



V/S



Latest trends in going more greener



Brief history of alcohol fermentation

- 7000 BC - Earliest evidence of alcoholic beverages found in China.
- 1857 - Louis Pasteur publishes his seminal work on alcoholic fermentation.
- Early 20th century - Development of the continuous fermentation process.
- 1970s - Ethanol production begins to increase for use as a fuel.
- Present - Ethanol is produced on a large scale for a variety of purposes.



Yeast becoming the primary Organism for Molasses Fermentation

Circumventing bacteria

1. High Sugar Metabolism
2. High Tolerance to Alcohol
3. High Availability & Compatibility in comparison to other organisms
4. Control & Consistency
5. Ease in Down streaming
6. Flavor Selection
7. Well known genetic sequence



Role of Enzymes & Nutrients in Yeast Metabolism during Fermentation

Enzymes	Nutrient
Acts in the substrate (Molasses)	Acts upon the microbial metabolism
Inherently present	Had to be supplied externally
Withers off after taking part in reaction	Become a part of microbes body
Examples Alpha Amylase Gluco Amylase Arabinose Xylanose	Examples Urea Di Ammonium Phosphate Sodium Meta Bi- Sulphate Zinc Sulphate



Why we took this topic

1. What we already doing?

2. What's our vision ?





Nboost- FE[®]

(100% Urea DAP &
Other Nutrients
Replacement Blend
of Bio-Nutrients for
Fermentation)

Nboost-ET[®]

(100% Urea DAP &
Other Nutrients
Replacement Blend
of Bio-Nutrients for
ETP/CPU)

CWR Sol[®]

Condensate
Water
Recycle and
High VA Molasses
Fermentation
Enzymes

Nbac-BC[®]

Bio-culture for
Effluent Treatment
Plant

Alco Gain-BH[®]

High Sugar
Fermentation/
B-Heavy Molasses
Fermentation
Enzymes

Gluco6 2x

(Saccharification
Enzymes for Grain
Fermentation)

Mol Protect[®]

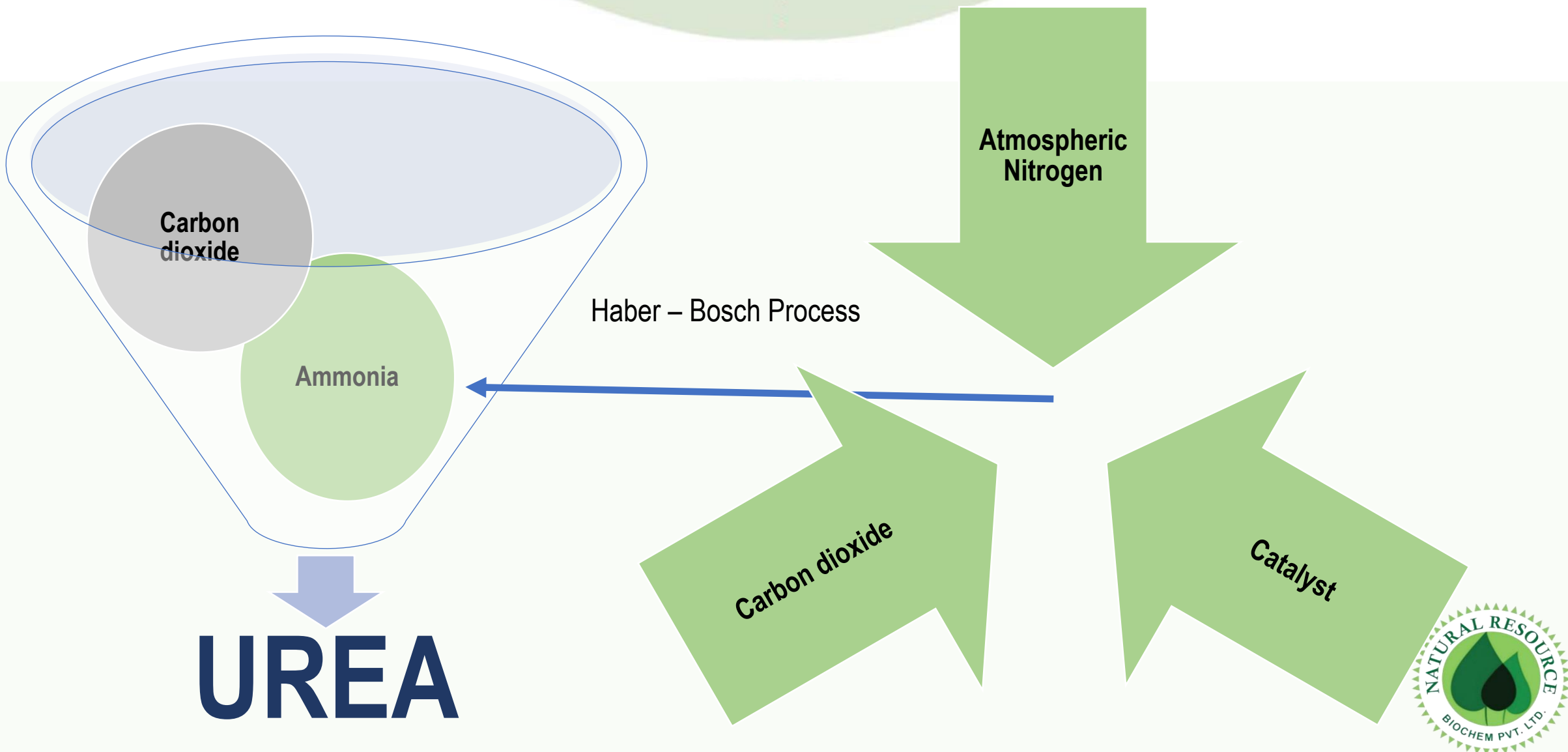
(TRS Preservation
Enzymes for
Molasses Storage)

Alpha4 2x

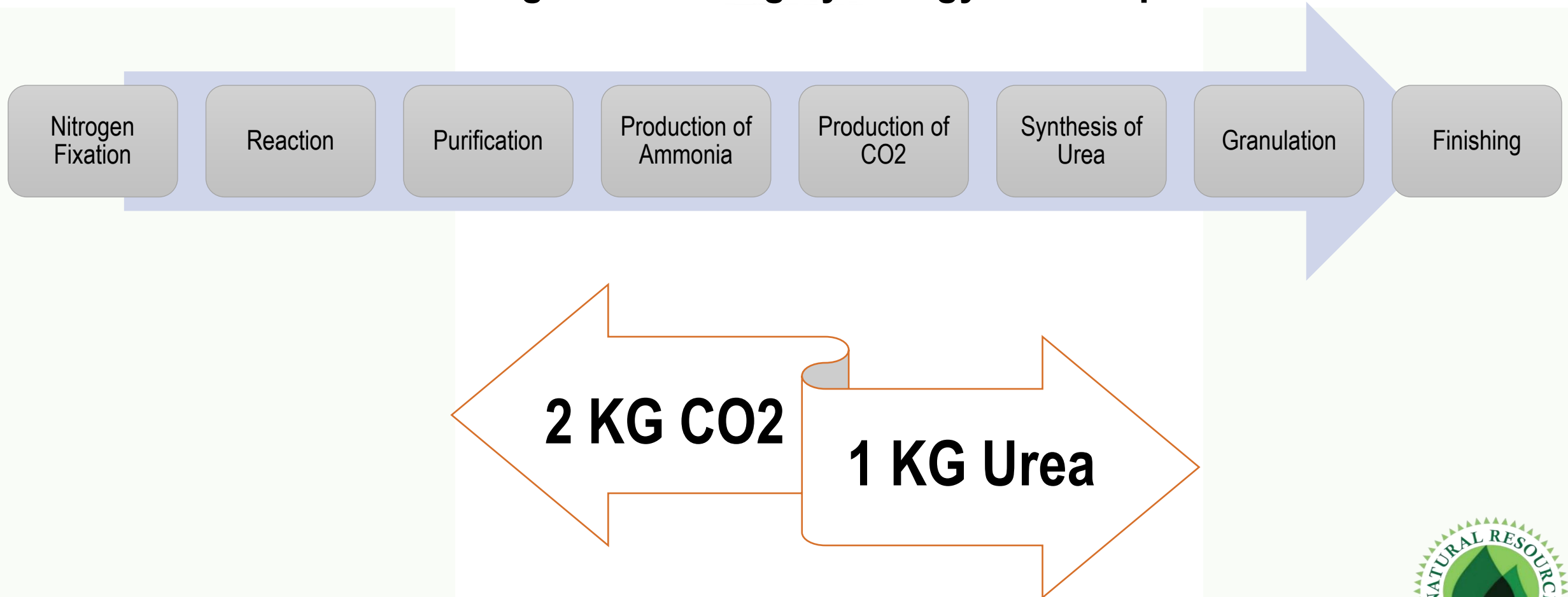
(Liquification
Enzymes for Grain
Fermentation)

Natural Resource Biochem Pvt. Ltd.

(ISO 9001:2015 & ISO 22000:2018 Certified Company)



Manufacturing Urea is a highly energy intense process

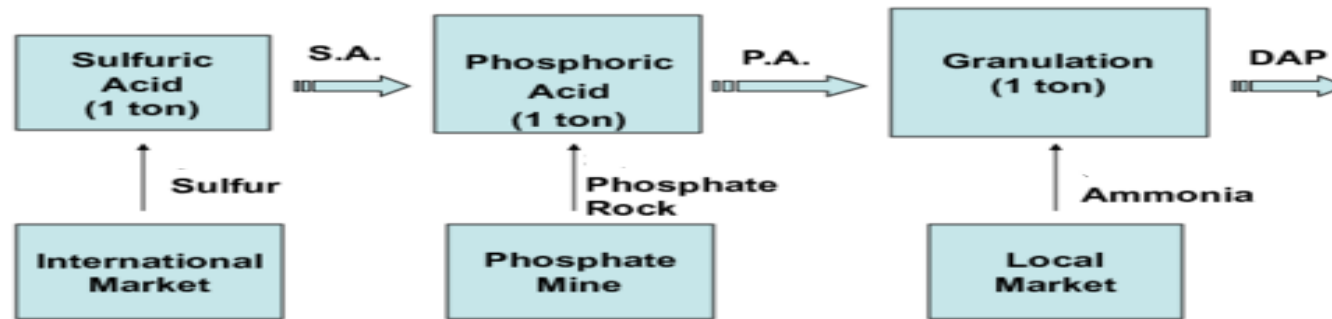


Assuming fossil fuels are used in heat management, CO₂ emission ratio is 1:2



Manufacturing DAP is energy intense as well exploits the environment

DAP FLOW DIAGRAM



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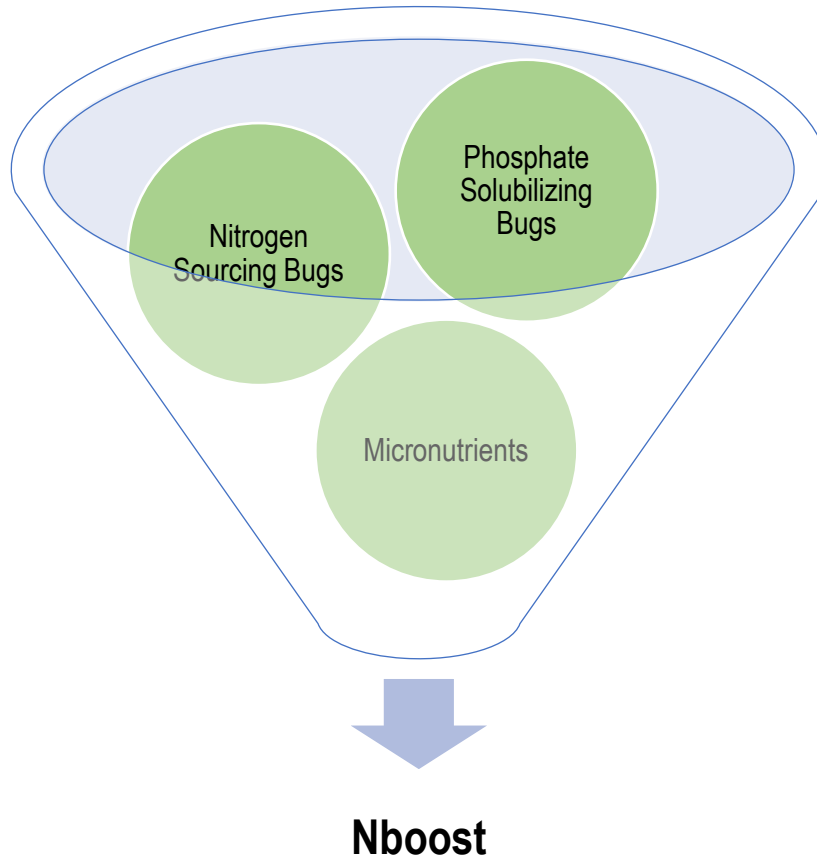
Assuming fossil fuels are used in heat management, CO2 emission ratio is 1:0.7



In NRBPL; we take this cumbersome process within 4 walls of a laboratory cum formulation unit



We went back to fundamentals



- Studied the difference of assimilable and non assimilable Nitrogen & Phosphorous
- Identify living micro factories who can do the same job
- At a negligible investment of power, space, effort and time
- Is formulated into a **synergistic blend**
- Universally applicable in bioreactors



Why do we call it “latest trend”

	Conventional Urea + DAP	Nboost
Assimilable form of Nitrogen & Phosphorous	YES	YES
Works for both Fermentation & ETPs'	YES	YES
Effect on Reaction Rate	NO	YES
100 % Organic	NO	YES
Can be blended with Enzyme & Bionutrients	NO	YES
Can be blended with other bacterial cultures	NO	YES

All these at a low cost - low storage – low logistics effort



NRBPL in the last **15 months** had substituted around

2000 Metric Tonne of Urea & 300 Metric Tonne DAP

In Other Words

Took 45 Cars out of Road every day

Had 35 fully grown additional Banyan trees for all those day

Saved fertilizer to nourish 10000 hectares of sugarcane field



Just holistic or tangible ? A. Syrup Process

Cost benefit sheet Nboost-FE for 500 KL/DAY (Syrup Fermentation) (Same Recovery)		
Urea Use/Day (in Fermenters & PF) for 500 KL/D	KG	1500
Average cost (Urea) per KG	INR	₹ 29.00
DAP Use /Day (in Fermenters & PF) for 500 KL/D	KG	700
Average cost (DAP) per KG	INR	₹ 32.00
Total cost of urea & DAP for 500KL/D (A)	INR	₹ 65,900.00
ZnSO ₄ ,MgSO ₄ & Biocide consume/Day (in Fermenters & PF) for 500 KL/D	KG	250
Average cost (ZnSO ₄ ,MgSO ₄ & Biocide) per KG	INR	₹ 35.00
Cost of (ZnSO ₄ ,MgSO ₄ & Biocide) using Nboost-FE in PF & Fermenter (B)	INR	₹ 8,750.00
Total cost per day from Urea, DAP ZnSO ₄ ,MgSO ₄ & Biocide at same recovery (C) = (A + B)	INR	₹ 74,650.00
Nboost-FE /day for 42 lakh wash @35 ppm for 500KL/D	KG	147
Cost of Nboost-FE/Day @ 400 INR/KG for 500KL/D (D)	INR	₹ 58,800.00
Cost of 50% of (ZnSO ₄ ,MgSO ₄ & Biocide) using Nboost-FE in PF & Fermenter (E)	INR	₹ 4,375.00
Total cost Per day at same recovery after using Nboost-FE (F) = (D + E)	INR	₹ 63,175.00
Total cost saving per day at same recovery after using Nboost-FE (C - F)	INR	₹ 11,475.00
In month	INR	₹ 3,44,250.00
Cost/BL for 500 KLPD @35 ppm of Nboost-FE	INR	₹ 0.12



B. Molasses Processs

Cost benefit sheet Nboost-FE for 500 KL/DAY (B Heavy Molasses Fermentation) (Same Recovery)		
Urea Use/Day (in Fermenters & PF) for 500 KL/D	KG	400
Average cost (Urea) per KG	INR	₹ 29.00
DAP Use /Day (in Fermenters & PF) for 500 KL/D	KG	250
Average cost (DAP) per KG	INR	₹ 32.00
Total cost of urea & DAP for 500KL/D (A)	INR	₹ 19,600.00
ZnSO ₄ ,MgSO ₄ & Bicide consume/Day (in Fermenters & PF) for 350 KL/D	KG	100
Average cost (ZnSO ₄ ,MgSO ₄ & Biocide) per KG	INR	₹ 35.00
50% Cost Saving of (ZnSO ₄ ,MgSO ₄ & Biocide) using Nboost-FE in PF & Fermenter (B)	INR	₹ 1,750.00
Total cost saving per day from Urea,DAP ZnSO ₄ ,MgSO ₄ & Biocide at same recovery after using Nboost-FE (A + B)	INR	₹ 21,350.00
Nboost-FE /day for 42 lakh wash @10ppm for 500KL/D	KG	42
Cost of Nboost-FE/Day @ 400 INR/KG for 500KL/D	INR	₹ 16,800.00
Total cost saving per day at same recovery after using Nboost-FE	INR	₹ 4,550.00
In month	INR	₹ 1,36,500.00
Cost/BL for 350 KLPD @10 ppm of Nboost-FE	INR	₹ 0.05



Our Clients:



Whatever achieved is not even 10% of the Sugar Cane alcohol scene

WTP's & Grain distilleries are the next major consumers of Urea/DAP as nutrients

We are not taking our mind off !!



Leave Urea & DAP for farmers

And please visit our stall

