ICAR-CICR

Central Institute for Cotton Research, Nagpur



ICAR-CICR INVITES
EXPRESSION OF INTEREST (EOI)
FOR TRANSFER OF TECHNOLOGY (ToT) AND COMMERCIALIZATION

EOI No.: ICAR-CICR/ITMU/Commercialization/2026-27/01

Expressions of Interest (EOI) are invited by ICAR – Central Institute for Cotton Research (CICR), Nagpur, from the eligible organizations/ industries/ companies/ individuals having relevant experience, for the Transfer of Technology (ToT) and commercialization, on a Non-exclusive basis, of the technologies/ products listed below.

Technologies on Offer

1. Antagonistic and growth promoting fungal endophyte *Diaporthe melonis* isolate CFS-5 in cotton and non-host crops
2. *Diaporthe longicolla* isolate CEL-48 as an endophytic, growth promoting, biocontrol agent against major diseases of cotton
3. Endophytic and growth promoting *Diaporthe longicolla* isolate CEL-41 as biocontrol agent against cotton diseases



Technology in Brief

- Seed treatment with isolate CFS-5 significantly reduced wilt incidence in the field. Seed bio-priming with CFS-5 has showed an increase in total soluble protein content in cotton (22.95%), wheat (69.13%) and cowpea (56.1%). This technology has been certified by ICAR in 2025.
- CEL-48 was found promising with more than 64% inhibition against target leaf spot pathogen *Corynespora cassiicola* and seedling rot causing *Fusarium solani*.
- Seed bio-priming with CEL-48 increased total soluble protein by 20% in cotton and 40% in cowpea.
- CEL-41 showed over 52% inhibition of *Corynespora cassiicola*. Seed bio-priming with CEL-41 in host and non-host crops enhanced biochemical traits, increasing total soluble protein by 30% in cotton and 58% in cowpea.



Contact Details

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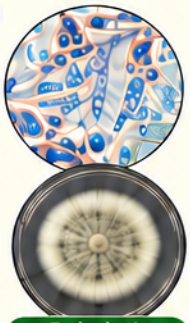
Techology Ready for Commercialization

Endophytic *Diaporthe spp.* as biocontrol agents

One Endophyte. Multiple Benefits. Sustainable Cotton.

What is *Diaporthe sp.*?

- Naturally occurring fungal endophyte isolated from healthy cotton plants.
- Inhibits major cotton pathogen without causing harm.
- Developed and validated by ICAR-Central Institute for Cotton Research (CICR), Nagpur.
- A promising biocontrol agent for disease management in cotton.



Endophytic *Diaporthe spp* (CFS-5)

About the Technology

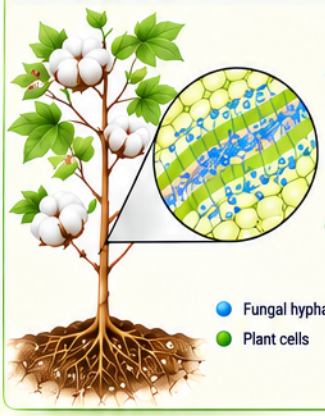
Lead Developer:
Dr. Neelkanth S. Hiremani

Technology Name:
Endophytic *Diaporthe spp* isolates (CFS-5, CEL-48 and CEL-41) as promising biocontrol and growth promoting agents

Origin & Source:
ICAR-CICR, Nagpur

Category:
Crop Science
(Biocontrol Agent)

Endophytic Colonization in Cotton



- Colonizes inner tissues – roots, stems, leaves, boll
- Establishes long-term association
- Provides continuous protection and benefits

Key Features and Applications

1. Broad-Spectrum Disease Suppression

- Inhibits fungal pathogens
- Reduces disease incidence
- Restricts pathogen establishment

2. Plant Growth Promotion



- Enhances growth and vigor
- Improves nutrient uptake
- Increases biomass and seed cotton yield

3. Induced Plant Defense

- Upregulates defense enzymes (CAT, POD)
- Enhances antioxidant activity
- Strengthens plant immunity

4. Multiple Benefits from a Single Endophyte



Our Promising Endophytic Isolates

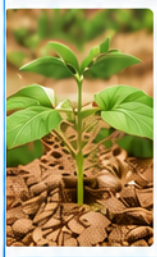
Diaporthe melonis CFS-5



- >54% inhibition of *C. cassiicola*
- Lowest wilt incidence of 0.53% (Suraj) and 1.67% (Phule Dhanwantary) as against Control (10–12%)
- Enhanced proteins (69.13% in wheat, 56.1% in cowpea)

Effective biocontrol and growth promotion

Diaporthe longicolla CEL-41



- >52% inhibition of *C. cassiicola*
- Controls *M. phaseolina* root rot
- Boosts proteins (30% in cotton, 58% in cowpea)

**Dual action:
Disease control + Growth promotion**

Diaporthe longicolla CEL-48



- >64% inhibition of *C. cassiicola*, 49% of *F. solani*
- With reduction to 0.67–2.12%
- Enhanced proteins (20% in cotton, 40% in cowpea)

Strong biocontrol potential

Key Takeaways

- Endophytic *Diaporthe* isolates (CFS-5, CEL-41, CEL-48) offer sustainable protection against major cotton diseases.
- Promote plant growth and enhance defense mechanisms.
- Ready for commercialization for eco-friendly cotton production.

References

1. ICAR-CICR. 2025. ICAR-CICR Certified Technologies 2025.
2. Hiremani, N.S. et al. (2023–2024). Antagonistic and growth promoting potential of endophytic *Diaporthe melonis* (CFS-5) in cotton. *Indian Phytopathology* 75: 1–12.

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