

N Guard

Nitrification Inhibitor

N-Guard is marketed exclusively by
Ameropa Ag in North, Central and
South America and Algio Sas in Italy



N-GUARD is a Neem limonoids and Neem bitters based formulation which helps maximize the Nitrogen Use Efficiency of nitrogenous fertilizers like Urea, while minimizing the loss of Nitrogen by virtually eliminating the risk of volatility, nitrification and leaching. The *Epinimbin* in N-GUARD has maximum nitrification inhibition potency followed by *Desacetylnimbin*, *Salannin*, *Desacetylsalannin*, *Azadirachtin* and *Nimbin*.

Advantages of using N-GUARD:

- 1) It helps to increase the fertilizer use efficiency (FUE) of nitrogenous fertilizers.
- 2) It reduces the nitrification rate by curbing the activity of nitrifying bacteria such as *Nitrosomonas* and *Nitrobacter* which ensures controlled release and continuous availability of Nitrogen to the crop during its critical stages of growth.
- 3) It helps to reduce the loss of Nitrogen through ammonia volatilization, nitrate leaching and other similar processes.
- 4) It helps plants increase their Nitrogen uptake. It helps to control soil borne insect-pests and nematodes.
- 5) It potentially increases crop yield It helps farmers to cut down the use of Urea by up to 25 %

A large percentage of the Nitrogen in nitrogenous fertilizers such as Urea is lost due to the action of nitrifying bacteria and ammonification. This leads to low fertilizer use efficiency, over and above which, this also proves to be an underground environmental hazard as the nitrogen leaches into ground water. When Urea is applied to the soil only approximately 33% is actually utilized by the plant. After application to soil, Urea hydrolyses rapidly to Ammonium Carbonate. This Ammonical form of Nitrogen is subsequently converted to Nitrite (NO_2^-) and then to 2 Nitrate (NO_3^-) by the action of nitrifying bacteria viz. *Nitrosomonas spp.* and *Nitrobacter spp.*, respectively. The processes of hydrolysis and nitrification of Urea fertilizer is, to a large extent, completed in about 15-20 days under most conducive agro-climatic conditions. Since the duration of most cultivated crops extends beyond 90-100 days, nitrates formed as a result of the relatively rapid hydrolysis and nitrification of Urea, being highly soluble, and in excess of the limited quantities required by the crops at their early stages of growth, are liable to be leached beyond the active root zone of crops. Therefore, apart from being directly responsible for a huge monetary loss, it is also an underground environmental hazard through nitrate leaching and ammonification. This gives rise to ground water contamination which poses a serious threat to the environment and human health. This problem can be considerably alleviated by treating such nitrogenous fertilizers with N-GUARD.

In order to ensure continuous and optimal supply of Nitrogen to match the requirements of crops at different stages of growth it is necessary to regulate the Nitrogen supply to crops by slowing down the rate of hydrolysis or nitrification or both.

Average increase in yield:

Rice 9.6% Wheat 6.9%

Potato 10.5% Sugarcane 15.5%

Cotton 10.3% Finger Millet 5.3%

Other crops also show an increase in yield due to use of Neem along with urea.

Source: Neem Research and Development

The antibacterial properties of Neem have been found to help nitrification inhibition. In this context, the significance of Neem in increasing fertilizer Nitrogen efficiency has been studied extensively. Results of the effect of Neem coating or blending of prilled Urea are available from a large number of experiments on several crops. Experiments on rice, in which losses of nitrogen are reported to be the most, reveal that the increase in rice yield due to Neem coating/blending of prilled urea ranged from 0.9% to 54.2%.

MAIZE TRIAL CONDUCTED BY SGS

N-Guard coating at 8 litres per tonne of Urea recorded the highest increase in yield over control @ 27.5%

Fertiliser Use Efficiency:

- The best fertilizer (nitrogen) use efficiency was shown by N-Guard coating @ 8 ml/kg with a Harvest Index of 37.1%

Economics:

- We discovered that N-Guard coating @ 8 ml/kg also resulted the highest B:C ratio of 0.73:1

Nitrogen Status:

- The soil samples collected from various plots and analysed in the laboratory revealed that N-Guard coating @ 8 ml/kg treated plots had the maximum available nitrogen status in soil (58.7% increase)
- N-Guard coating @ 8 ml/kg resulted 37 % stabilization of the Nitrogen in soil through inhibition of nitrification.

Further, it has been able to show some control on the common pests, diseases and nematodes affecting Maize.

Active Ingredient:

Neem limonoids

Mixing methods and Dosage:

Liquid Fertilizers:

N-GUARD can be mixed with liquid fertilizers such as Aqua Ammonia or other liquid ammonical or Urea Nitrogen composition. To make a stable emulsion, N-GUARD should be added to liquid fertilizer with constant agitation. Apply the mixture to the field as normal.

500ml – 1 litre / acre

Granular Ammonium and Urea:

N-GUARD can be coated on most dry ammonical fertilizers or blends containing ammonical fertilizers, by mixing in a closed rotary drum mixer. Apply this **N-GUARD** coated fertilizer in the field as normal.

1 l /125 kg Urea **OR** 8 l/MT Urea.

Tank Mixing:

N-GUARD may be applied in tank mixtures. The mix can be in water or most Urea, Ammonium Nitrate & NPK solutions, slurries or suspensions. Check the compatibility of the mixture as indicated below. Maintain constant agitation during both, mixing and application to ensure uniformity of the spray mixture. In case agitation facility is not available; we can provide an emulsifier to facilitate **N-GUARD** solubility.

500ml – 1 litre / acre

Packaging:

1000 litre tank

200 litre barrel

5 litre carboy

1 litre plastic bottle

500 ml. plastic bottle

Storage:

Store in cool, dry place away from direct sunlight.

Shelf life:

2 years

Compatibility Test:

To test the compatibility of N-Guard with liquid fertilizer and/or herbicide mix, add a proportionate amount of each ingredient to a small jar. Close the jar, shake and let the mixture stand for 15 to 20 minutes. Formation of precipitates or layers that do not readily re-disperse indicates incompatibility and should not be used.

Result In Crop :

Research & Development Farm **NICO ORGO MANURES, Dakor**

Effect of different products of company on the yield of chillies (Kharif-Rabi 2006)



Treatment	INCREASE IN YIELD OVER CONTROL (%)
NICOPLUS (TWO SPRAYS)	42.2
ORGOZYME (20 Kg/ha as Basal)	20.6
BIO-ORGO (TWO SPRAYS)	23.6
> N –GUARD (75% UREA)	38.2
> N-GUARD (100% UREA) *	49.5

► Prilled urea was coated with N-GUARD @ 1 Litre / 150 Kg (3 Bags) First spray one month after planting & second two months after first spray.

* 100 % Prilled Urea as Control

Effect of N-savers on production of Brinjal cv. Chaklasi Doli (year 2007-08)

Treatments	Yield (Kg/100m ²)	% Increase over control	% Increase over similar nitrification inhibitor	% Increase over synthetic nitrification inhibitor
N-GUARD	407	35.2	15.0	13.4
CONTROL	301	-	-	-

		Efficacy evaluation of N-Guard (a nitrification-inhibitor) coated urea in corn								Job Ref: IN/MUM/AGR/20110898/01									
										Version		1.0							
										Validation date		04/05/2012							
										SGS Study Code		0898/01							
EFFECT OF VARIOUS TREATMENTS ON GROWTH, DEVELOPMENT AND YIELD PARAMETERS OF MAIZE (CV. PIONEER HI-BRED-30R77) AT VILL-GALUDHAN, TALUQ-DAHEGAM, AHMEDABAD DURING RABI, 2011-12																			
DOSE												GROWTH, DEVELOPMENT AND YIELD PARAMETERS OF MAIZE							
TR (T)	NITRIFICATION-INHIBITOR/N-STABILIZER FOR COATING SPLIT UREA (ML/HA)		N : P : K (SPLIT N-UREA) (KG/HA)		HEIGHT (CM)	CROP VIGOUR (1-10 SCALE)	NUMBER OF GRAINS PER EAR/COB (NO.)	GRAIN-YIELD (Q/HA)	STOVER-YIELD (T/HA)	HARVEST INDEX (%)	IOC GRAIN-YIELD-(T1) (%)	B : C RATIO							
T1	UNCOATED (0.00)		120:60:40 (120)		145.7	6.7	463.8	27.3	7.88	34.6	0.0	0.38							
T2	UNCOATED (0.00)		120:60:40 (60+60)		153.3	7.2	473.5	31.6	9.00	35.1	15.8	0.59							
T3	UNCOATED (0.00)		120:60:40 (40+40+40)		154.3	7.5	480.4	32.2	9.12	35.3	17.9	0.62							
T4	Competitor's Product@ 740.87 (246.96+246.96+246.96)		120:60:40 (40+40+40)		155.8	9.2	505.1	33.7	9.16	36.8	23.4	0.66							
T5	N-GUARD @ 1980 (660+660+660)		120:60:40 (40+40+40)		162.1	9.3	514.6	34.8	9.38	37.1	27.5	0.73							
T6	N-GUARD @ 1721.74 (573.91+573.91+573.91)		120:60:40 (40+40+40)		155.1	8.6	496.0	32.6	8.96	36.4	19.4	0.62							
T7	N-GUARD @ 1463.48 (487.83+487.83+487.83)		120:60:40 (40+40+40)		155.0	8.0	486.1	31.3	8.71	35.9	14.7	0.56							
T8	N-GUARD @ 1463.48 (487.83+487.83+487.83)		102 : 60:40 (34+34+34)		151.3	6.9	481.9	29.5	8.39	35.2	8.1	0.49							
T9	N-GUARD @ 1291.3 (430.43+430.43+430.43)		90:60:40 (30+30+30)		146.5	6.4	463.6	27.7	8.01	34.6	1.5	0.41							
SEM (±)					2.19	0.1	9.9	0.4	0.24	-									
CD (P=0.05)					6.64	0.2	30.0	1.1	0.72	-									
CV (%)					2.48	1.2	3.5	2.1	4.71	-									
VALUES ARE MEANS OF THREE REPLICATIONS ONCE AT BASAL STAGE (T1)									Prepared by										
IOC = PERCENT INCREASE IN GRAIN-YIELD OVER UNCOATED UREA APPLICATION																			
									Dr. Ranjeet K. Poddar (Field Trials Specialist) SGS, INDIA										

Results in crop :



Paddy N-guard



Papaya N-
Guard

Certificate of Analysis
N-GUARD

Neem Based Nitrification Inhibitor cum Coating Agent

Batch No. : 065/14
Date of analysis : 03/07/2014
Mfg. Date : 03/07/2014
Expiry Date : 03/07/2016

Sr. No.	Characteristic	Requirement	Results Obtained
1	Physical Appearance	Brownish viscous oily liquid	Complies
2	Odour	Peculiar bitter odour of neem	Complies
3	Sp. Gravity	0.96 g/cc	Complies
4	Chemical Stability	Stable at ordinary condition of use and storage.	Complies
5	pH	5.5	Complies

Remark: The above product complies as per specification.

For Nico Orgo Manures

For Nico Orgo Manures

Quality Control Dept.

Partner

Microbiologist

MATERIAL SAFETY DATA SHEET

N-GUARD

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

Name : N-GUARD

Company Identification:

NICO ORGO MANURES

Opp. Railway Station,

Dakor – 388225.

Ph: 02699 244403 / 244611

Fax: 02699 244903

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

N-GUARD - Brownish Viscous Oily Liquid

**** SECTION 3 - HAZARDS IDENTIFICATION ****

Fire: Non inflammable. Non hazardous.

Other Hazards: Hazardous polymerisation will not occur.

**** SECTION 4 - FIRST AID MEASURES ****

Wash affected area with soap and water..

**** SECTION 5 - FIRE FIGHTING MEASURES ****

Non flammable

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

Recover free product. Use absorbent material to minimize runoff of mixed product..

**** SECTION 7 - HANDLING and STORAGE ****

Store in a cool, dry, & covered place. No other special arrangements required.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Use of mask is recommended. Use under ventilated conditions. Use gloves-avoid contact with open wounds

Avoid contact with eyes. Wash thoroughly with water and soap after exposure.

****** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ******

Appearance : Brownish Viscous Oily Liquid with typical organic & Neem odour.

Stable and non reactive

****** SECTION 10 - STABILITY AND REACTIVITY ******

Stable and non reactive

****** SECTION 11 - TOXICOLOGICAL INFORMATION ******

Non Toxic

****** SECTION 12 - ECOLOGICAL INFORMATION ******

Eco friendly Product.

****** SECTION 13 - DISPOSAL CONSIDERATIONS ******

Does not require special steps. May be disposed as per the requirements of

The local authorities.

****** SECTION 14 - TRANSPORT INFORMATION ******

Safe for transportation. Nonhaz.

****** SECTION 15 - REGULATORY INFORMATION ******

It is non toxic, non corrosive and does not contain any hazardous air pollutants.

****** SECTION 16 - ADDITIONAL INFORMATION ******

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Nico Orgo Manures assumes no legal responsibility for use or reliance on these data.