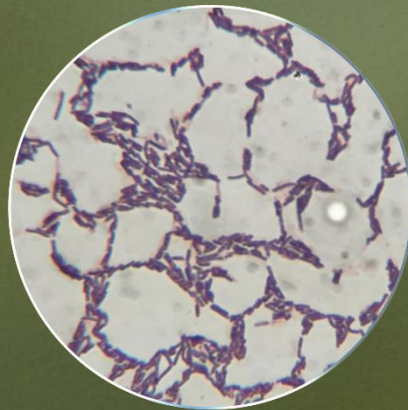
BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

Biosiembra®

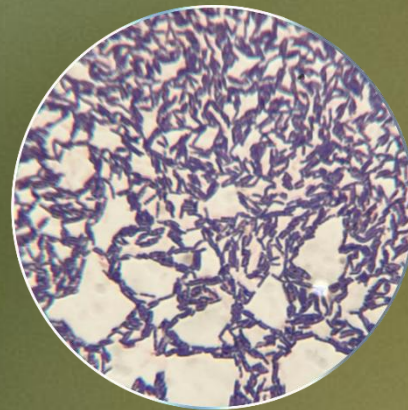
Name	Microorganisms	Concentration
GREENFINITY®	<i>Bacillus amyloliquefaciens</i> , <i>Bacillus velezensis</i> , <i>Bacillus subtilis</i>	1 x 10 ⁹ CFU/ml
DINAMICS®	<i>Trichoderma asperellum</i>	1 x 10 ⁸ CFU/ml



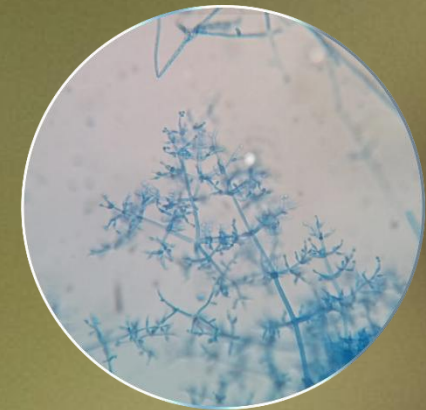
*Bacillus
subtilis*



*Bacillus
velezensis*



*Bacillus
amyloliquefaciens*

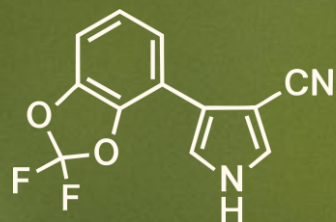


Microscopic structures
of *Trichoderma*

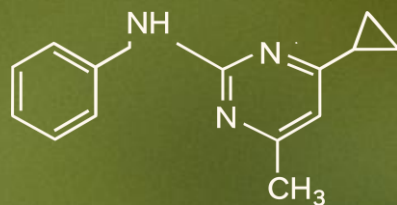
CHEMICAL FUNGICIDES EVALUATED IN THE STUDY

Biosiembra®

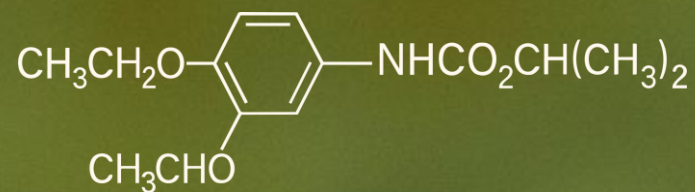
CHEMICAL GROUP	ACTIVE INGREDIENT	DOSAGE
Phenylpyrrole	Fludioxonil 23%	0.65 cc/L
Anilinopyrimidine + Phenylpyrrole	Cyprodinil 37.5% + Fludioxonil 25%	0.50 g/L
Pyridinylethylbenzamide + Anilinopyrimidine	Fluopyram 12.5 % + Pyrimethanil 37.5 %	0.80 cc/L
N-phenyl carbamate	Diethofencarb 35%	0.50 g/L
Dicarboximide	Iprodione 50%	1.0 cc/L



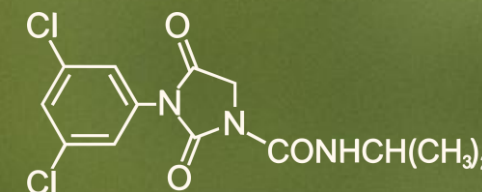
Phenylpyrrole



Anilinopyrimidine



N-phenyl carbamate



Dicarboximide

Botrytis cinerea strains
evaluated in the study

Biosiembra®

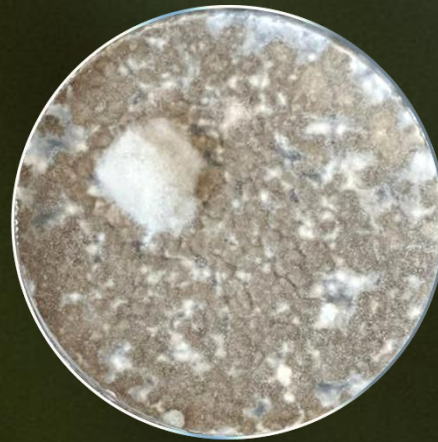
BOTRYTIS STRAINS	PROVINCE	LOCALITY	LOCATION	INOCULUM CONCENTRATION
STRAIN 1 C1	PICHINCHA	TABACUNDO	NORTH	1.0 x 10 ⁴ CFU/mL
STRAIN 2 C2	COTOPAXI	LASSO	SOUTH	1.0 x 10 ⁴ CFU/mL
STRAIN 3 C3	COTOPAXI	TANICUCHI	SOUTH	1.0 x 10 ⁴ CFU/mL
STRAIN 4 C4	PICHINCHA	TABACUNDO	NORTH	1.0 x 10 ⁴ CFU/mL
STRAIN 5 C5	COTOPAXI	LASSO	SOUTH	1.0 x 10 ⁴ CFU/mL



*Strain 1
C1*



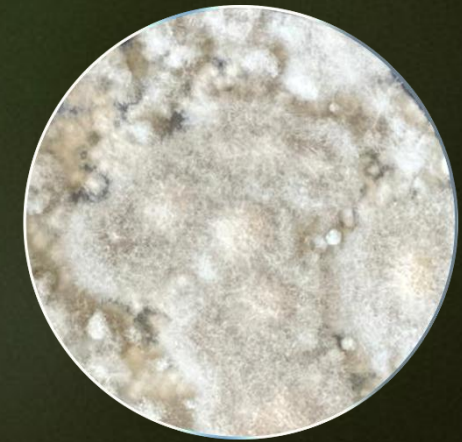
*Strain 2
C2*



*Strain 3
C3*



*Strain 4
C4*

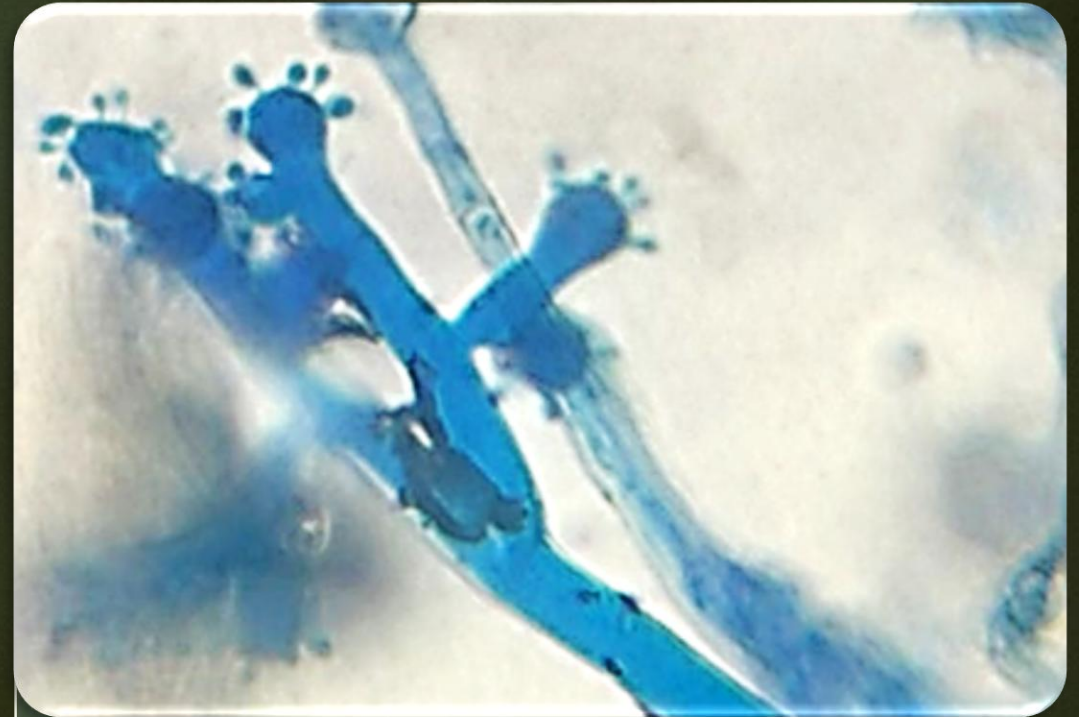


*Strain 5
C5*

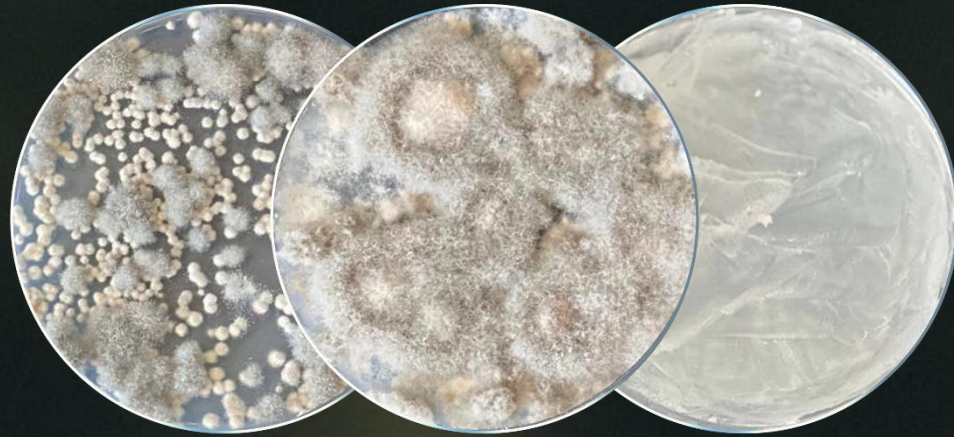
*Microscopic structures of
Botrytis*



Conidia of *Botrytis*



Conidiophores of
Botrytis



**BIOLOGICAL PRODUCTS
EVALUATED IN THE STUDY**

Biosiembra[®]

BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

Biosiembra®

GREENFINITY

(Bacillus amyloliquefaciens + Bacillus velezensis + Bacillus subtilis) – Dosage: 2–4 cc/L



Strain 1



Strain 2



Strain 3



Strain 4



Strain 5

Greenfinity completely inhibited the growth of *B. cinerea* in all five strains evaluated in this study. (100% Control)

*BIOLOGICAL PRODUCTS EVALUATED IN THE
STUDY*

Biosiembra®

DINAMICS

(*Trichoderma asperellum*) – Dosage: 2–4 cc/L



Strain 1



Strain 2



Strain 3



Strain 4



Strain 5

Dinamics completely inhibited the growth of *B. cinerea* in all five strains evaluated in this study. (100% Control)

BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Fludioxonil 23%) – Dosage 0.65 cc/Lt

STRAIN 1 of *Botrytis cinerea* (C1)

Biosiembra®

A: Control *Botrytis*C1

B: Bacteria + C1

C: Fungus + C1

D: Fludioxonil 23% + C1

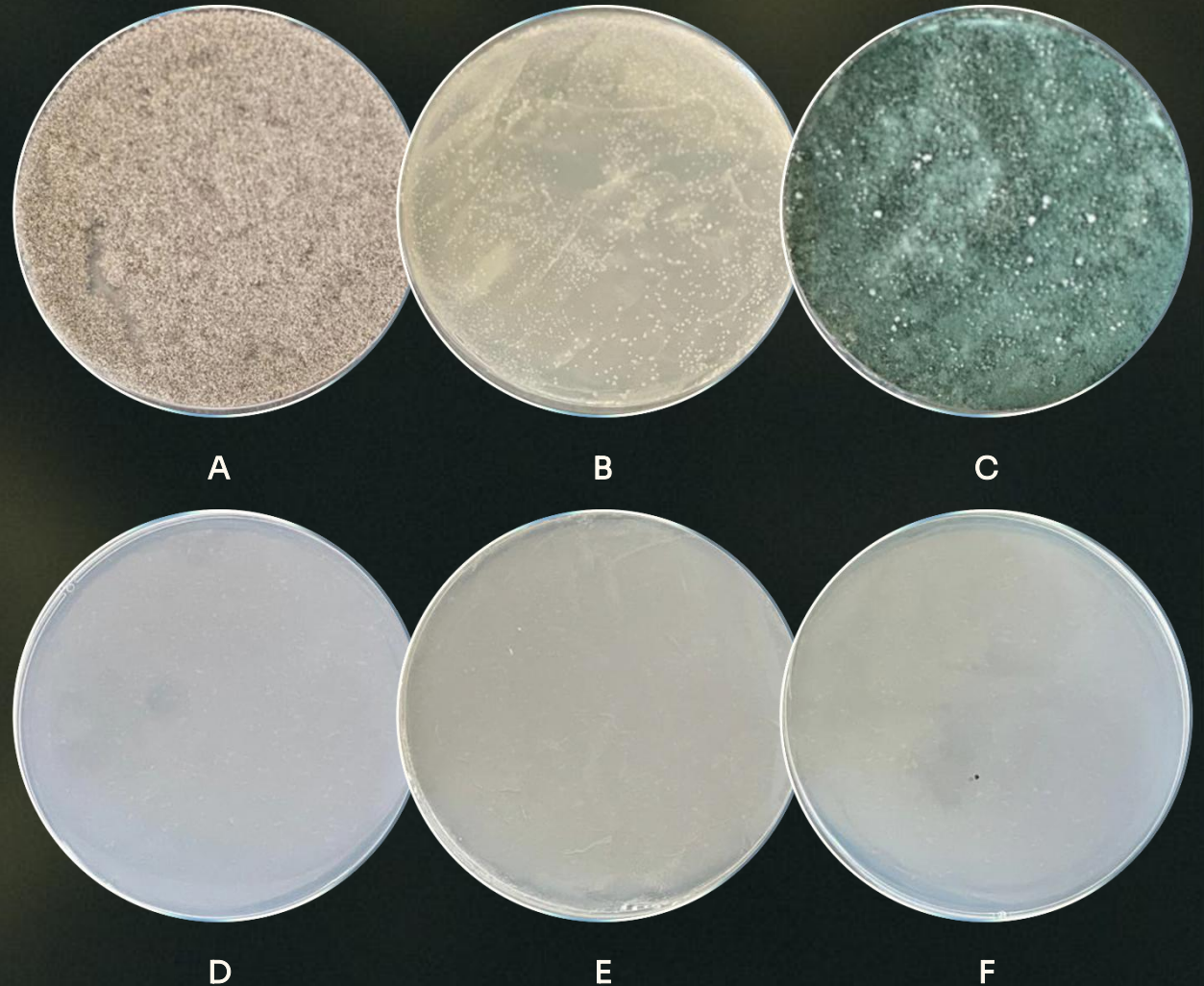
E: Fludioxonil 23% + Bacteria + C1

F: Fludioxonil 23% + Fungus + C1

Fludioxonil 23% completely inhibited (100% control) the growth of *B. cinerea* in strain C1 (D).

This product was COMPATIBLE with Greenfinity (*Bacillus* mixture); allowing normal growth of the beneficial bacteria and achieving complete inhibition of the pathogen (E).

Fludioxonil 23% was NOT COMPATIBLE with Dynamics (*T. asperellum*), as it completely eliminated to the beneficial fungus (F).



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Fludioxonil 23%) – Dosage 0.65 cc/Lt

STRAIN 5 of *Botrytis cinerea* (C5)

Biosiembra®

A: Control *Botrytis* C5

B: Bacteria + C5

C: Fungus + C5

D: Fludioxonil 23% + C5

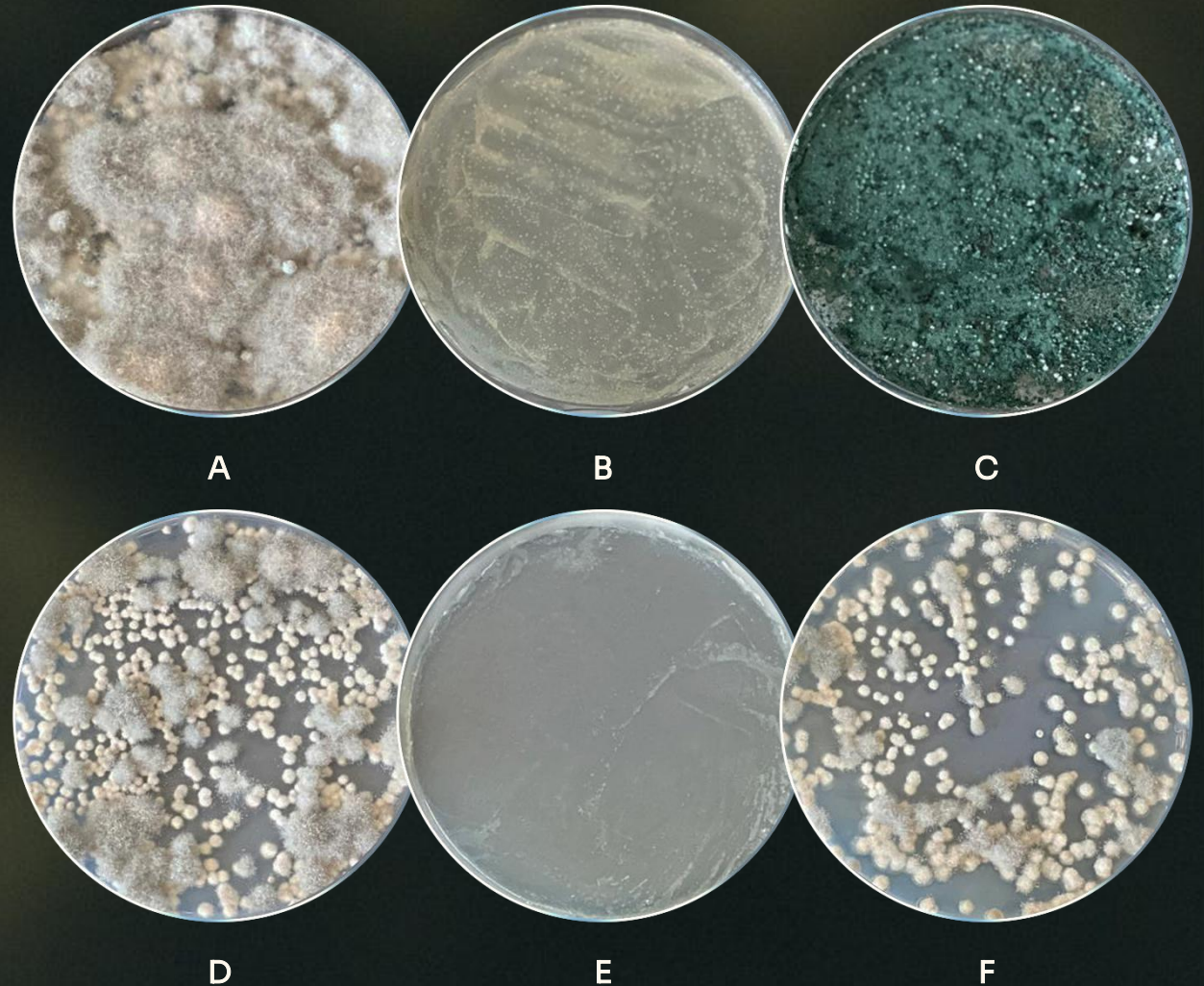
E: Fludioxonil 23% + Bacteria + C5

F: Fludioxonil 23% + Fungus + C5

Fludioxonil 23% exhibited a partial inhibition (20% control) of *B. cinerea* in strain C5 (D).

The product was COMPATIBLE with Greenfinity (*Bacillus* mixture), achieving complete inhibition of the pathogen (E).

However, Fludioxonil 23% was NOT COMPATIBLE with Dinamics (*T. asperellum*), as it completely eliminated the beneficial fungus while still allowing normal growth of the pathogen (F).



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Cyprodinil 37.5% + Fludioxonil 25%) – Dosage 0.5g/Lt
STRAIN 1 of *Botrytis cinerea* (C1)

Biosiembra®

A: Control *Botrytis*C1

B: Bacteria + C1

C: Fungus + C1

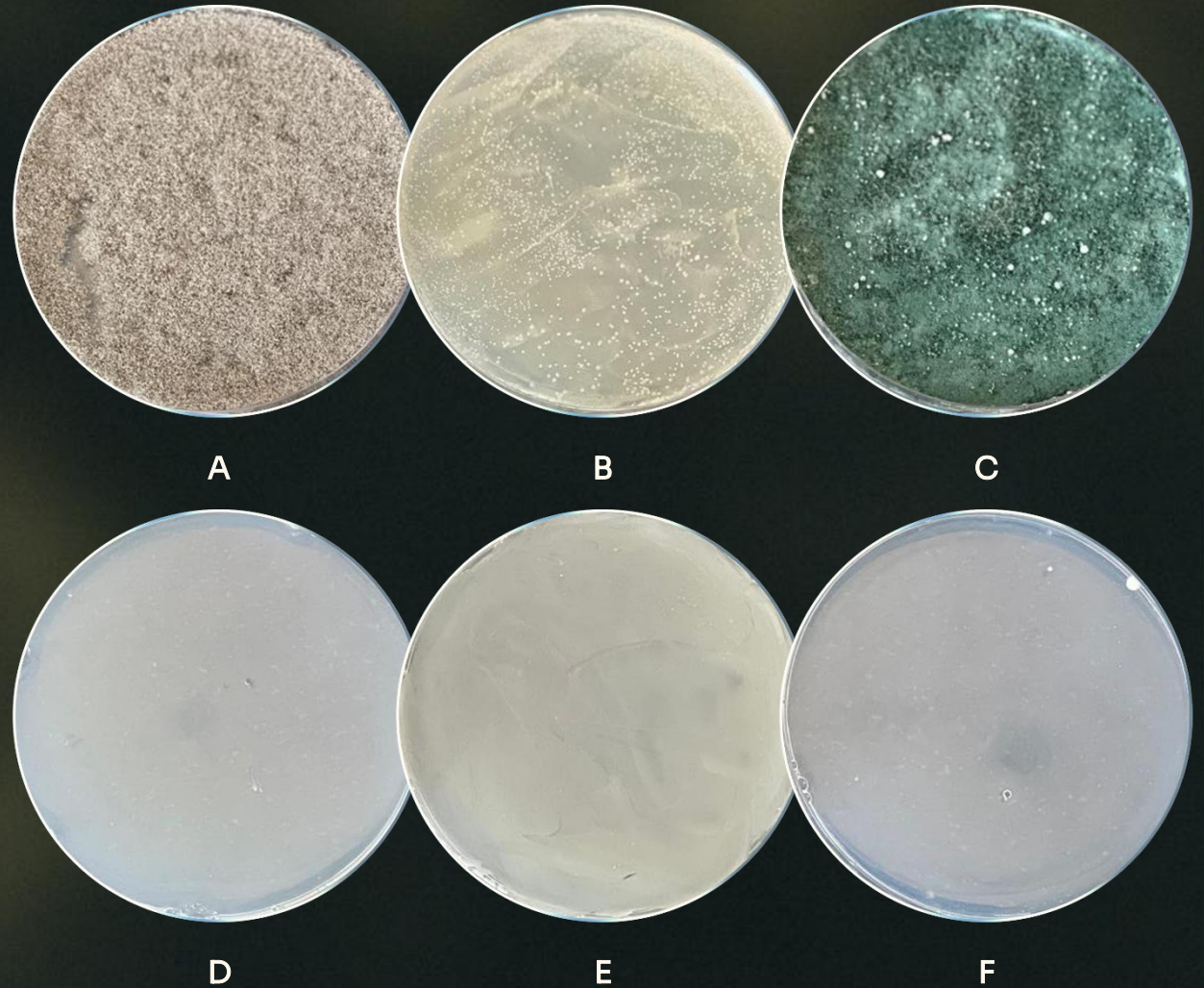
D: Cyprodinil 37.5% + Fludioxonil 25% + C1

E: Cyprodinil 37.5% + Fludioxonil 25% + Bacteria + C1

F: Cyprodinil 37.5% + Fludioxonil 25% + Fungus + C1

(Cyprodinil 37.5% + Fludioxonil 25%) completely inhibited the growth (100% control) of *B. cinerea* in strain C1 (D). This product was COMPATIBLE with Greenfinity (*Bacillus* mixture); indicating that normal growth of the beneficial bacteria was maintained, achieving complete inhibition of the pathogen (E).

(Cyprodinil 37.5% + Fludioxonil 25%) was NOT COMPATIBLE with Dinamics (*T. asperellum*), as it completely eliminated both organisms : the beneficial fungus and the pathogen (F).



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Cyprodinil 37.5% + Fludioxonil 25%) – Dosage 0.5g/Lt
STRAIN 5 of *Botrytis cinerea* (C5)

Biosiembra®

A: Control *Botrytis* C5

B: Bacteria + C5

C: Fungus + C5

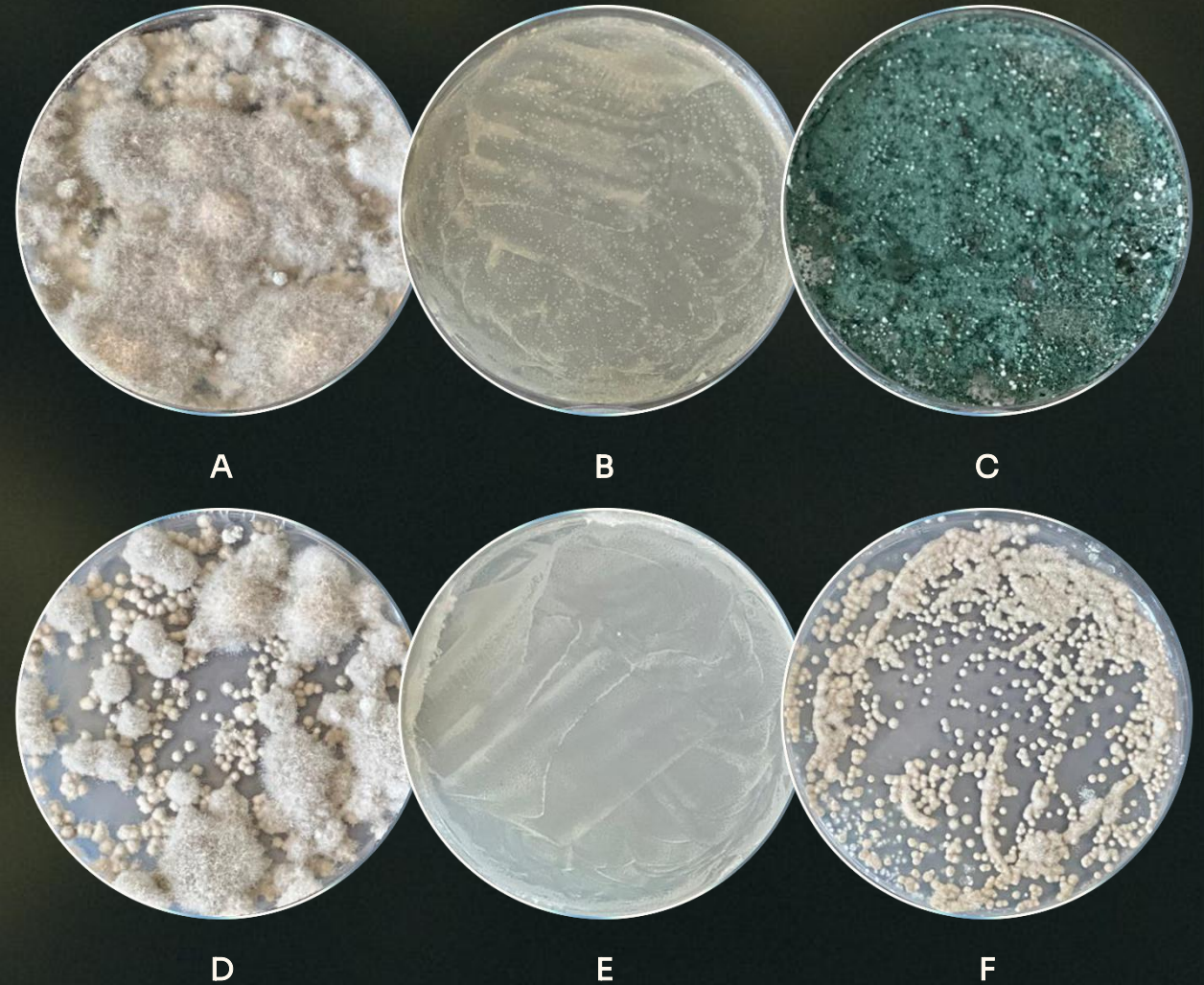
D: Cyprodinil 37.5% + Fludioxonil 25% + C5

E: Cyprodinil 37.5% + Fludioxonil 25% + Bacteria + C5

F: Cyprodinil 37.5% + Fludioxonil 25% + Fungus + C5

(Cyprodinil 37.5% + Fludioxonil 25%) did not inhibit the normal growth (0% control) of *B. cinerea* in strain C5 (D). The product was COMPATIBLE with Greenfinity (*Bacillus* mixture); indicating that there was a normal growth of the beneficial bacteria, achieving complete inhibition of the pathogen (E).

(Cyprodinil 37.5% + Fludioxonil 25%) was NOT COMPATIBLE with Dinamics (*T. asperellum*), as it completely eliminated the beneficial fungus while still allowing normal growth of the pathogen (F).



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Fluopyram 12.5 % + Pyrimethanil 37.5 %) – Dosage 0.8 cc/Lt
STRAIN 1 of *Botrytis cinerea* (C1)

Biosiembra®

A: Control *Botrytis*C1

B: Bacteria + C1

C: Fungus + C1

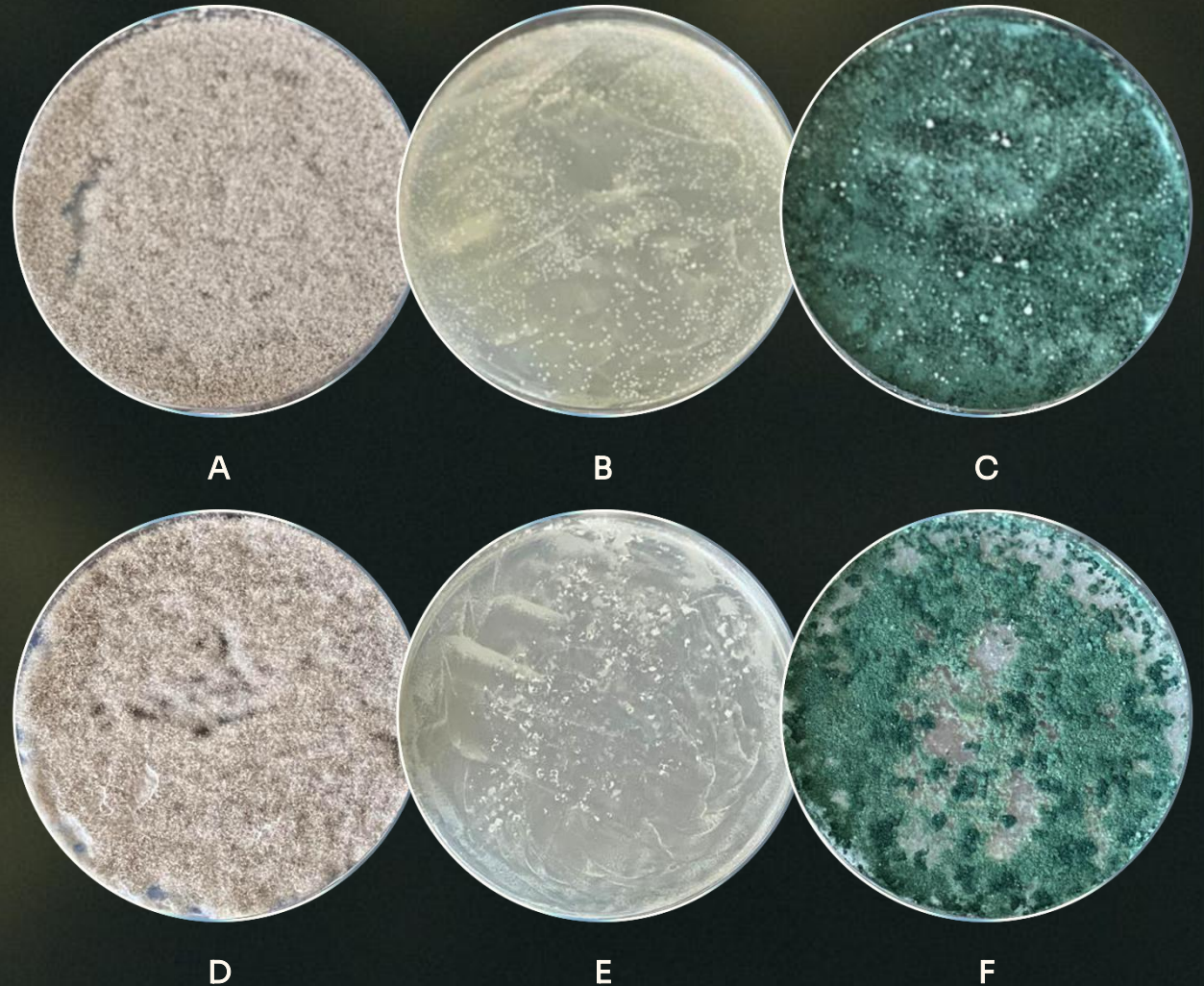
D: Fluopyram 12.5 % + Pyrimethanil 37.5 % + C1

E: Fluopyram 12.5 % + Pyrimethanil 37.5 % + Bacteria + C1

F: Fluopyram 12.5 % + Pyrimethanil 37.5 % Fungus + C1

(Fluopyram 12.5 % + Pyrimethanil 37.5 %) did not inhibit the normal growth (0% control) of *B. cinerea* in strain C1 (D).

The product was COMPATIBLE with Greenfinity (*Bacillus* mixture) (E) and with Dinamics (*T. asperellum*) (F) where normal growth of the beneficial bacteria and fungi was observed, achieving complete inhibition of the pathogen in both cases.



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Fluopyram 12.5 % + Pyrimethanil 37.5 %) – Dosage 0.8 cc/Lt
STRAIN 5 of *Botrytis cinerea* (C5)

Biosiembra®

A: Control *Botrytis* C5

B: Bacteria + C5

C: Fungus + C5

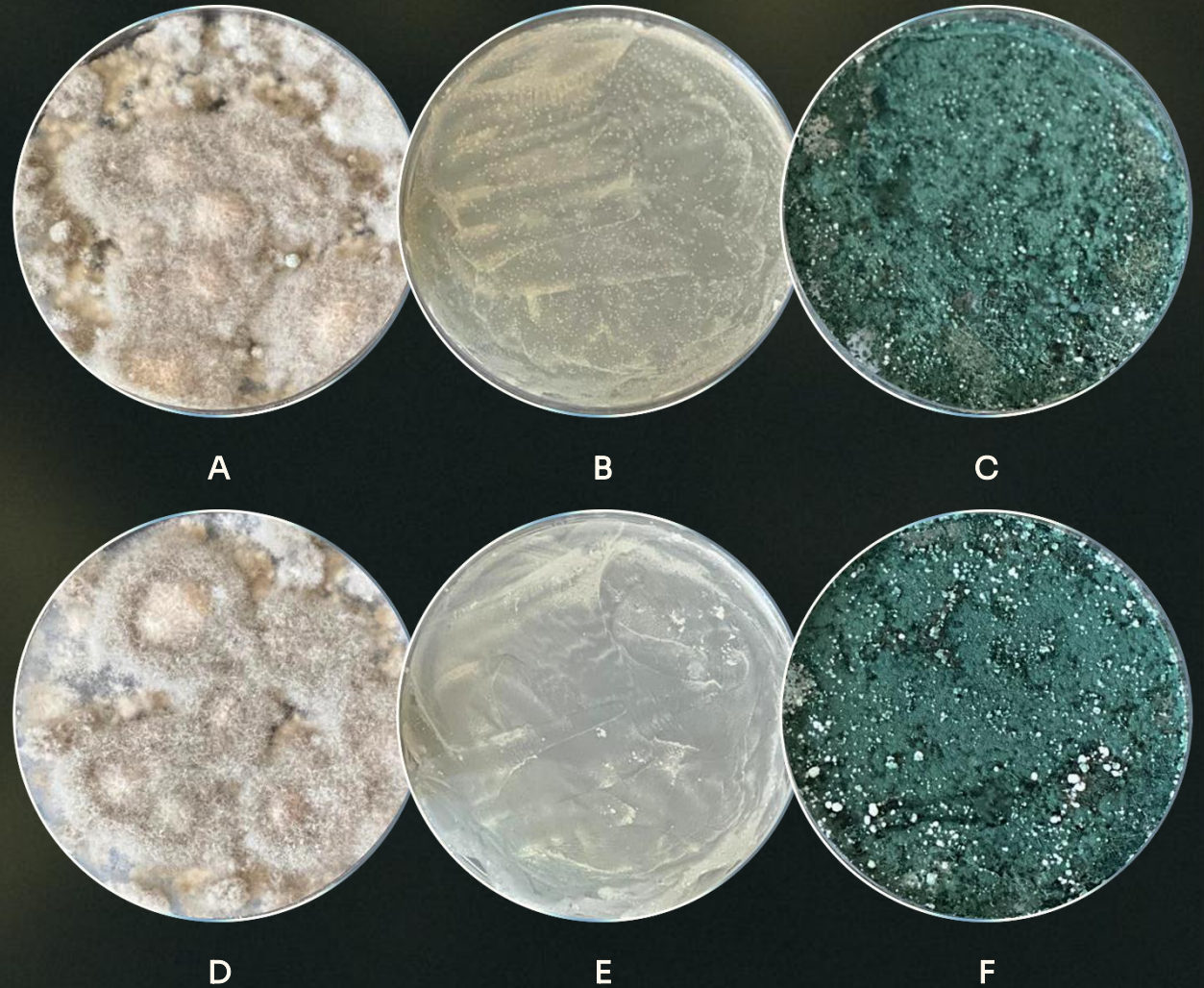
D: Fluopyram 12.5 % + Pyrimethanil 37.5 % + C5

E: Fluopyram 12.5 % + Pyrimethanil 37.5 % + Bacteria + C5

F: Fluopyram 12.5 % + Pyrimethanil 37.5 % Fungus + C5

(Fluopyram 12.5 % + Pyrimethanil 37.5 %) did not inhibit the normal growth (0% control) of *B. cinerea* in strain C5 (D).

This product was COMPATIBLE with Greenfinity (*Bacillus* mixture) (E) and Dinamics (*T. asperellum*) (F); normal growth of the beneficial bacteria and fungi was observed, achieving complete inhibition of the pathogen in both cases.



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Diethofencarb 35%) – Dosage 0.5 g/Lt
STRAIN 1 of *Botrytis cinerea* (C1)

Biosiembra®

A: Control *Botrytis* C1

B: Bacteria + C1

C: Fungus + C1

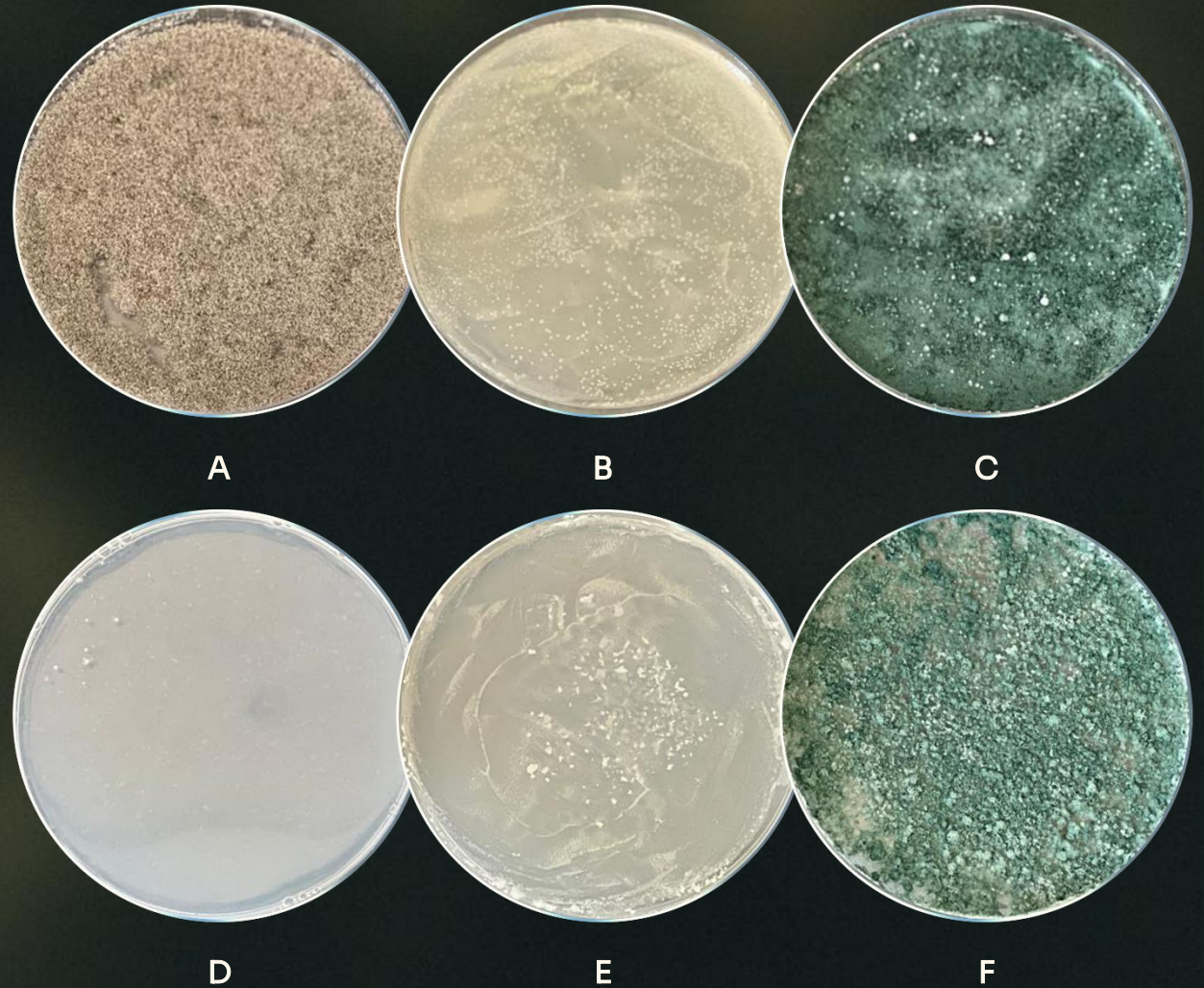
D: Diethofencarb 35% + C1

E: Diethofencarb 35% + Bacteria + C1

F: Diethofencarb 35% + Fungus + C1

(Diethofencarb 35%) completely inhibited (100% control) the growth of *B. cinerea* in strain C1 (D).

The product was COMPATIBLE with Greenfinity (*Bacillus* mixture) (E) and with Dinamics (*T. asperellum*) (F), where normal growth of the beneficial bacteria and fungi was maintained, while complete inhibition of the pathogen was achieved in both cases.



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Diethofencarb 35%) – Dosage 0.5 g/Lt
STRAIN 5 of *Botrytis cinerea* (C5)

Biosiembra®

A: Control *Botrytis* C5

B: Bacteria + C5

C: Fungus + C5

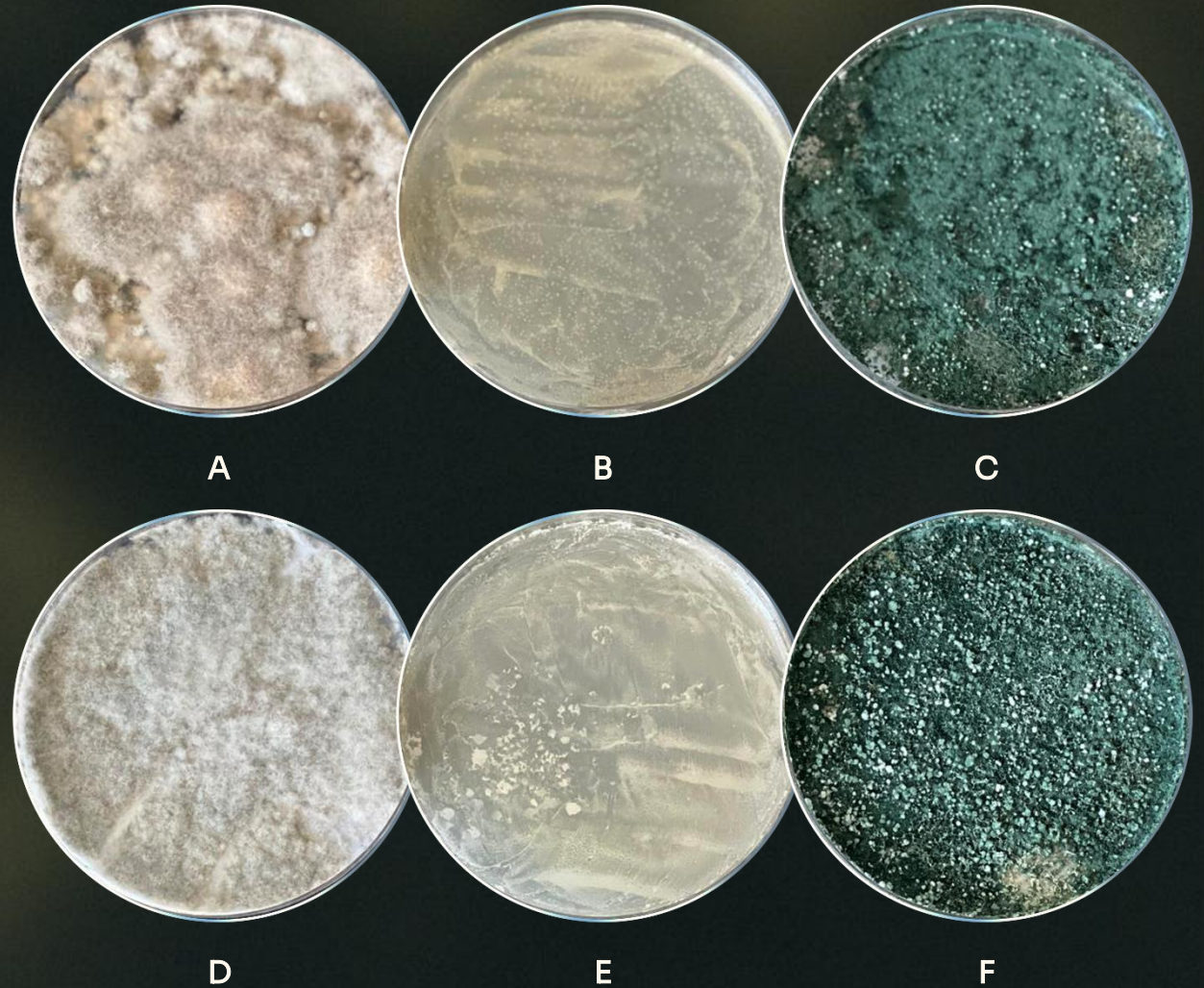
D: Diethofencarb 35% + C5

E: Diethofencarb 35% + Bacteria + C5

F: Diethofencarb 35% + Fungus + C5

(Diethofencarb 35%) did not inhibit the normal growth (0% control) of *B. cinerea* in strain C5 (D).

The product was COMPATIBLE with Greenfinity (*Bacillus* mixture) (E) and with Dinamics (*T. asperellum*) (F), where normal growth of the beneficial bacteria and fungi was maintained, while complete inhibition of the pathogen was achieved in both cases.



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Iprodione 50%) – Dosage 1 cc/Lt

STRAIN 1 of *Botrytis cinerea* (C1)

Biosiembra®

A: Control *Botrytis* C1

B: Bacteria + C1

C: Fungus + C1

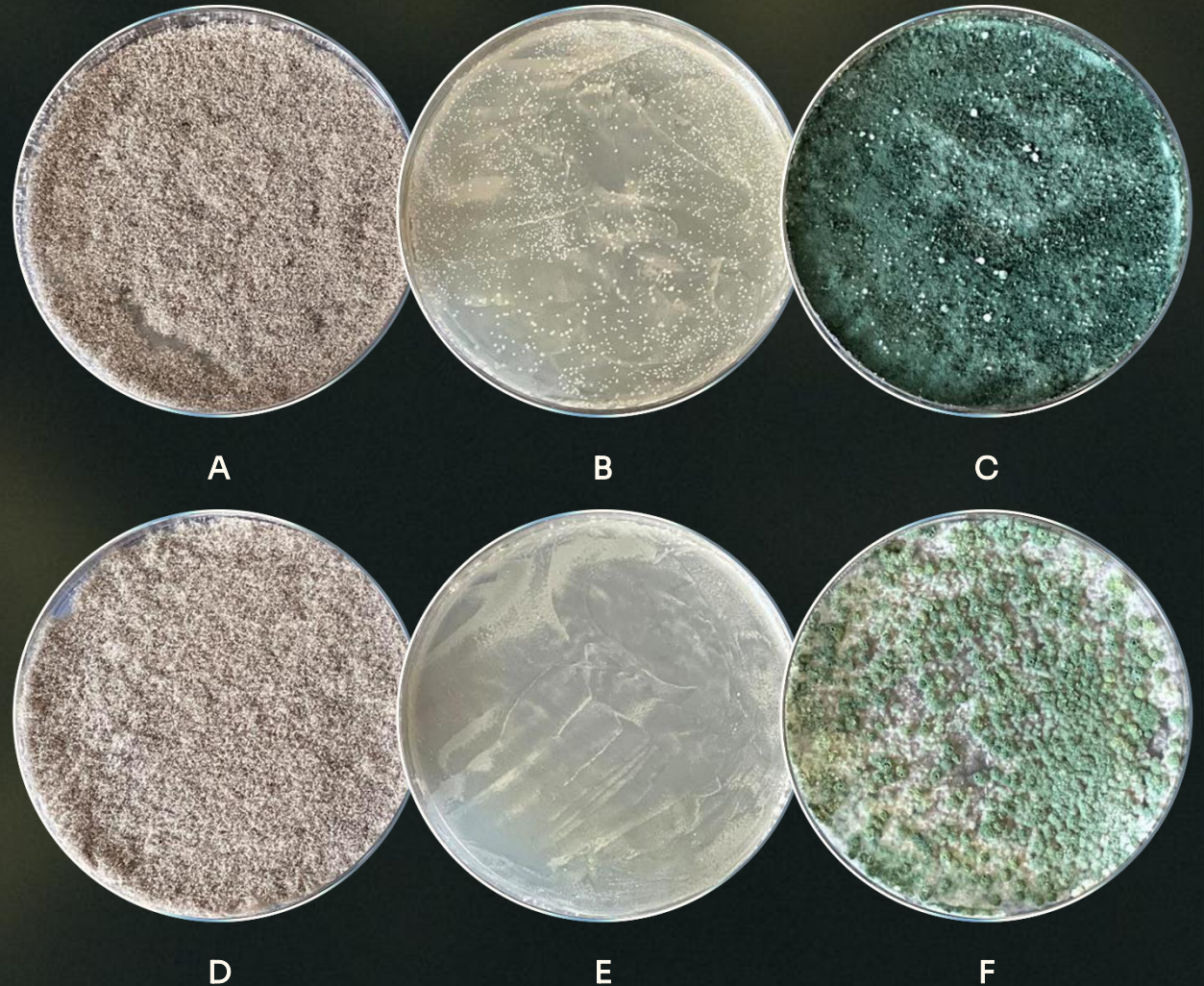
D: Iprodione 50% + C1

E: Iprodione 50% + Bacteria + C1

F: Iprodione 50% + Fungus + C1

(Iprodione 50%) did not inhibit the normal growth (0% control) of *B. cinerea* in strain C1 (D).

The product was COMPATIBLE with Greenfinity (*Bacillus* mixture) (E) and with Dinamics (*T. asperellum*) (F), where normal growth of the beneficial bacteria and fungi was maintained. Although the beneficial fungus exhibited a reduced rate of sporulation, the pathogen was completely inhibited.



BIOLOGICAL PRODUCTS EVALUATED IN THE STUDY

(Iprodione 50%) – Dosage 1 cc/Lt

STRAIN 5 of *Botrytis cinerea* (C5)

Biosiembra®

A: Control *Botrytis* C5

B: Bacteria + C5

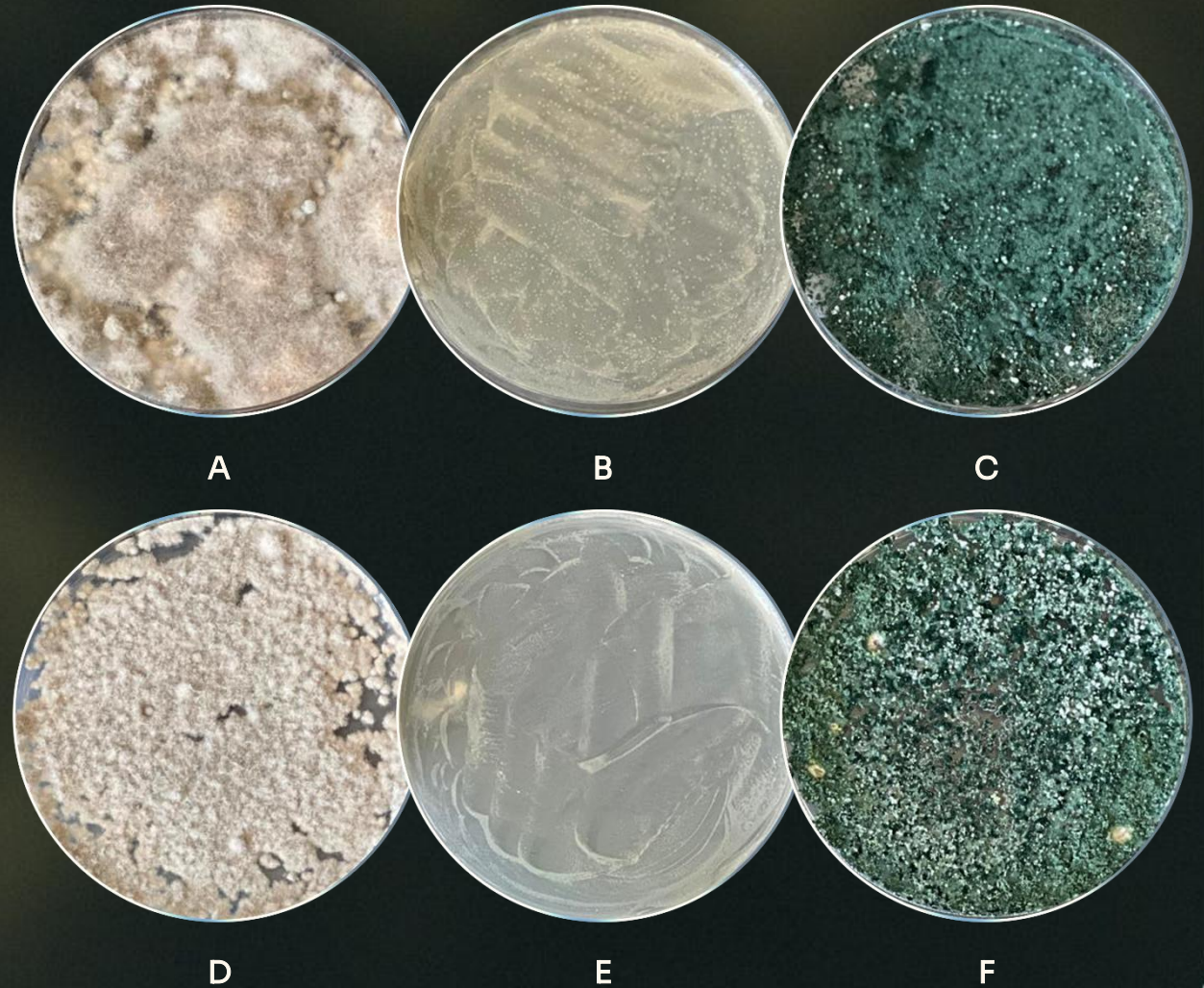
C: Fungus + C5

D: Iprodione 50% + C5

E: Iprodione 50% + Bacteria + C5

F: Iprodione 50% + Fungus + C5

(Iprodione 50%) did not inhibit the normal growth (0% control) of *B. cinerea* in strain C5 (D). This product was COMPATIBLE with Greenfinity (*Bacillus mixture*) and Dinamics (*T. asperellum*) (F). Normal growth of the beneficial bacteria and fungi was observed, achieving complete inhibition of the pathogen in both cases.



GREENFINITY and DINAMICS

100%

Greenfinity (*Bacillus*) and Dinamics (*T. asperellum*), applied at 4 cc/L achieved complete inhibition (100% control) of all *Botrytis* strains evaluated.

Biosiembra®

FLUDIOXONIL 23%

100%

WITH GREENFINITY

CHEMICAL ONLY

100%	20-30%	0%
C1 & C4	C2 & C5	C3

(Fludioxonil 23%) at 0.65 cc/L achieved **complete inhibition (100% control)** of strains C1 and C4, **partial inhibition (20 – 30% control)** of strains C2 and C5, and **no inhibition (0% control)** of strain C3. This product was **COMPATIBLE** with Greenfinity, and in combination they achieved **complete inhibition (100% control)** of all *Botrytis* strains. It was **NOT COMPATIBLE** with Dinamics, completely eliminating the beneficial fungus, and in some cases, **allowing pathogen growth**.

Biosiembra®

CYPRODINIL 37.5% + FLUDIOXONIL 25%

100%
WITH GREENFINITY

CHEMICAL ONLY

100%
C1 & C4

0%
C2, C3 & C5

(Cyprodinil 37.5% + Fludioxonil 25%) at 0.50 g/L achieved complete inhibition (100% control) of strains C1 and C4, while C2, C3, and C5 showed no inhibition (0% control). This product was COMPATIBLE with Greenfinity, and in combination achieved complete inhibition (100% control) of all *Botrytis* strains. It was NOT COMPATIBLE with Dinamics, eliminating the beneficial fungus and, in some cases, favoring pathogen growth.

Biosiembra®

FLUOPYRAM 12.5% + PYRIMETHANIL 37.5%

100%

WITH GREENFINITY &
DINAMICS

CHEMICAL ONLY

10%

C3

0%

REMAINING STRAINS

(Fluopyram 12.5% + Pyrimethanil 37.5%) at 0.80 cc/L achieved **partial inhibition (10% control)** of strain C3 and **no inhibition (0% control)** of strains C1, C2, C4 and C5. This product was **COMPATIBLE** with both biological products **Greenfinity** and **Dinamics**. In combination with these biological products, **complete inhibition (100% control)** of all pathogen strains was achieved.

Biosiembra®

DIETHOFENCARB 35%

100%

WITH GREENFINITY &
DINAMICS

CHEMICAL ONLY

100%	0%
C1, C3 & C4	C2 & C5

(Diethofencarb 35%) at 0.50 g/L achieved **complete inhibition (100% control)** of strains C1, C3 and C4, while C2 and C5 showed **no inhibition (0% control)**. This product was **COMPATIBLE** with both biological products: **Greenfinity and Dinamics**, and in combination achieved **complete inhibition (100% control)** of all *Botrytis* strains.

Biosiembra®

IPRODIONE 50%

100%

WITH GREENFINITY &
DINAMICS

CHEMICAL ONLY

0%

ANY OF THE
BOTRYTIS STRAINS

(Iprodione 50%) at 1.0 cc/L **did not show inhibition (0% control)** of any of the *Botrytis* strains evaluated. However, it was **COMPATIBLE** with Greenfinity and Dinamics. In combination, these treatments achieved **complete inhibition (100% control)** of all *Botrytis* strains. In some cases, the chemical affected the beneficial fungus reducing sporulation but without compromising its effectiveness.

Biosiembra®

OVERVIEW TABLE OF EFFECTIVENESS AND COMPATIBILITY

EVALUATION DATE: 17 - 11 - 2025

CHEMICAL GROUP	TRADE NAME	ACTIVE INGREDIENT	DOSAGE (cc/l) or (g/l)	CONTROL BOTRYTIS STRAINS (%)					GREENFINITY	DINAMICS
				C1	C2	C3	C4	C5		
Phenylpyrrole		Fludioxonil 23%	0.65	100%	30%	0%	100%	20%	YES	NOT
Anilinopyrimidine + Phenylpyrrole		Cyprodinil 37.5% + Fludioxonil 25%	0.50	100%	0%	0%	100%	0%	YES	NOT
Pyridinylethylbenzamide + Anilinopyrimidine		Fluopyram 12.5 % + Pyrimethanil 37.5 %	0.80	0%	0%	10%	0%	0%	YES	YES
N-phenyl carbamate		Diethofencarb 35%	0.50	100%	0%	100%	100%	0%	YES	YES
Dicarboximide		Iprodione 50%	1.0	0%	0%	0%	0%	0%	YES	YES
BIOLOGICOS	GREENFINITY	<i>Bacillus amyloliquefaciens + Bacillus velezensis + Bacillus subtilis</i>	4.0	100%	100%	100%	100%	100%	-	-
	DINAMICS	<i>Trichoderma asperellum</i>	4.0	100%	100%	100%	100%	100%	-	-



Biosiembra®