

Central Food Technological Research Institute, Mysore – 570 020

N-TRIACONTANOL (A Plant Growth Promoter)

From tea wax/ rice bran wax/ sugarcane press mud wax

1. Introduction:

The n-triacontanol is a prominent plant growth promoter. The n-triacontanol is isolated from active fraction of tea waste. It can also be extracted from sugarcane press mud & rice bran waste. Successful field trials have proved its efficacy for high yield in the case of a number of crops like barley, corn, paddy, maize lettuce, cucumber, etc. Tea Research Institute, UPASI, Coimbatore has made successful field trials on tea cultivation. A yield increase to the extent of 20 to 30% and a reduction in dormant shoots (banji) has been reported. Some of the Agricultural Universities have tried this product on crops like paddy, tomato, brinjal, potato and the results have shown remarkable increase in yield.

The n-triacontanol and its formulation have shown excellent market potential. Number of tea planters in the country has shown keen interest especially after successful trials made by UPASI Tea Research Institute and reported an increase in the yield by 25 to 40%. Its application in the agriculture field and horticulture field will certainly enhance the demand of the product in the near future. Similar to n-triacontanol, developed at CFTRI, other products of similar nature, i.e. plant growth promoter are available in market with brand name like Paras, Miraculan, Vipul and Vardhaman.

2. Raw Material:

The three major raw materials used to extract the n-triacontanol are:

- i. Tea waste – black tea waste including stiff sweeping, tea waste from Instant tea processing, damaged tea, decaffeinated tea wax etc.
- ii. Sugarcane press mud-obtained as waste product during the clarification of sugar cane juice in sugar factories
- iii. Rice bran wax extracted from the co-product obtained from the rice milling/ solvent extraction industry

The tea waste is mostly available in tea processing centers, which are concentrated in North Eastern Region, Tamilnadu, Kerala and part of Karnataka. The sugarcane pressmud is available from all sugar industries. Rice bran wax is available from the solvent extraction units handling rice bran.

Comparative yield of n-triacontanol from various waxes:

	Yield %	Purity %
Sugarcane pressmud wax	20	20
Tea waste	30	40
Rice bran wax	30	25

3. Plant And Machinery:

List of equipments:

Soxhlet extraction unit, Heating mantle with thermostat, Distillation unit (Glass unit), Water bath, Concentration unit, Refluxing units, Filtration assembly (complete unit), Pressure vacuum pump, Miscellaneous equipment like clamp, vessels, jars, round bottom flask, etc., Testing equipment like TLC kit, iodine chamber, laboratory oven and other laboratory glassware, Refrigerator – 250 litre capacity, Weighing balance etc.

4. Project Cost – Fixed Cost – Working Capital (in Rs. '000) (Estimate for a model project):

a)	Land & Land development (500 m ²)	190.00
b)	Building and civil works (100 m ²)	604.00
c)	Plant and machinery	579.00
d)	Auxiliary equipment	291.00
e)	Miscellaneous fixed assets	50.00
f)	Pre-operative expenses	347.00
	Total fixed capital	2061.00
	Working capital margin	132.00
	Total Project cost	2193.00
Means of finance		
	- Promoters contribution	907.00
	- Term loan	1286.00

5. Production Capacity-(estimate)

Suggested economic capacity:	40-60g n-triacontanol/day
Working:	1 shift/day, 300 working days/year
Capacity:	12-18 kg/annum

6. Technology/Manufacturing Process – Availability

The technology for the manufacture of n-triacontanol has been developed at CFTRI, Mysore, using appropriate equipment for optimal product recovery of right quality. The CFTRI has the necessary expertise to provide technical assistance and guidance for setting up the project. The CFTRI can offer further technical assistance for project implementation under technical consultancy arrangements.

The manufacturers have to take a license under Central Insecticide Board (CIB), Government of India if required.