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SOIL FERTILITY INSTITUTE



OPTIMIZING COMPRESSED BIOGAS (CBG)

The Role of microbial diversity in Biological Stabilization
& Value-Added FOM Production

THE PRESENT SCENARIO OF CBG PLANTS



The **Compressed Biogas** (CBG) sector is **rapidly expanding**, yet a significant portion of **operational plants underperform** relative to their rated capacities.

CBG PLANT OPERATORS
must shift from a
MECHANICAL - FIRST MINDSET
to a BIOLOGY-FIRST
APPROACH.

The Core Challenge

Most **CBG plants do not underperform** because of poor technology; they struggle because commissioning and daily operations are **treated** as purely **mechanical startups** rather than biological system management.

While **project developers** invest heavily in world-class anaerobic digesters, **high - efficiency compressors, and advanced gas purification systems**, the **biological core** is often **neglected**.

Microbial cultures are used as reactive measure while adding them only during **acute biological stress** in the **digester**

Consequently, **digesters** frequently **lose stability** due to

- Organic and hydraulic shock loads
- Toxicity build-up due to lack of sufficient microbial population
- Weak or washed-out microbial biomass



Concentrated **Jeevamrut**

The **Biological Catalyst** for Enhanced Biogas **Production**

Jeevamrut Concentrate offers an inevitable, bio-based solution to this operational challenge.

Jeevamrut Concentrate acts as a robust microbial culture. It introduces a **diverse beneficial microbe** in the digester capable of synthesizing the specific extracellular enzymes required to **degrade complex organic compounds**.





Overcoming the **Ligno cellulosic Barrier**

Crop residues and **plant-based raw materials** are heavily composed of **lignocellulose**.

The presence of lignin is negatively correlated with **biogas** yield, acting as a physical and chemical barrier that **reduces total gas recovery**.



OVERCOMING THE LIGNO CELLULOSIC BARRIER



RAW PLANT
WASTE



LIGNIN
BARRIER



SLOW
DECOMPOSITION



LOW BIOGAS
YIELD

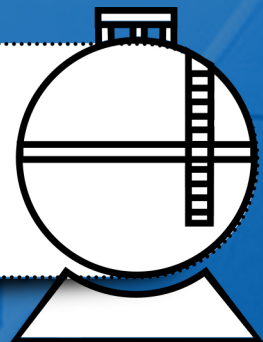
Concentration Jeevamrut Added



ENZYMATIC
BREAKDOWN



RAPID
FERMENTATION



MAXIMUM GAS OUTPUT

APPLICATION STRATEGY

In-Digester continuous Dosing

PROCESS IMPACT

Boosts microbial diversity and population kinetics during **anaerobic digestion**

END-PRODUCT BENEFIT

Increases gas production and stabilizes the biological process.
Generates a **nutrient-rich**, microbe-heavy sludge into **premium-grade organic fertilizer**.



Conclusion

By incorporating **Concentrated Jeevamrut**, CBG plant operators can transit from a volatile unstable mechanical process to a **highly resilient, high-yielding biological ecosystem**.

The dual benefit is clear:

Optimized gas output at the front end, and **premium, microbe-enriched FOM** at the **backend**—significantly improving the overall viability and profitability of the plant.

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